UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN

ANDREI FENNER and JOSHUA HERMAN, individually and on behalf of themselves and all others similarly situated,

Plaintiffs,

v.

GENERAL MOTORS LLC, a Delaware Limited Liability Company; ROBERT BOSCH GMBH, a corporation organized under the laws of Germany; and ROBERT BOSCH LLC, a Delaware Limited Liability Company,

Defendants.

No.

JURY TRIAL DEMANDED

CLASS ACTION COMPLAINT

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Plaintiffs Andrei Fenner and Joshua Herman, individually and on behalf of all others similarly situated (the "Class"), allege the following based upon the investigation of counsel, the review of scientific papers, and the proprietary investigation of experts:

I. INTRODUCTION

1. This is what General Motors ("GM") promised when selling its popular Silverado and Sierra HD Vehicles—that its Duramax engines turned "heavy diesel fuel into a fine mist," delivering "low emissions" that were a "whopping reduction" compared to the prior model and at the same time produced a vehicle with "great power." GM claimed its engineers had accomplished a "remarkable reduction of diesel emissions."

2. As explained in detail below, this is not what GM delivered in the estimated 705,000 or more Silverado and Sierra diesels on the road. In contrast to GM's promises, emissions testing has revealed that the Sierra and Silverado models emit levels of NOx many times higher than (i) their gasoline counterparts, (ii) what a reasonable consumer would expect, (iii) the Environmental Protection Agency's maximum standards, and (iv) the levels set for the vehicles to obtain a certificate of compliance that allows them to be sold in the United States.

3. In the last two years, there have been major scandals involving diesel vehicles made by Volkswagen, Audi, Mercedes, and Fiat Chrysler America.

Volkswagen pled guilty to criminal violations of the Clean Air Act, Mercedes is under investigation by the Department of Justice, and Fiat Chrysler America has been notified by the EPA that it has violated the Clean Air Act for improper emissions in hundreds of thousands of 2014-2016 Dodge Ram 1500 EcoDiesels and 2014-2016 Jeep Grand Cherokee EcoDiesels. The diesel vehicles made by these manufacturers evade emissions standards with the help of certain software that turns off emissions controls when the vehicles are not being tested.

4. Testing conducted by engineering experts in emissions testing indicates that GM is no different. Its top selling Silverado and Sierra 2500HD vehicles emit far more pollution on the road than in the emission certification testing environment, and these vehicles exceed federal and state emission standards and employ at least three different "defeat devices" to turn down the emissions controls when the vehicle senses that it is not in the certification test cycle. A defeat device means an auxiliary emissions control device that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal vehicle operation and use.

5. GM Defeat Device No. 1 reduces or derates the emissions system when temperatures are above the emissions certification test range (86°F). GM Defeat Device No. 2 operates to reduce emissions control when temperatures are below the emissions certification low temperature range (68°F). Testing reveals

that at temperatures below 68°F (the lower limit of the certification test temperature), stop and go emissions are 2.1 times the emissions standard at 428 mg/mile (the standard is 200 mg/mile). At temperatures above 86°F, stop and go emissions are an average of 2.4 times the standard with some emissions as high as 5.8 times the standard. Based on temperatures in the top 30 metropolitan areas, these vehicles are operating with the emissions systems derated a material amount of their vehicle miles travelled. But the emission scheme is a step more nefarious: enter GM Defeat Device No. 3, which reduces the level of emissions controls after 200-500 seconds of steady speed operation in all temperature windows, causing emissions to increase on average of a factor of 4.5. Based on a study of temperatures in 30 major metropolitan areas as well as the demographics of Silverado sales, it is estimated that due to the temperature-triggered defeat devices, the vehicles operate at 65-70% of their miles driven with emissions that are 2.1 to 5.8 times the standard.

6. Increased sales and thus increased profits drove GM to use at least these three defeat devices in its Duramax diesel engines. By reversing the traditional order of the exhaust treatment components and putting the Selective Catalytic Reduction (SCR) in front of the Diesel Particulate Filter (DPF), GM could obtain and market higher power and efficiency from its engines while still passing the cold-start emissions certification tests. This made GM's trucks more

appealing and competitive in the marketplace, driving up sales and profits. But the reordering would have also drastically increased the need to employ Active Regeneration and other power- and efficiency-sapping exhaust treatment measures, reversing the very advantage gained. GM's solution was to install defeat devices to purposefully reduce SCR dosing, increase NOx emissions, and thus decrease Active Regeneration. The defeat devices allowed GM to have its cake and it eat too. It could gain the advantage of hot exhaust going into the SCR system needed to pass cold-start tests, while avoiding the fuel- and power-robbing Active Regeneration procedure that the DPF filter requires when the SCR treatment comes first. GM turned a blind eye to the twofold to fivefold increase in deadly NOx emissions its scheme caused—all to drive up its sales and profits.

7. Diesel engines pose a difficult challenge to the environment because they have an inherent trade-off between power, fuel efficiency, and emissions. Compared to gasoline engines, diesel engines generally produce greater torque, low-end power, better drivability, and much higher fuel efficiency. But these benefits come at the cost of much dirtier and more harmful emissions.

8. One by-product of diesel combustion is NOx, which generally describes several compounds comprised of nitrogen and oxygen atoms. These compounds are formed in the cylinder of the engine during the high temperature combustion process. NOx pollution contributes to nitrogen dioxide, particulate

matter in the air, and reacts with sunlight in the atmosphere to form ozone. Exposure to these pollutants has been linked with serious health dangers, including serious respiratory illnesses and premature death due to respiratory-related or cardiovascular-related effects. The United States Government, through the Environmental Protection Agency (EPA), has passed and enforced laws designed to protect United States citizens from these pollutants and certain chemicals and agents known to cause disease in humans. Automobile manufacturers must abide by these U.S. laws and must adhere to EPA rules and regulations. This case is not based on these laws but on deception aimed at consumers.

9. Seeing a major opportunity for growth, almost all of the major automobile manufacturers rushed to develop "clean diesel" and promoted new diesel vehicles as environmentally friendly and clean. Volkswagen, Mercedes, GM, Fiat Chrysler America, and other manufacturers began selling diesel cars and trucks as more powerful, yet also as an environmentally friendly alternative to gasoline vehicles. And the marketing worked, as millions of diesel vehicles were purchased between 2007 and 2016.

10. The green bubble with respect to diesel vehicles popped on September 18, 2015, when the EPA issued a Notice of Violation of the Clean Air Act (the "First NOV") to Volkswagen Group of America, Audi AG, and Volkswagen America for installing illegal "defeat devices" in 2009-2015

Volkswagen and Audi diesel cars equipped with 2.0-liter diesel engines. A defeat device, as defined by the EPA, is any apparatus that unduly reduces the effectiveness of emissions control systems under conditions a vehicle may reasonably be expected to experience. The EPA found that the Volkswagen/Audi defeat device allowed the vehicles to pass emissions testing while in the real world these vehicles polluted far in excess of emissions standards. The California Air Resources Board also announced that it had initiated an enforcement investigation of Volkswagen pertaining to the vehicles at issue in the First NOV.

11. On September 22, 2015, Volkswagen announced that 11 million diesel cars worldwide were installed with the same defeat device software that had evaded emissions testing by U.S. regulators. Volkswagen pled guilty to criminal charges and settled civil class actions for over ten billion dollars.[1]

12. Volkswagen wasn't alone—soon, government agencies began to reveal that many manufacturers both in the U.S. and in Europe had produced dozens of models that were exceeding emissions standards. On January 12, 2017, the EPA issued a Notice of Violation to Fiat Chrysler America because it had cheated on its emissions certificates with respect to its popular Dodge Ram and Jeep Grand Cherokee vehicles, and on May 23, 2017 the United States filed a civil

[1] *See* Exhibit 1, Nathan Bomey, *Volkswagen Emission Scandal Widens: 11 Million Cars Affected*, USA Today (Sept. 22, 2015), http://www.usatoday.com/story/money/cars/2015/09/22/volkswagen-emissions-scandal/72605874/.

suit in the Eastern District of Michigan alleging violations of the Clean Air Act (E.D. Mich. No. 2:17-cv-11633).

13. GM is no different. To appeal to environmentally conscious consumers, GM markets its Silverado and Sierra Duramax vehicles as having low emissions, high fuel economy, and powerful torque and towing capacity. GM charges a premium of approximately $5,000 for diesel-equipped vehicles over comparable gas vehicles.

14. GM's representations are deceptive and false, and GM sold these vehicles while omitting information that would be material to a reasonable consumer that GM has programmed its Silverado and Sierra Duramax vehicles to significantly reduce the effectiveness of the NOx reduction systems during real-world driving conditions.

15. Plaintiffs' on-road testing has confirmed that GM's Silverado and Sierra vehicles with a Duramax engine produce NOx emissions that are not "reduced" or "low" but in fact exceed emission standards, and that GM has programmed the vehicles so that in a wide range of conditions, the emissions systems are powered down, producing NOx in excess of emissions standards. This testing indicates that GM and Bosch have programmed the software to detect a possible emission testing environment and to comply with emissions requirements in that circumstance, but to turn off the emissions controls when a testing

environment is not detected. A reasonable consumer would not expect their Silverado or Sierra vehicle to spew unmitigated NOx in this fashion while driving in the city or on the highway.

16. Plaintiffs allege that the following GM models powered by Duramax engines are affected by the unlawful, unfair, deceptive, and otherwise defective emission controls utilized by GM: model year 2011-2016 GM Sierra 2500HD and 3500 HD trucks and GM Silverado 2500 HD and 3500 HD trucks (the "Affected Vehicles").

17. In addition, GM markets the Affected Vehicles as fuel efficient, if not the "best" of any full-sized pickup. Without manipulating its software to turn off the emissions controls, GM could not achieve the fuel economy and range it promises.

18. GM did not previously disclose to Plaintiffs or Class members that in real-world driving conditions, the Affected Vehicles can only achieve high fuel economy, power, and durability by reducing emissions controls in order to spew NOx into the air.

19. GM never disclosed to consumers that the Affected Vehicles may be "clean" diesels in very limited circumstances but are "dirty" diesels under most driving conditions. GM never disclosed to consumers that it programs its emissions systems to work only under certain conditions. GM never disclosed that it

prioritizes engine power and profits over the environment. GM never disclosed that the Affected Vehicles' emissions materially exceed the emissions from gasoline powered vehicles, that the emissions exceed what a reasonable consumer would expect from a "low emissions" vehicle, and that the emissions materially exceed applicable emissions limits in real-world driving conditions. And GM collected a premium for these trucks by selling them at thousands of dollars over the cost of a comparable gasoline powered truck.

20. GM did not act alone. At the heart of the diesel scandal in the United States and Europe are Bosch GmbH and Bosch LLC (together, "Bosch"). Bosch was an active and knowing participant in the scheme to evade U.S. emissions requirements. Bosch developed, manufactured, and tested the electronic diesel control (EDC) that allowed GM to implement the defeat device. The Bosch EDC-17 is a good enabler for manufacturers to employ "defeat devices" as it enables the software to detect conditions when emissions controls can be detected—*i.e.*, conditions outside of the emissions test cycle. Almost all of the vehicles found or alleged to have been manipulating emissions in the United States (Mercedes, Fiat Chrysler America, Volkswagen, Chevy Cruze) use a Bosch device.

21. Plaintiffs bring this action individually and on behalf of all other current and former owners or lessees of the Affected Vehicles. The Affected Vehicles include all 2011 to 2016 GM Sierra 2500HD/3500HD and Silverado

2500HD/3500HD vehicles. Plaintiffs seek damages, injunctive relief, and equitable relief for GM's and Bosch's misconduct related to the design, manufacture, marketing, sale, and lease of Affected Vehicles, as alleged in this Complaint.

II. JURISDICTION

22. This Court has subject matter jurisdiction over this action under 28 U.S.C. § 1331 because Plaintiffs' claims arise under the RICO Act, 18 U.S.C. § 1962. The Court also has diversity jurisdiction because Plaintiffs and Defendants reside in different states. The Court has supplemental jurisdiction over Plaintiffs' state law claims under 28 U.S.C. § 1367.

23. This Court also has original jurisdiction over this lawsuit pursuant to 28 U.S.C. § 1332(a)(1), as modified by the Class Action Fairness Act of 2005, because Plaintiffs and Defendants are citizens of different states; there are more than 100 members of the Class (as defined herein); the aggregate amount in controversy exceeds $5 million, exclusive of attorneys' fees, interest, and costs; and Class members reside across the United States. The citizenship of each party is described further below in the "Parties" section.

24. This Court has personal jurisdiction over each Defendant pursuant to 18 U.S.C. § 1965(b) & (d). This Court has personal jurisdiction over Defendants because they have minimum contacts with the United States, this judicial district, and this State, and they intentionally availed themselves of the laws of the United

States and this state by conducting a substantial amount of business throughout the state, including the design, manufacture, distribution, testing, sale, lease, and/or warranty of GM vehicles in this State and District. At least in part because of Defendants' misconduct as alleged in this lawsuit, Affected Vehicles ended up on this state's roads and in dozens of franchise dealerships.

III. VENUE

25. Venue is proper in this Court under 28 U.S.C. § 1391 because: (i) Defendants conduct substantial business in this District and have intentionally availed themselves of the laws and markets of the United States and this District; and/or (ii) many of the acts and transactions giving rise to this action occurred in this District, including, *inter alia*, GM's promotion, marketing, distribution and sale of the Affected Vehicles to Plaintiffs in this District. Defendant GM sells a substantial number of automobiles in this District, has dealerships located throughout this District, and the misconduct occurred in part in this District. Venue is also proper under 18 U.S.C. § 1965(a) because Defendants are subject to personal jurisdiction in this District, as alleged in the preceding paragraph, and Defendants have agents located in this District.

IV. PARTIES

A. Plaintiffs

1. Andrei Fenner

26. Plaintiff Andrei Fenner (for the purpose of this paragraph, "Plaintiff") is an individual residing in Mountain View, California. On August 1, 2013, Plaintiff purchased a used 2011 GMC Sierra from Cardinale GMC, an authorized GM dealer in Monterey, California. Plaintiff purchased and still owns this vehicle. Unknown to Plaintiff at the time the vehicle was purchased, it only achieved its promised fuel economy and performance because it was equipped with an emissions system that, during normal driving conditions, exceeded the allowed level of pollutants such as NOx. GM's unfair, unlawful, and deceptive conduct in designing, manufacturing, marketing, selling, and leasing the vehicle without proper emission controls has caused Plaintiff out-of-pocket loss, future attempted repairs, and diminished value of his vehicle. GM knew about, or recklessly disregarded, the inadequate emission controls during normal driving conditions, but did not disclose such facts or their effects to Plaintiff, so Plaintiff purchased his vehicle on the reasonable but mistaken belief that his vehicle was a "clean diesel" and/or a "low emission diesel," complied with U.S. emissions standards, was properly EPA-certified, and would retain all of its promised fuel economy and performance throughout its useful life. Plaintiff selected and ultimately purchased his vehicle, in part, because of the diesel system, as represented through

advertisements and representations made by GM. Plaintiff recalls that before he purchased the vehicle, he reviewed advertisements on GM's website and representations from GM's authorized dealer touting the efficiency, fuel economy, and power and performance of the engine. Had GM disclosed this design or the fact that the GMC Sierra actually emitted unlawfully high levels of pollutants, Plaintiff would not have purchased the vehicle or would have paid less for it. Plaintiff and each Class member has suffered an ascertainable loss as a result of GM's omissions and/or misrepresentations associated with the Duramax engine system, including but not limited to a high premium for the Duramax engine compared to what they would have paid for a gas-powered engine, out-of-pocket losses by overpaying for the vehicles at the time of purchase, and future attempted repairs, future additional fuel costs, decreased performance of the vehicles, and diminished value of the vehicles. Neither GM nor any of its agents, dealers, or other representatives informed Plaintiff or Class members of the existence of the unlawfully high emissions and/or defective nature of the diesel engine system of the Affected Vehicles prior to purchase.

2. Joshua Herman

27. Plaintiff Joshua Herman (for the purpose of this paragraph, "Plaintiff") is an individual residing in Sulphur, Louisiana. On June 4, 2016, Plaintiff purchased a new 2016 Silverado with a Duramax diesel engine from Billy

Navarre Chevrolet, an authorized GM dealer in Sulphur, Louisiana. Plaintiff purchased and still owns this vehicle. Unknown to Plaintiff at the time the vehicle was purchased, it only achieved its promised fuel economy and performance because it was equipped with an emissions system that, during normal driving conditions, emitted many multiples of the allowed level of pollutants such as NOx. GM's unfair, unlawful, and deceptive conduct in designing, manufacturing, marketing, selling, and leasing the vehicle without proper emission controls has caused Plaintiff out-of-pocket loss, future attempted repairs, and diminished value of his vehicle. GM knew about, or recklessly disregarded, the inadequate emission controls during normal driving conditions, but did not disclose such facts or their effects to Plaintiff, so Plaintiff purchased his vehicle on the reasonable but mistaken belief that his vehicle was a "clean diesel," complied with U.S. emissions standards, was properly EPA-certified, and would retain all of its promised fuel economy and performance throughout its useful life. Plaintiff selected and ultimately purchased his vehicle, in part, because of the diesel system, as represented through advertisements and representations made by GM. Plaintiff recalls that before he purchased the vehicle, he reviewed advertisements on GM's website and representations from GM's authorized dealer touting the efficiency, fuel economy, and power and performance of the engine. Had GM disclosed this design or the fact that the Silverado actually emitted unlawfully high levels of

pollutants, Plaintiff would not have purchased the vehicle or would have paid less for it. Plaintiff and each Class member has suffered an ascertainable loss as a result of GM's omissions and/or misrepresentations associated with the Duramax engine system, including but not limited to a high premium for the Duramax engine compared to what they would have paid for a gas-powered engine, out-of-pocket losses by overpaying for the vehicles at the time of purchase, and future attempted repairs, future additional fuel costs, decreased performance of the vehicles, and diminished value of the vehicles. Neither GM nor any of its agents, dealers, or other representatives informed Plaintiff or Class members of the existence of the unlawfully high emissions and/or defective nature of the diesel engine system of the Affected Vehicles prior to purchase.

B. Defendants

1. General Motors

28. Defendant General Motors LLC (GM) is a Delaware limited liability company with its principal place of business located at 300 Renaissance Center, Detroit, Michigan, and is a citizen of the States of Delaware and Michigan. The sole member and owner of General Motors LLC is General Motors Holdings LLC. General Motors Holdings LLC is a Delaware limited liability company with its principal place of business in the State of Michigan.

29. GM, through its various entities, including Chevrolet and GMC, designs, manufactures, markets, distributes, and sells GM automobiles in this District and multiple other locations in the United States and worldwide. GM and/or its agents designed, manufactured, and installed the GM engine systems in the Silverado and Sierra vehicles. GM also developed and disseminated the owner's manuals and warranty booklets, advertisements, and other promotional materials relating to the Affected Vehicles.

2. The Bosch Defendants

30. From at least 2005 to 2015, Robert Bosch GmbH, Robert Bosch LLC, and currently unnamed Bosch employees (together, "Bosch") were knowing and active participants in the creation, development, marketing, and sale of illegal defeat devices specifically designed to evade U.S. emissions requirements in vehicles sold solely in the United States and Europe. These vehicles include the Dodge Ram 1500 EcoDiesel and Jeep Grand Cherokee EcoDiesel, as well as models made by Volkswagen, Audi, Porsche, and Mercedes.

31. The following is a list, excluding the GM vehicles in this case, of all diesel models in the United States with Bosch-supplied software whose emissions exceed standards and are beyond what a reasonable consumer would expect from cars marketed as "clean" or "low emission":

AFFECTED VEHICLES

VOLKSWAGEN:

2.0-liter Class Vehicles	3.0-liter Class Vehicles
VW Jetta TDI 2009-15	VW Touareg TDI 2009-16
VW Jetta SportWagen TDI 2009-14	Porsche Cayenne Diesel 2013-16
VW Beetle TDI 2012-15	Audi A6 Quattro TDI 2014-16
VW Beetle Convertible TDI 2012-15	Audi A7 Quattro TDI 2014-16
Audi A3 TDI 2010-15	Audi A8 TDI 2014-16
VW Golf TDI 2010-15	Audi A8L TDI 2014-16
VW Golf SportWagen TDI 2015	Audi Q5 TDI 2014-16
VW Passat TDI 2012-15	Audi Q7 TDI 2009-16

FIAT CHRYSLER:

Jeep Grand Cherokee EcoDiesel 2014-16
Dodge Ram 1500 EcoDiesel 2014-16

MERCEDES:

ML 320 2007-16	R320 2007-16	S Class 2007-16
ML 350 2007-16	E Class 2007-16	GLK Class 2007-16
GL 320 2007-16	GL Class 2007-16	GLE Class 2007-16
E320 2007-16	ML Class 2007-16	Sprinter 2007-16
S350 2007-16	R Class 2007-16	

32. Bosch participated not just in the development of the defeat device, but in the scheme to prevent U.S. regulators from uncovering the device's true functionality. Moreover, Bosch's participation was not limited to engineering the defeat device (in a collaboration described as unusually close). Rather, Bosch marketed "Clean Diesel" in the United States and lobbied U.S. regulators to approve "Clean Diesel," another highly unusual activity for a mere supplier. These lobbying efforts, taken together with evidence of Bosch's actual knowledge that its software could be operated as a defeat device and participation in concealing the

true functionality of the device from U.S. regulators, can be interpreted only one way under U.S. law: Bosch was a knowing and active participant in a massive, decade-long conspiracy with Volkswagen, GM, and others to defraud U.S. consumers, regulators, and diesel car purchasers or lessees.

33. Robert Bosch GmbH is a German multinational engineering and electronics company headquartered in Gerlingen, Germany. Robert Bosch GmbH is the parent company of Robert Bosch LLC. Robert Bosch GmbH, directly and/or through its North American subsidiary Robert Bosch LLC, at all material times, designed, manufactured, and supplied elements of the defeat device to GM for use in the Affected Vehicles. Bosch GmbH is subject to the personal jurisdiction of this Court because it has availed itself of the laws of the United States through its management and control over Bosch LLC and over the design, development, manufacture, distribution, testing, and sale of hundreds of thousands of the defeat devices installed in the Affected Vehicles sold or leased in the U.S.

34. Robert Bosch LLC is a Delaware limited liability company with its principal place of business located at 38000 Hills Tech Drive, Farmington Hills, Michigan. Robert Bosch LLC is a wholly owned subsidiary of Robert Bosch GmbH. Robert Bosch LLC, directly and/or in conjunction with its parent Robert Bosch GmbH, at all material times, designed, manufactured, and supplied elements of the defeat device to GM for use in the Affected Vehicles.

35. Both Robert Bosch GmbH and Robert Bosch LLC operate under the umbrella of the Bosch Group, which encompasses some 340 subsidiaries and companies. The Bosch Group is divided into four business sectors: Mobility Solutions (formerly Automotive Technology), Industrial Technology, Consumer Goods, and Energy and Building Technology. The Mobility Solutions sector, which supplies parts to the automotive industry, and its Diesel Systems division, which develops, manufacturers, and supplies diesel systems, are particularly at issue here and include the relevant individuals at both Bosch GmbH and Bosch LLC. Bosch's sectors and divisions are grouped not by location but by subject matter. Mobility Solutions includes the relevant individuals at both Bosch GmbH and Bosch LLC. Regardless of whether an individual works for Bosch in Germany or the U.S., the individual holds him or herself out as working for Bosch. This collective identity is captured by Bosch's mission statement: "We are Bosch," a unifying principle that links each entity and person within the Bosch Group.[2]

V. FACTUAL ALLEGATIONS

A. The Environmental Challenges Posed by Diesel Engines and the U.S. Regulatory Response Thereto

36. The U.S. government, through the Environmental Protection Agency (EPA), has passed and enforced laws designed to protect U.S. citizens from

[2] Exhibit 2, Bosch 2014 Annual Report, *Experiencing quality of life*, available at http://www.bosch.com/media/com/bosch_group/bosch_in_figures/publications/archive/GB2014_EN.pdf (last accessed May 24, 2017).

pollution and, in particular, certain chemicals and agents known to cause disease in humans. Automobile manufacturers must abide by these laws and must adhere to EPA rules and regulations.

37. The U.S. Clean Air Act has strict emissions standards for vehicles, and it requires vehicle manufacturers to certify to the EPA that the vehicles sold in the U.S. meet applicable federal emissions standards to control air pollution. Every vehicle sold in the U.S. must be covered by an EPA-issued certificate of conformity.

38. There is a very good reason that these laws and regulations exist, particularly in regards to vehicles with diesel engines: in 2012, the World Health Organization declared diesel vehicle emissions to be carcinogenic and about as dangerous as asbestos.

39. Diesel engines pose a particularly difficult challenge to the environment because they have an inherent trade-off between power, fuel efficiency, and emissions: the greater the power and fuel efficiency, the dirtier and more harmful the emissions.

40. Instead of using a spark plug to combust highly refined fuel with short hydrocarbon chains, as gasoline engines do, diesel engines compress a mist of liquid fuel and air to very high temperatures and pressures, which causes the diesel

to spontaneously combust. This causes a more powerful compression of the pistons, which produces greater engine torque (that is, more power).

41. The diesel engine is able to do this both because it operates at a higher compression ratio than a gasoline engine and because diesel fuel contains more energy than gasoline.

42. But this greater energy and fuel efficiency comes at a cost: diesel produces dirtier and more dangerous emissions. One byproduct of diesel combustion is oxides of nitrogen (NOx), which includes a variety of nitrogen and oxygen chemical compounds that only form at high temperatures.

43. NOx pollution contributes to nitrogen dioxide, particulate matter in the air, and reacts with sunlight in the atmosphere to form ozone. Exposure to these pollutants has been linked with serious health dangers, including asthma attacks and other respiratory illnesses serious enough to send people to the hospital. Ozone and particulate matter exposure have been associated with premature death due to respiratory-related or cardiovascular-related effects. Children, the elderly, and people with pre-existing respiratory illness are at acute risk of health effects from these pollutants. As a ground level pollutant, NO_2, a common byproduct of NOx reduction systems using an oxidation catalyst, is highly toxic in comparison to nitric oxide (NO). If overall NOx levels are not sufficiently controlled, then

concentrations of NO_2 levels at ground level can be quite high, where they have adverse acute health effects.

B. Both the Silverado and Sierra Share a Common Duramax Engine

44. For the purposes of this complaint, the following terms are used to describe the Duramax engine found in all Silverado and Sierra vehicles at issue in this case. These two models share the same engine test group and are considered by EPA and ARB to have identical engines.

45. Critical components of the engine are:

1. HCI – Hydrocarbon Injector

46. The hydrocarbon injector (HCI) is located in the turbocharger downpipe. It is simply a fuel injector used to inject diesel fuel into the exhaust stream during active regeneration (cleaning of the diesel particulate filter). This active regeneration strategy is unique as the previous version allowed fuel to be injected into the cylinder during the exhaust stroke instead of utilizing a separate injector.

2. DOC – Diesel Oxidation Catalyst

47. The diesel oxidation catalyst (DOC) converts hydrocarbons and carbon monoxide into water and carbon dioxide through an oxidization reaction. The DOC also converts nitric oxide to nitrogen dioxide to generate favorable conditions for the reduction of NOx in the SCR system downstream of the DOC.

Finally, the DOC oxidizes fuel injected from the HCI to generate the temperatures required for active regeneration.

3. Diesel Exhaust Fluid Injector

48. The diesel exhaust fluid (DEF) is injected downstream of the DOC. DEF is composed of 32.5% urea (its active ingredient), distilled water, and a very small amount of additives. Because of its urea content, some people call the process "urea injection." DEF is required for the selective catalytic reduction process to occur. The heat of the exhaust converts the DEF into carbon dioxide and ammonia.

4. SCR – Selective Catalytic Reduction

49. Once DEF is added to the exhaust, it travels through the selective catalytic reduction (SCR) catalyst. Here, oxides of nitrogen (NOx) are converted to nitrogen gas (N_2) and water (H_2O) by means of a reduction reaction. The SCR system significantly reduces NOx emissions, reducing the frequency of active regeneration cycles and allowing for more freedom in the calibration of the engine. The drawback of SCR is its increased complexity and the need to carry and replenish the urea fluid (also known by its trademark name AdBlue).

5. DPF – Diesel Particulate Filter

50. Once the exhaust stream has been treated by the DOC and SCR, it travels through the diesel particulate filter (DPF), where particulate matter (soot) is trapped and stored. The DPF is cleaned through a process known as regeneration,

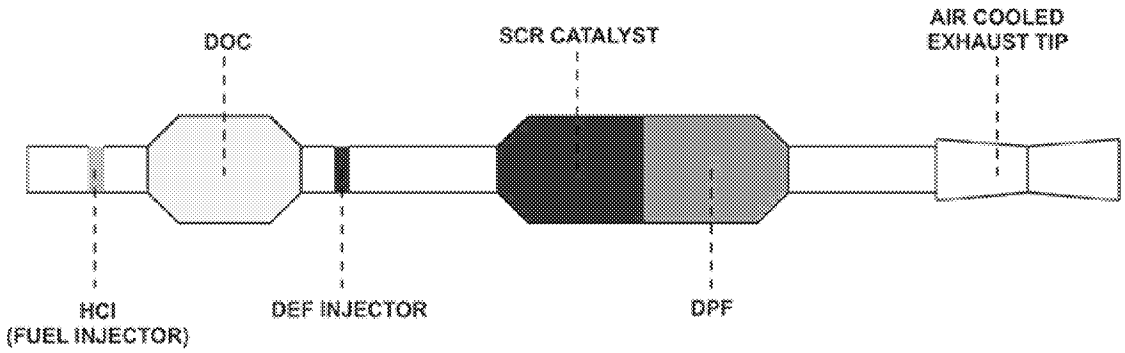
which is divided into two strategies. Passive regeneration occurs at any time the vehicle is being operated and the exhaust gas temperature is high enough to burn the particulate matter trapped by the filter. It is a continuously occurring process, meaning that it naturally occurs whenever the conditions are met under normal operation. Active regeneration occurs only when the engine senses that the DPF needs to be cleaned as the DPF is approaching maximum capacity and generating too much exhaust backpressure. When active regeneration occurs, fuel is injected into the exhaust stream via the HCI to increase the exhaust gas temperature so that the particulate matter can be burned off at carbon's non-catalytic oxidation temperature. Active regeneration dramatically reduces fuel economy since fuel is being used for purposes other than moving the vehicle. The exhaust system features a specifically designed air-cooled exhaust tip to reduce the heat of the exhaust gases as they are expelled. While the DPF is highly effective at trapping particulates, as the amount of particulates accumulates, the resistance to air flow increases also, increasing the load of the engine. To purge the DPF of accumulated deposits, it must undergo a regeneration cycle approximately every 500 km, lasting about 30 minutes. DPF regeneration requires high exhaust temperatures of approximately 600°C that are almost never achieved under normal engine operating conditions. Unfortunately, these conditions may not arise in normal urban driving, requiring the ECU to perform *active regeneration*. In this mode, the

ECU adjusts engine operation to increase exhaust temperature to regenerate the DPF; however, if the vehicle is only driven for short distances, such a temperature may never be reached. At sufficiently high soot load, the vehicle will illuminate a special warning lamp, prompting the driver to drive the vehicle at increased speed to allow active regeneration to take place. Thus, while the DPF is highly effective at reducing particulate emissions, it imposes a performance penalty and can become a hassle for owners who drive their vehicle for short distances. Furthermore, as demonstrated over the course of testing the Duramax-equipped Silverado, NOx emissions increase by a factor of 5-10 compared to normal driving conditions.

6. EGR – Exhaust Gas Recirculation

51. Exhaust gas recirculation (EGR) is used to reduce NOx emissions. Since oxides of nitrogen form in oxygen rich, high temperature environments, introducing exhaust gases back into the intake air charge reduces the amount of these compounds that form. Exhaust gas recirculation is not a new technology and has been regularly used on diesel engines for many years.

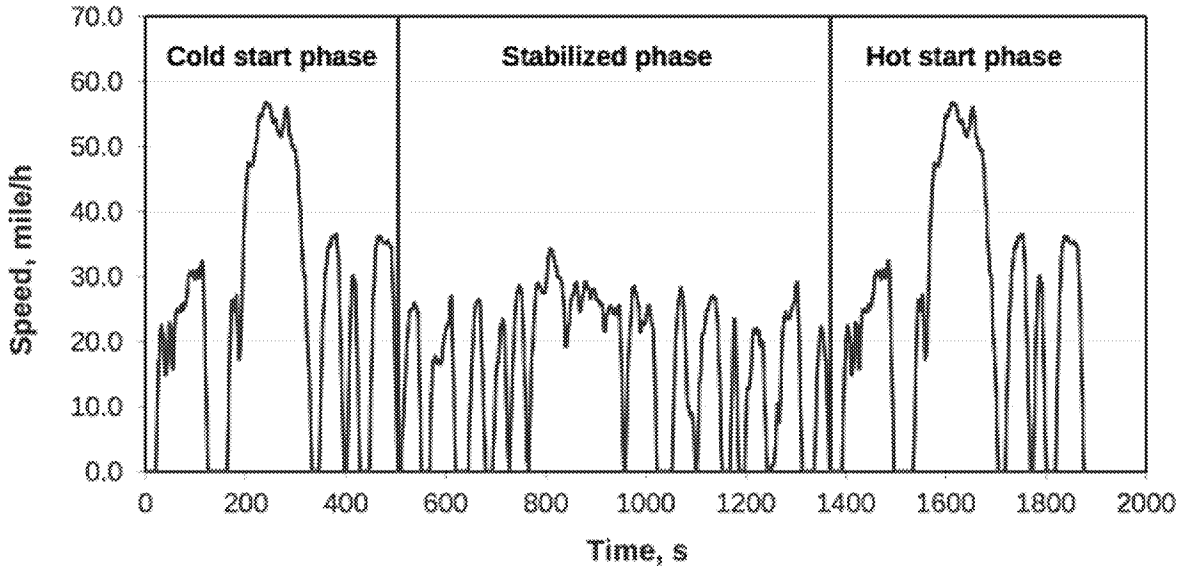
52. The following is a depiction of these components:



C. Emission Test Cycles and Emission Standards

53. An emissions test cycle defines a protocol that enables repeatable and comparable measurements of exhaust emissions to evaluate compliance. The protocol specifies all conditions under which the engine is tested, including lab temperature and vehicle conditions. Most importantly, the test cycle defines the speed and load over time that is used to simulate a typical driving scenario. An example of a driving cycle is shown in Figure A. This graph represents the FTP-75 (Federal Test Procedure) cycle that has been created by the EPA and is used for emission certification and fuel economy testing of light-duty vehicles in the U.S. The cycle simulates an urban route with frequent stops, combined with both a cold and a hot start transient phase. The cycle lasts 1,877 seconds (about 31 minutes) and covers a distance of 11.04 miles (17.77 km) at an average speed of 21.2 mph (34.12 km/h).

Figure A



54. Besides urban test cycles such as FTP-75, there are also cycles that simulate driving patterns under different conditions. To assess conformance, several of these tests are carried out on a chassis dynamometer, a fixture that holds a car in place while allowing its drive wheel to turn with varying resistance. Emissions are measured during the test and compared to an emissions standard that defines the maximum pollutant levels that can be released during such a test. In the U.S., emissions standards are managed on a national level by the EPA. In addition, California has its own emissions standards that are defined and enforced by the California Air Resources Board (CARB). California standards are also used by a number of other states ("Section 177" states). Together with California, these states cover a significant fraction of the U.S. market, making them a de facto second

national standard. In Europe, the emissions standards are called Euro 1 through Euro 6, where Euro 6 is the most recent standard in effect since September 2014.

55. The FTP-75 is the primary dynamometer cycle used to certify the light- and medium-duty passenger cars/trucks. This cycle is primarily a dynamic cycle, with rapid changes in speed and acceleration meant to reflect city driving along with some steadier higher speed sections meant to account for some highway driving.

56. One critically important thing to understand about the FTP-75 is that it's a "cold start" cycle. That means the vehicle starts the cycle with the engine having been off for at least eight hours and in a completely cold state. The "cold start" portion of the test is challenging for diesel engines employing SCR because catalysts meant to control emissions are not yet at temperatures where they work (*i.e.*, above their "light-off" temperature).

D. GM Profited from Using Multiple Defeat Devices in Its Duramax Diesel Powertrains

57. As noted, the Duramax exhaust treatment system consists of four components: the Exhaust Gas Recirculation System (EGR); the Diesel Oxidation Catalyst (DOC); the Selective Catalytic Reduction (SCR); and the Diesel Particulate Filter (DPF). The DPF traps particulate pollutants (like soot) but has to regenerate regularly in order to maintain low exhaust backpressure. There are two ways the DPF can regenerate: passively through catalysts built into the component

(Passive Regeneration) that use NO_2 (nitrogen dioxide) as the primary oxidizer, and actively, where the engine and HCI generate temperatures high enough to oxidize trapped carbon via direct (*i.e.*, non-catalytic) oxidation (Active Regeneration). Active Regenerations generally, though not always, require the vehicle to be driven at highway speeds for a continuous period. Active regeneration reduces fuel economy, decreasing miles per gallon and engine efficiency. Thus, manufacturers like GM seek to minimize Active Regeneration cycles. Active regeneration also leads to excessive NOx and reduces the life span of the SCR catalyst as the high temperatures drive hydrothermal aging and deactivation of the SCR catalyst.

58. Passive regeneration relies on the presence of NOx (specifically NO_2) to catalytically oxidize captured soot. The catalyst oxidizes nitric oxide to nitrogen dioxide, which then reacts at relatively low temperatures to oxidize and remove captured soot. That is, it works best when the exhaust passing through the DPF still contains high levels of NOx pollutants that trigger the catalyst to regenerate the filter. As a result, most diesel engine manufacturers put the DOC upstream of the SCR system where NOx concentrations are still relatively high and the DPF is more likely to regenerate via the passive regeneration mechanism.[3]

[3] Exhibit 3, Hannu Jääskeläinen et al., *Heavy-Duty Diesel Engines with Aftertreatment*, DieselNet (Dec. 2016), https://www.dieselnet.com/tech/engine_heavy-duty_aftertreatment.php.

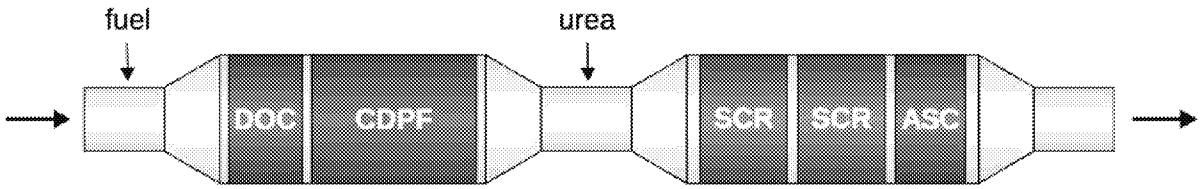
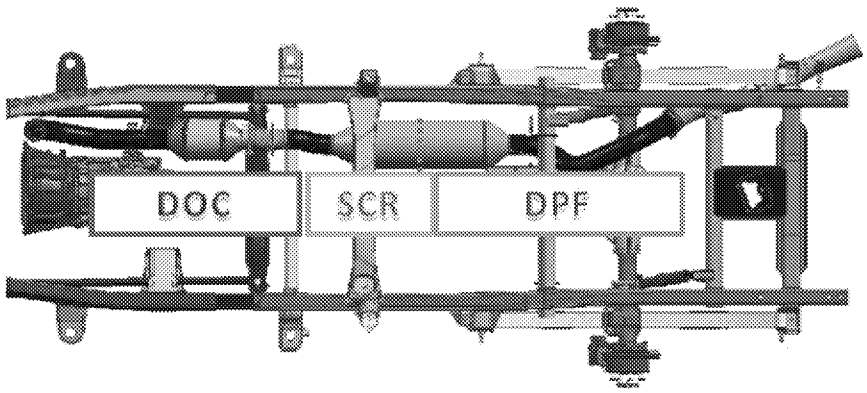


Figure 11. Schematic of typical US 2010 aftertreatment system

59. While the SCR is very effective at reducing NOx emissions, it requires hot exhaust for the urea catalyst to function properly. Thus, when it is placed downstream of the DPF, so as to increase Passive Regeneration and decrease the need for Active Regeneration, the system takes some time to warm up and does not work well when the engine system is cold. The DPF absorbs much of the heat during exhaust warmup and delays the time for the SCR catalyst to reach its light-off temperature.

60. But emissions testing to allow trucks such as those at issue here to be sold in the United States requires a "cold start" emissions measurement. That is, trucks must emit low levels of NOx even when they have just started and are not yet operating at high exhaust temperatures. GM did not want to increase Engine Gas Recirculation (EGR) or use other inefficient methods to reduce "cold start" emissions, so it departed from the DOC–DPF–SCR order that other manufacturers use and designed its Duramax engines with the SCR system closer to the engine than the DPF. In the Duramax, the order is as follows:



61. This configuration allows the SCR system to warm up sooner, thus allowing sufficiently reduced NOx emissions to pass the cold start test required for certification. But there is a catch. Because the NOx is reduced before the exhaust reaches the DPF filter, there is little Passive Regeneration in the DPF. Without relatively high NOx levels going into the DPF, more active regenerations would be required, resulting in reduced fuel economy, reduced lifetime of the SCR catalysts, and a significant increase in overall NOx emissions.

62. GM's solution to this problem was to use at least three separate "defeat devices" to increase engine power and efficiency, increase NOx levels into the DPF, and decrease the need for Active Regeneration. These defeat devices are explained in detail below. GM cared not that these defeat devices caused the Duramax engine to emit 1.5 to 5.5 times the permissible limit for deadly NOx pollutants during real-world driving.

63. The defeat devices solved GM's problem by decreasing the dosing of urea used by the SCR system and reducing the overall EGR rate: above (defeat

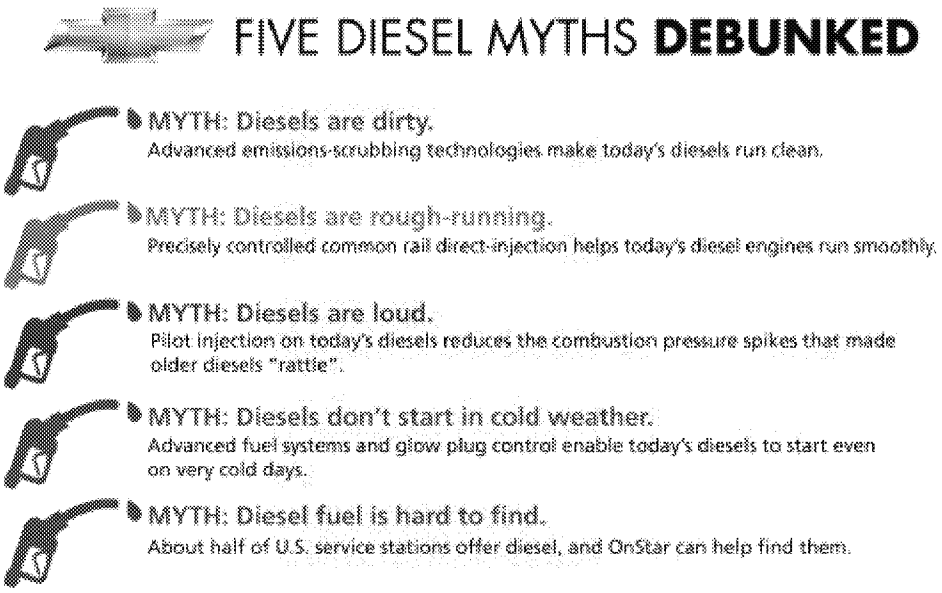
device 1) and below (defeat device 2) the narrow temperature band in which certification testing is performed (68-86°F); and decreasing the dose of the SCR system and rate of EGR (defeat device 3) after 5-8 minutes of relatively constant engine speed (which never happens during an emissions test). By decreasing the dosing of urea, the SCR allows more NOx to pass through to the DPF, thus increasing Passive Regeneration in the DPF and decreasing the need for Active Regenerations, which reduce fuel economy, reduce the lifetime of the SCR catalysts, and result in significant increases in overall NOx emissions. Reduced urea dosing has the added advantage of lower urea consumption, which means lower operating costs and longer service intervals between having to fill the urea catalyst tank.

64. Thus, by putting the SCR in front of the DPF and employing the defeat devices, GM was able to market and sell millions of Duramax-equipped trucks with power and efficiency characteristics that made them very appealing but also caused illegal levels of deadly NOx pollution. If GM had not employed illegal defeat devices, then its trucks would have been less efficient and less powerful, meaning that GM would not have sold as many and would not have been able to charge as much for them.

E. GM Promoted the Silverado and Sierra Duramax as Low Emission Vehicles Because It Knew the Environment Is Material to a Reasonable Consumer

65. GM understood that a vehicle's pollution footprint is a factor in a reasonable consumer's decision to purchase a vehicle. GM, in press releases, owner's manuals, and brochures that it intended to reach the eyes of consumers, promoted the Duramax engine as delivering "low emissions" or having "reduced NOx emissions." GM was acutely aware of this due to the public perception that diesels are "dirty."

66. Another example where GM promised clean diesel:[4]



67. Likewise, GM's brochure for the Sierra Duramax engine promised "low emissions":[5]

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[4] Exhibit 4, *Five Diesel Myths Debunked*, GM, available at http://www.torquenews.com/sites/default/files/image-119/%5Btitle-raw%5D/dieselmyths_v2.jpg (last accessed May 24, 2017).

DIRECT INJECTION TECHNOLOGY

For fast starts in cold weather, quiet operation and maximum efficiency, the direct injection system helps Sierra HD with the available DURAMAX diesel engine start in as little as 3 seconds at -40°C and operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, delivering low emissions and great power.

68. A 2011 Silverado owner's manual promised a 63% reduction in emissions over the previous model:[6]

New system reduces tailpipe NOx emissions

The enhanced, legendary Duramax 6.6L Turbo-Diesel is the most powerful Duramax ever built-generating more horsepower and torque than any competitor. This proven powerplant gets the job done while being friendlier to the environment.

The improved Duramax uses the latest emission control technology, reducing Nitrogen Oxide (NOx) emissions by a whopping 63%, when compared to the 2010 model. GM engineers determined the best way to accomplish this remarkable reduction of diesel emissions was to employ a Selective Catalytic Reduction (SCR) system that uses Diesel Exhaust Fluid (DEF).

Diesel exhaust fluid (DEF)

Diesel Exhaust Fluid (DEF) is a non-flammable fluid comprised of 33% ammonia-based urea and 67% purified water. DEF is used with diesel engine exhaust systems to reduce the amount of emissions produced by turning Nitrogen Oxide (NOx) into nitrogen and water vapor. DEF technology has a proven track record since it has been used in Europe for years.

69. A 2011 advertisement for the Duramax engine stated:[7]

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[5] Exhibit 5, *2016 Sierra 2500*, GMC, http://www.gmc.com/previous-year/sierra-2500hd-pickup-truck.html (last accessed May 24, 2017).

[6] Exhibit 6, *Using Diesel Exhaust Fluid with the Duramax 6.6L Turbo-Diesel*, Chevrolet.

6.6L Duramax LML
Duramax LML SPECS & INFO

The LML Duramax was released for 2011 model General Motors & Chevrolet HD trucks. The latest version of the 6.6L Duramax requires advanced emissions equipment, including the use of diesel exhaust fluid injection, to reduce nitrogen oxide emission levels by 63 percent over LMM powered trucks.

70. GM's advertising for the Sierra consistently featured claims of "low emissions":[8]

2016 GMC Sierra 2500HD

DIRECT INJECTION TECHNOLOGY

For fast starts in cold weather, quiet operation and maximum efficiency, the direct injection system helps Sierra HD with the available Duramax diesel engine start in as little as 3 seconds at -40°C and operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, delivering low emissions and great power.

71. Another example, from the 2015 GMC Sierra 2500HD brochure, promises "lower emissions":[9]

FOR FASTER STARTS IN COLD WEATHER, QUIETER OPERATION AND MAXIMUM EFFICIENCY, DIRECT INJECTION HELPS THE AVAILABLE DURAMAX DIESEL START IN AS LITTLE AS 3.0 SECONDS AT -40QF AND OPERATE AT NEARLY 30,000 PSI TO TURN HEAVY DIESEL FUEL INTO A FINE MIST, ***BURNING CLEANER***

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[7] Exhibit 7, *6.6L Duramax LML*, Duramax Hub, http://www.duramaxhub.com/lml.html (last accessed May 24, 2017).

[8] Exhibit 5, *2016 Sierra 2500*, GMC, http://www.gmc.com/previous-year/sierra-2500hd-pickup-truck.html (last accessed May 24, 2017).

[9] Exhibit 8, 2015 GMC Sierra 2500HD brochure, available at http://www.auto-brochures.com/makes/GMC/Sierra/GMC_US%20SierraHD_2015-2.pdf (last accessed May 24, 2017) (emphasis added).

> ***AND FASTER WITH LOWER EMISSIONS AND GREATER POWER*** THAN THE PREVIOUS MODEL.

72. An advertisement for the 2014 GMC Sierra 2500HD promises "lower emissions":[10]

> Duramax HIGH-PRESSURE DIRECT INJECTION For fast starts in cold weather, quieter operation and maximum efficiency, the direct-injection system operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, burning clean and fast with lower emissions.

73. An advertisement for the 2013 GMC Sierra 2500HD promises "reduced emissions and a better fuel budget":[11]

> Duramax B20 BIODIESEL CAPABILITY To reduce carbon dioxide emissions and stretch your fuel budget, the Duramax 6.6L can operate on B20 biodiesel a mix of 20 percent biodiesel from domestic, renewable resources, and 80 percent petroleum diesel.

74. An advertisement for the 2012 GMC Sierra 2500HD promises "clean and lower emissions":[12]

> Duramax HIGH-PRESSURE DIRECT INJECTION For fast starts in cold weather, quieter operation and maximum efficiency, the direct injection system operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, burning clean and fast with lower emissions and greater power than the previous model.

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[10] Exhibit 9, 2014 GMC Sierra 2500HD brochure, available at http://www.auto-brochures.com/makes/GMC/Sierra/GMC_US%20SierraHD_2014.pdf (last accessed May 24, 2017).

[11] Exhibit 10, 2013 GMC Sierra 2500HD brochure, available at http://www.auto-brochures.com/makes/GMC/Sierra/GMC_US%20Sierra 2013.pdf (last accessed May 24, 2017).

[12] Exhibit 11, 2012 GMC Sierra 2500HD brochure, available at http://www.auto-brochures.com/makes/GMC/Sierra/GMC_US%20Sierra 2012.pdf (last accessed May 24, 2017).

75. An owner's manual for the 2011 Duramax vehicles promised a "whopping reduction":[13]

> NEW SYSTEM REDUCES TAILPIPE NOx EMISSIONS
>
> The enhanced, legendary Duramax 6.6L Turbo-Diesel is the most powerful Duramax ever built-generating more horsepower and torque than any competitor. This proven powerplant gets the job done while being friendlier to the environment.
>
> The improved Duramax uses the latest emission control technology, reducing Nitrogen Oxide (NOx) emissions by a whopping 63%, when compared to the 2010 model. GM engineers determined the best way to accomplish this remarkable reduction of diesel emissions was to employ a Selective Catalytic Reduction (SCR) system that uses Diesel Exhaust Fluid (DEF).

76. A 2011 GM press release promised more power and lower emissions:[14]

> New 6.6L Duramax diesel delivering more power, up to 11-percent greater highway fuel economy up to 63-percent lower emissions, B20 biodiesel capability and quicker acceleration

F. The Deception

1. The 2013 Silverado 2500 diesel test setup.

77. Plaintiffs have extensively tested a 2013 Silverado 2500 diesel using a Portable Emissions Measurement System (PEMS).

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[13] Exhibit 6, *Using Diesel Exhaust Fluid with the Duramax 6.6L Turbo-Diesel*, Chevrolet.

[14] Exhibit 12, *GMC Sierra 2500HD Denali 2500HD - 2011*, GMC Pressroom, http://media.gmc.com/media/us/en/gmc/vehicles/sierra_hd/2011.brand_gmc.html (last accessed May 24, 2017).

78. The vehicle is representative of the class of Duramax diesel engines present in both the Chevrolet Silverado and GMC Sierra model years 2011 to 2016. The population of both the 2500 series and 3500 is large, though the population will most certainly be dominated by the 2500 series. For this reason, a 2500 series was chosen.

79. The vehicle as acquired had approximately 51,000 miles. It is therefore less than mid-way through its full useful life and is still covered under the emissions warranty. Furthermore, the vehicle was factory certified at the time of purchase.

80. The vehicle went through a rigorous check-in process. The vehicle was placed on a hydraulic rack, the underbody cowlings were removed, and the emission control system was examined to confirm the configuration was as expected and that parts were intact and free from damage. The emissions tag was analyzed and compared to the expected emission control group to ensure beyond a shadow of a doubt that the right engine was present and are comparing to the right certified emission standard.

81. The vehicle was also checked for engine faults and maintenance to ensure the maintenance records are clean and that there are no fault codes related to the emission control system. In this case, the vehicle purchased was factory certified, as previously mentioned.

82. The tire pressure and vehicle weight were checked, and the vehicle was loaded to the weight for the test configuration, in this case 9,500 lbs, so that the configuration is equivalent to the certification configuration.

2. Initial results indicate higher than expected emissions.

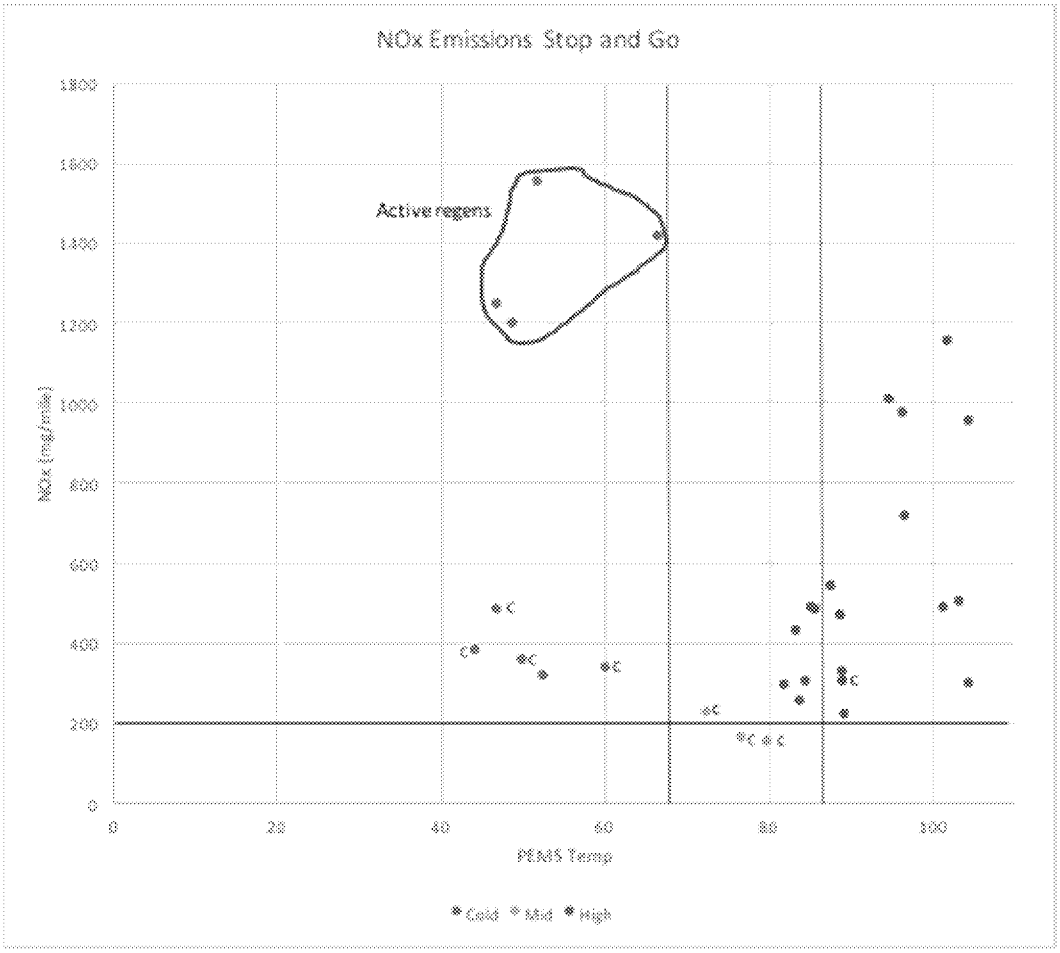
83. Testing confirmed that the vehicle complies with emissions standards at the temperature windows where the emissions test is performed for certification. But the NOx emissions increase significantly when the temperature is below 68°F or above 86°F. This means that GM, using software supplied by Bosch, employs a "defeat device" that allows the vehicle to meet emissions standards in the test temperature range. At all other times, NOx is allowed to be emitted in a much greater amount.

84. Plaintiffs' experts created a special program that is specific to each vehicle to allow communication with the vehicle's computer (ECM) in order to extract important operational information like exhaust temperatures, EGR rates, NOx concentrations upstream of the SCR catalysts, and other information the vehicle's computer might collect.

85. The Silverado was certified at 100 mg/mile for the highway fuel economy standard test (HWFET), where the standard is 400 mg/mile. Initial testing at steady 60 mph speeds indicated emissions of 533 mg/mile on flat roads or 1.3

times the standard. The Silverado's emission on flat roads for the stop and go standard was 538 mg/mile or 2.7 times the standard of 200 mg/mile.

86. Further testing was done in stop and go conditions with average speeds and relative positive acceleration values that correlate well with the FTP-75 emissions cycle. The blue dots show data where the defeat device below 68°F is active; the green dots represent conditions within the certification temperature window (68°F-86°F); the red dots represent data where the defeat device above 86°F is active. The vertical blue lines represent the temperature limits of the test standard for the test cycle, while the horizontal red line represents the emission standard.



87. One important point must be emphasized in analyzing this data. The PEMS temperature sensor, which collects ambient temperature data, is mounted on top of the vehicle (*i.e.*, at roof level), shielded from the sun by horizontal white metal fins, and well ventilated. This is the ideal setup to collect the true ambient temperature of the surroundings without complication from the sun's radiant heat or stagnant heating because of poor flow.

88. The vehicle's ambient temperature sensor, by contrast, is usually mounted in front of the radiator close to the road. These sensors are not necessarily

shielded from the sun and are highly susceptible to false readings at high ambient temperatures from heat generated by hot black top.

89. When it comes to a defeat device based on ambient temperature, obviously the vehicle will be using its own sensors to trigger the defeat. There are several temperature sensors in the intake manifold for the engine, any combination of which could be used to trigger a defeat device (in addition to the possible use of the ambient temperature sensor). The temperature sensors may not directly measure ambient temperature but are certainly related to ambient temperature. Therefore, the cutoff temperatures, as measured by the PEMS ambient temperature sensor, are not necessarily exactly 68°F or 86°F.

90. It should be noted that the effect of ambient temperature on the inlet NOx concentrations, the inlet temperature to the SCR catalyst, and outlet temperature of the SCR catalyst were studied to rule out the possibility of delayed light-off because of low ambient temperature. When compared to cold start conditions within the certification temperature window, the cold start temperatures into and out of the SCR catalyst as well as the NOx concentrations into the SCR catalyst were found to be the same. Thus, the effect of ambient temperature on its own was ruled out as the cause of the high cold start emissions at cold temperature. Clearly, the engine was programmed to produce higher emissions at temperatures below 68°F.

91. The points labeled with a "C" are cold start tests, with distances, RPAs (relative positive accelerations), and average speeds, and overall distance that represent very well the characteristics of the FTP-75 certification cycle. In the case of temperatures below 68°F, cold start emissions exceed the standard by a factor of 2.1 at 428 mg/mile of NOx with a maximum of 483 mg/mile. During active regenerations, emissions are 1,402 mg/mile on average, or 7 times the emission standard. In the certification temperature window, cold start emissions are 178 mg/mile, which is close to the certification emissions of 200 mg/mile and below the standard of 200 mg/mile. At temperatures above 86°F, cold start emissions were not examined in great detail because hot start emissions were so far in excess of the standard. On average, emissions above 86°F are 479 mg/mile (2.4 times the standard), with excursions as high 1,153 mg/mile (5.8 times the standard).

92. It should be noted, significantly, that the same high temperature behavior was observed in the Chevrolet Cruze and is part of that vehicle's defeat strategy. Given that the Silverado is a Chevrolet product, it is not surprising that the same defeat strategy was employed.

93. Based on a study of temperatures in 30 major metropolitan areas as well as the demographics of Silverado sales, it is estimated that the high temperature defeat device is active 30-35% of the total population vehicle miles

traveled (VMT). Similar estimates show that the cold temperature defeat device is active approximately 35% of the VMT. In total, these two defeat devices are active 65-70% of VMT with emissions that are 2.1 to 5.8 times the standard.

94. This type of emissions performance is not what a reasonable consumer would expect from a vehicle that "turns NOx into nitrogen and water vapor," or "into a fine mist," or "reduces emissions by a whopping amount."

3. Further testing demonstrates that GM—enabled by Bosch's EDC-17—employs three defeat devices.

95. Further testing was conducted so that the vehicle was tested for over 3,500 miles and over a wide range of conditions.

96. Testing confirms the existence of three "defeat devices." The three cheats, or defeat devices, are:

One:

The vehicles produce emissions above the certification tests at temperatures above the certification range (86°F).

Two:

The vehicles produce higher emissions when temperatures are below the certification test range (68°F).

Three:

Higher emissions occur after the vehicle has been run for 200-500 seconds of steady speed operation on average by a factor of 4.5 in all temperature windows.

a. Defeat Devices One and Two: the Temperature Defeat Devices

97. The test results for Defeat Device One, in stop and go testing with temperatures above 86°F, are 2.4 times the emissions standard, with maximum measured emissions of 1,153 mg/mile or 5.8 times the standard.

98. The test results for Defeat Device Two, in stop and go testing at temperatures below 68°F, were 2.1 times the emissions standard.

99. Further testing at temperatures below 68°F reveals that the vehicle has several active regenerations. Such regenerations are on average 7 times the emissions standard.

b. Defeat Device Three: the Steady Speed Time-Out Defeat

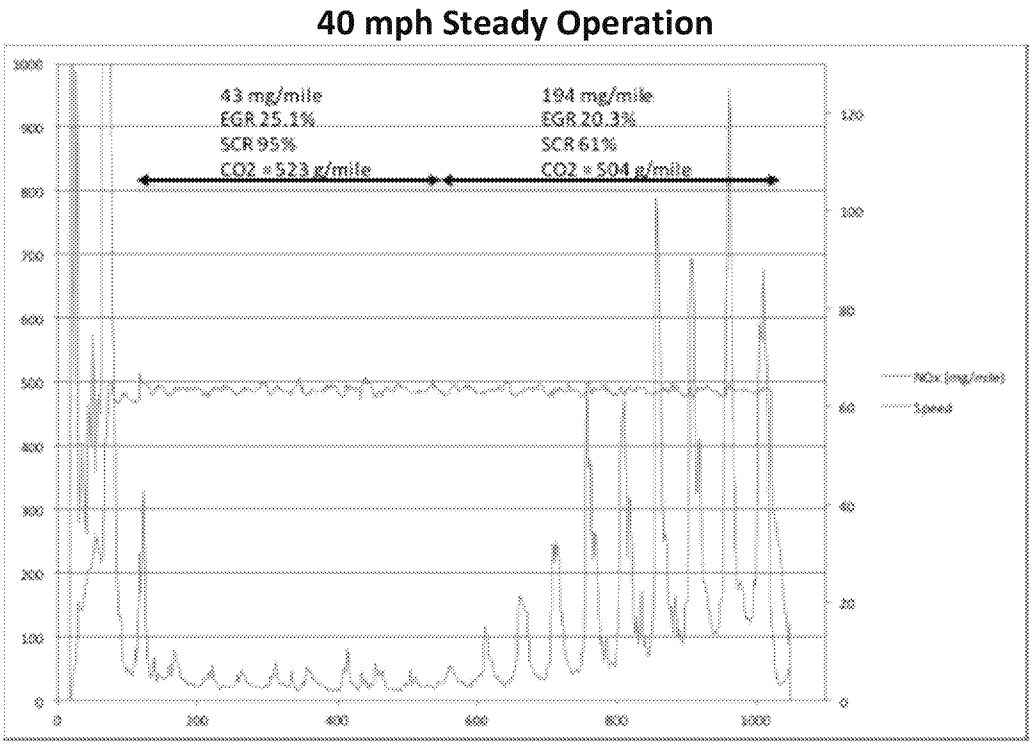
100. In controlled track testing at steady speed, following at steady speeds of 40, 50, and 60 mph, the following observations were made. The blue line represents the NOx emissions in mg/mile, while the orange line shows vehicle speed in km/hour. What is clear is that NOx emissions increase over time and markedly about 500 seconds after the steady speed is achieved (40 mph in this case). This is counterintuitive as, if anything, emissions performance should

improve as the catalyst warms ups. ***It should be noted, importantly, that this data was taken at ambient temperatures in the certification test window***.

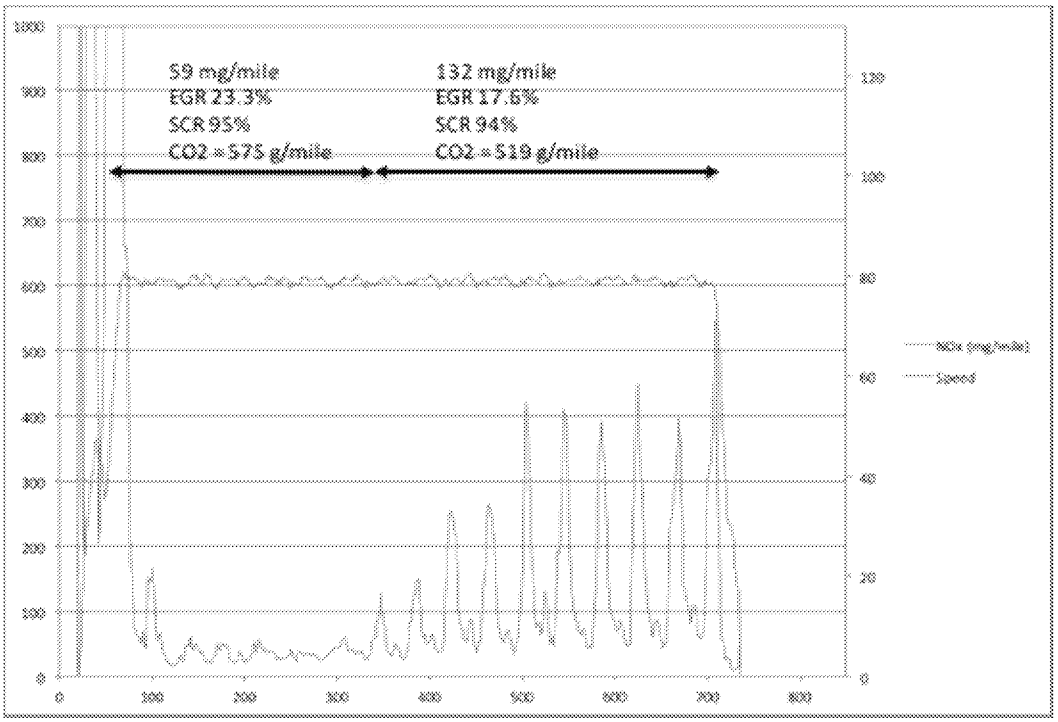
101. In this case, the emissions increase by about a factor of 4, while the EGR rate and SCR reduction are significantly reduced. Note that CO_2 emissions go down, which would be reflected in better fuel economy.

102. The motivation for such a defeat is simple. It increases the NOx going into the DPF, thereby ensuring better passive regeneration performance and, perhaps just as important, better fuel economy. Furthermore, decreasing the effectiveness of the SCR system economizes urea usage, which leads to improved customer satisfaction. Lower EGR rates and higher NOx mode are generally associated with better fuel economy.

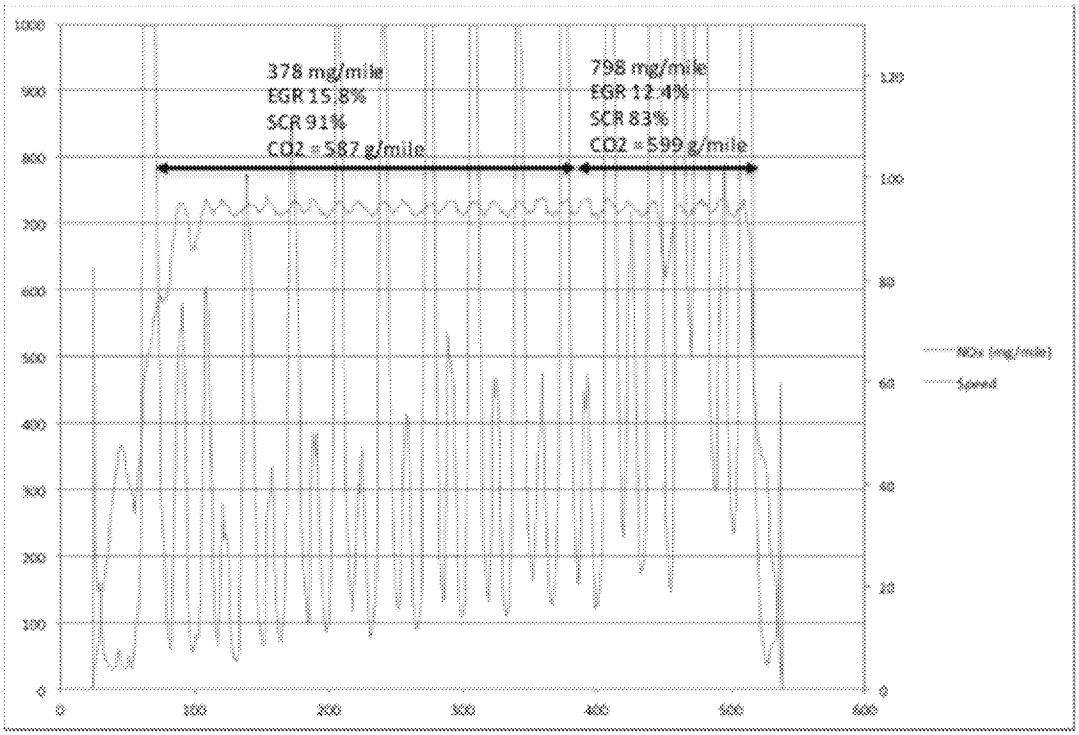
103. An example of this timing defeat device is depicted below:



104. The same behavior is observed in the 50 mph test. Again, a large increase in emissions (factor of 2.2) with a drop in EGR rate, a small decrease in SCR rate, and a decrease in CO_2 emissions (*i.e.*, better fuel economy).



105. At 60 mph, the same phenomenon was observed. Emissions double, while EGR rate and SCR reduction go down.



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106. After observing this behavior on the test track, experts reviewed previous over-the-road test data in a variety of steady speed conditions (mostly at approximately 60 mph) and found at least 22 instances where the same time phenomenon occurred.

107. The following table summarizes the events:

Condition	Ambient Temp. (°F)	Event #	Pre timeout NOx (mg/mile)	After timeout NOx (mg/mile)	Factor Increase	Increase in NOx (mg/mile) from pre-timeout condition
Downhill 0.7%	55.5	**1**	200	422	2.1	222
Downhill 0.4%	77.3	**2**	274	360	1.3	86
Flat	47	**3**	344	512	1.5	168
Uphill 0.7%	63.6	**4**	62	197	3.2	135
Mild Hills	63	**5**	442	531	1.2	89
Downhill 0.7%	52.5	**6**	17	276	16.2	259
Flat	47.6	**7**	21	191	9.1	170
Downhill 0.4%	48.3	**8**	94	372	4.0	278
Downhill 0.6%	53.3	**9**	47	265	5.6	218
Downhill 0.5%	62.9	**10**	149	408	2.7	259
Flat	78.8	**11**	152	273	1.8	121
Downhill 1.3%	70	**12**	152	596	3.9	444
Uphill 1.3%	64.9	**13**	177	1428	8.1	1251
Slight hills	68.8	**14**	129	286	2.2	157
Downhill 0.5%	62.6	**15**	37	203	5.5	166
Downhill 0.4%	73	**16**	72	393	5.5	321
Flat	75.3	**17**	27	168	6.2	141

Condition	Ambient Temp. (°F)	Event #	Pre timeout NOx (mg/mile)	After timeout NOx (mg/mile)	Factor Increase	Increase in NOx (mg/mile) from pre-timeout condition
Downhill 0.7%	90.1	**18**	28	309	11.0	281
Downhill 0.3%	87.9	**19**	61	164	2.7	103
Downhill 0.2%	88.4	**20**	94	231	2.5	137
Downhill 1.4%	67.3	**21**	475	778	1.6	303
Downhill 0.3%	102.5	**22**	291	442	1.5	151
				Average	**4.5**	**248**

108. The key conclusion here is that this defeat device appears to be active at all temperatures. ***In general, the "timeout" defeat device results in a factor of 4.5 increase in NOx once activated***. The exact time for the defeat device to activate varies, but is generally 200-500 seconds. At steady speed, the average increase in NOx once the defeat device kicks in is 248 mg/mile.

109. On average, there is a reduction in the EGR rate (from 18.9% to 17.9% pre- and post-timer) and SCR effectiveness (from 90% to 74% pre- and post-timer). The de-rated use of the SCR system would result in significant savings in urea and would also ensure better operation of the downstream DPF.

4. The test vehicle is representative of all Sierra and Silverado vehicles.

110. Plaintiffs allege that the following GM models are affected by the unlawful, unfair, deceptive, and otherwise defective emission controls: 2011-2016 Silverado 2500HD/3500 HD trucks and Sierra 2500HD /3500HD trucks.

111. Plaintiffs did not test each model to derive plausible allegations that each Affected Vehicle violates U.S. and CARB emissions standards and produces emissions beyond those a reasonable consumer would have expected when he or she purchased their vehicles. Plaintiffs did not need to. As set forth in more detail below, all of the models share either identical or very similar engines and emissions systems, allowing Plaintiffs' experts to plausibly conclude that all Affected Vehicles violate U.S. and CARB standards and the expectations of a reasonable consumer.

112. GM itself grouped the engine used for both the Silverado and Sierra into the same application and test group. CARB and EPA certified the engines in the test group which means, from an emissions standpoint, the engines are considered identical.

113. All variants of the Silverado and Sierra sold in the U.S. are well represented by both the Plaintiffs' list of vehicles and Plaintiffs' test vehicles since GM did not change the engine in any significant way between 2011 and 2016; all vehicles employ the same generation of Duramax engine.

114. Plaintiffs' experts also conducted additional research into the technical literature to understand the various configurations of Duramax engines sold between 2011 and 2016. The literature provides some insight into the architecture of the variants of the engines. In all cases, the engines are shown to have much more commonality than not, leading Plaintiffs' experts to conclude that there is a strong basis for sufficient similarity or "sameness" to warrant inclusion on the list of Affected Vehicles. The vehicles are either equivalent from an emissions standpoint to the test vehicles or use the same core technologies and engine platforms as the test vehicles.

G. This Is Not the Only GM Model to Employ This Deception

115. GM's deceptive emissions practice are also found in the GM Chevy Cruze, giving rise to the inference that its emissions manipulation strategy occurred here and is part of an overall diesel strategy employed by GM and facilitated by Bosch.

116. This is what GM promised for the Chevy Cruze:

117. Plaintiffs have tested the Cruze using a Portable Emissions Measurement System (PEMS). Testing revealed that the Cruze fails to meet U.S. emissions standards as promised. The U.S. standard on the HWFET test is 70 mg/mile. In steady highway driving at 60 mph, the Cruze averaged 128 mg/mile with a high of 557 mg/mile. In stop and go driving, the average was 182 mg/mile with a maximum of 689 mg/mile, or 3.6 to 13.8 times the federal standard. When tested at temperatures below 50°F, the NOx was 689 mg/mile and it appears the emissions control system stops working. The same is true at temperatures over 85°F, where NOx rates were tested and ran at 450 to 550 mg/mile.

H. The Bosch EDC-17

118. All modern engines are integrated with sophisticated computer components to manage the vehicle's operation, such as an electronic diesel control.

Bosch tested, manufactured, and sold the EDC system used by Volkswagen, Fiat Chrysler America, Mercedes, and GM. This system is more formally referred to as the Electronic Diesel Control Unit 17 ("EDC Unit 17" or "ED17"). Upon its introduction, EDC Unit 17 was publicly touted by Bosch as follows:[15]

> EDC17 . . . controls every parameter that is important for effective, low-emission combustion.
>
> Because the computing power and functional scope of the new EDC17 can be adapted to match particular requirements, it can be used very flexibly in any vehicle segment on all the world's markets. In addition to controlling the precise timing and quantity of injection, exhaust gas recirculation, and manifold pressure regulation, it also offers a large number of options such as the control of particulate filters or systems for reducing nitrogen oxides. The Bosch EDC17 determines the injection parameters for each cylinder, making specific adaptations if necessary. This improves the precision of injection throughout the vehicle's entire service life. The system therefore makes an important contribution to observing future exhaust gas emission limits.

119. Bosch worked with each vehicle manufacturer that utilized EDC Unit 17 to create a unique set of specifications and software code to manage the vehicles' engine operation.

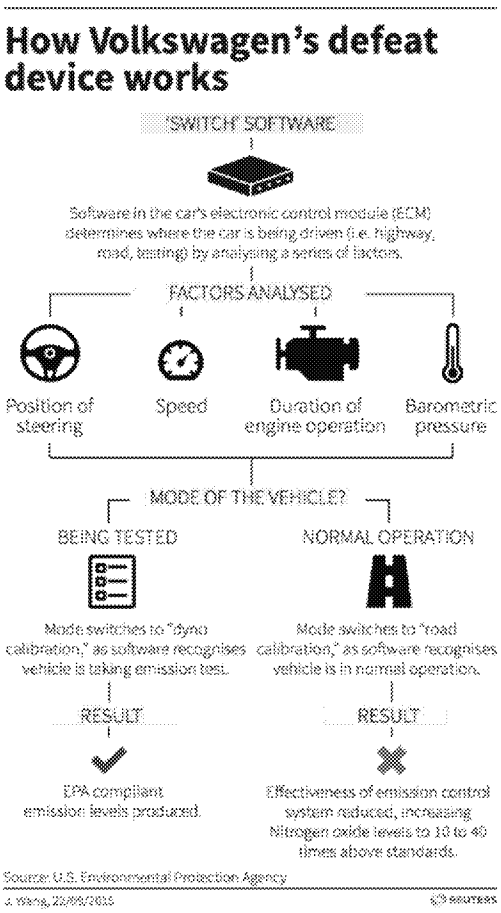
120. With respect to the Affected Vehicles, however, EDC Unit 17 was also enabled by Bosch and GM to surreptitiously evade emissions regulations. Bosch and GM worked together to develop and implement a specific set of

[15] *See* Exhibit 13, Bosch Press Release, *The brain of diesel injection: New Bosch EDC17 engine management system* (Feb. 28, 2006), http://www.bosch-presse.de/presseforum/details.htm?txtID=2603&locale=en.

software algorithms for implementation in the Affected Vehicles, which enabled GM to adjust fuel levels, exhaust gas recirculation, air pressure levels, and even urea injection rates (for applicable vehicles).[16] When carmakers test their vehicles against EPA emission standards, they place their cars on dynamometers (large rollers) and then perform a series of specific maneuvers prescribed by federal regulations. Bosch's EDC Unit 17 gave Volkswagen, GM, and other manufacturers the power to detect test scenarios by monitoring vehicle speed, acceleration, engine operation, air pressure, and even the position of the steering wheel. When the EDC Unit 17's detection algorithm detected that the vehicle was on a dynamometer (and undergoing an emission test), additional software code within the EDC Unit 17 downgraded the engine's power and performance and upgraded the emissions control systems' performance by switching to a "dyno calibration" to cause a subsequent reduction in emissions to legal levels. Once the EDC Unit 17 detected that the emission test was complete, the EDC Unit would then enable a different "road calibration" that caused the engine to return to full power while reducing the emissions control systems' performance, and consequently caused the vehicle to

[16] *See, e.g.*, Exhibit 14, *Engine management*, Bosch Auto Parts, http://de.bosch-automotive.com/en/parts_and_accessories/motor_and_sytems/diesel/engine_management_2/engine_control_unit_1 (last accessed May 24, 2017).

spew the full amount of illegal NOx emissions out on the road.[17] This process is illustrated in the following diagram, applicable to GM as well:



121. This workaround was illegal. The Clean Air Act expressly prohibits defeat devices, defined as any auxiliary emission control device "that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal vehicle operation and use." 40 C.F.R. § 86.1803-01; *see also id.* § 86.1809-10 ("No new light-duty vehicle,

[17] Exhibit 15, Russell Hotten, *Volkswagen: The scandal explained*, BBC (Dec. 10, 2015), http://www.bbc.com/news/business-34324772.

light-duty truck, medium-duty passenger vehicle, or complete heavy-duty vehicle shall be equipped with a defeat device."). Moreover, the Clean Air Act prohibits the sale of components used as defeat devices "where the person knows or should know that such part or component is being offered for sale or installed for such use or put to such use." 42 U.S.C. § 7522(a)(3). Finally, in order to obtain a certificate of compliance ("COC"), automakers must submit an application, which lists all auxiliary emission control devices installed in the vehicle, a justification for each, and an explanation of why the control device is not a defeat device.

122. Thus, in order to obtain the COCs necessary to sell their vehicles, GM did not disclose, and affirmatively concealed from government regulators, the presence of the test-detecting and performance-altering software code that it developed with Bosch, thus making that software an illegal defeat device. In other words, GM, working closely with Bosch, lied to the government, its customers, its dealers, and the public at large.

123. Because the COCs were fraudulently obtained, and because the Affected Vehicles did not conform "in all material respects" to the specifications provided in the COC applications, the Affected Vehicles were never covered by a valid COC, and thus were never legal for sale, nor were they EPA and/or CARB compliant as represented. GM and Bosch hid these facts from the EPA, CARB and other regulators, its dealers, and consumers, and it continued to sell and lease the

Affected Vehicles to the driving public despite their illegality and with the complicity of Bosch.

124. GM's illegal workaround was enabled by its close partnership with Bosch, which enjoyed a sizable portion of its annual revenue from manufacturing parts used in GM's and other manufacturers' diesel vehicles.[18] Bosch was well aware that GM was using its emissions control components as a defeat device and, in fact, worked with GM to develop the software algorithm specifically tailored for the Affected Vehicles.

125. Because the COCs were fraudulently obtained, the Affected Vehicles were never covered by valid COCs and thus were never offered legally for sale. GM hid these facts from the EPA, CARB and other state regulators, and consumers, and it continued to sell and lease the Affected Vehicles despite their illegality and with the complicity of Bosch.

I. Bosch Played a Critical Role in the Defeat Device Scheme in Many Diesel Vehicles in the U.S.

126. Although this case is not about Volkswagen, Bosch's history with Volkswagen provides background and support for its participation in the RICO enterprise alleged herein, of which Bosch and GM were participants. The

[18] Approximately 50,000 of Bosch's 375,000 employees worked in the diesel technology operations branch of Bosch, and Volkswagen was the biggest diesel manufacturer in the world. *See* Exhibit 16, *Bosch probes whether its staff helped VW's emissions rigging*, Automotive News (Jan. 27, 2016), http://www.autonews.com/article/20160127/COPY01/301279955/bosch-probes-whether-its-staff-helped-vws-emissions-rigging.

following details of Bosch's involvement with Volkswagen are taken from the publicly filed complaint in the Volkswagen litigation, which was filed after the benefit of discovery. On information and belief, Plaintiffs allege that the same level of coordination between Bosch and Volkswagen also occurred between Bosch and GM.

1. Volkswagen and Bosch conspire to develop the illegal defeat device.

127. Bosch tightly controlled development of the control units in the Affected Vehicles and actively participated in the development of the defeat device.

128. As discussed above, Bosch introduced a new generation of diesel ECUs for Volkswagen.

129. A February 28, 2006 Bosch press release introduced the "New Bosch EDC17 engine management system" as the "brain of diesel injection" which "controls every parameter that is important for effective, low-emission combustion." The EDC17 offered "[e]ffective control of combustion" and a "[c]oncept tailored for all vehicle classes and markets." In the press release, Bosch touted the EDC17 as follows:[19]

[19] *See* Exhibit 13, Bosch press release, *The brain of diesel injection: New Bosch EDC17 engine management system* (Feb. 28, 2006), http://www.bosch-presse.de/presseforum/details.htm?txtID=2603&locale=en.

EDC17: Ready for future demands

Because the computing power and functional scope of the new EDC17 can be adapted to match particular requirements, it can be used very flexibly in any vehicle segment on all the world's markets. In addition to controlling the precise timing and quantity of injection, exhaust gas recirculation, and manifold pressure regulation, it also offers a large number of options such as the control of particulate filters or systems for reducing nitrogen oxides. The Bosch EDC17 determines the injection parameters for each cylinder, making specific adaptations if necessary. This improves the precision of injection throughout the vehicle's entire service life. The system therefore makes an important contribution to observing future exhaust gas emission limits.

130. Bosch and Volkswagen worked together closely to modify the software and to create specifications for each vehicle model. Indeed, customizing a road-ready ECU is an intensive three- to five-year endeavor involving a full-time Bosch presence at an automaker's facility.

131. All Bosch ECUs, including the EDC17, run on complex, highly proprietary engine management software over which Bosch exerts nearly total control. In fact, the software is typically locked to prevent customers, like Volkswagen and GM, from making significant changes on their own.

132. Bosch's security measures further confirm that its customers cannot make significant changes to Bosch software without Bosch involvement. Bosch boasts that its security modules protect vehicle systems against unauthorized access in every operating phase, meaning that no alteration could have been made

without either a breach of that security—and no such claims have been advanced—or Bosch's knowing participation.[20]

133. Unsurprisingly, then, at least one car company engineer has confirmed that Bosch maintains absolute control over its software as part of its regular business practices:[21]

> I've had many arguments with Bosch, and they certainly own the dataset software and let their customers tune the curves. Before each dataset is released it goes back to Bosch for its own validation.
>
> Bosch is involved in all the development we ever do. They insist on being present at all our physical tests and they log all their own data, so someone somewhere at Bosch will have known what was going on.
>
> All software routines have to go through the software verification of Bosch, and they have hundreds of milestones of verification, that's the structure . . . .
>
> The car company is *never* entitled by Bosch to do something on their own.

Thus, Bosch cannot convincingly argue that the development of the "akustik" device was the work of a small group of rogue engineers.

134. In fact, Volkswagen's and Bosch's work on the EDC17 reflected a highly unusual degree of coordination. It was a massive project that required the work of numerous Bosch coders for a period of more than ten years, or perhaps

[20] Exhibit 17, *Reliable Protection for ECUs*, ESCRYPT (May 12, 2016), https://www.escrypt.com/en/news-events/protection-for-ecus.

[21] Exhibit 18, Michael Taylor, *EPA Investigating Bosch over VW Diesel Cheater Software*, Car and Driver (Nov. 23, 2015), http://blog.caranddriver.com/epa-investigating-bosch-over-vw-diesel-cheater-software/.

more.[22] Although Bosch publicly introduced the EDC17 in 2006, it had started to develop the engine management system years before.[23]

135. In fact, Bosch was in on the secret and knew that Volkswagen was using Bosch's software algorithm as an "on/off" switch for emission controls when the vehicles were undergoing testing. As noted above, it has been said the decision to cheat was an "open secret" at Volkswagen.[24] It was an "open secret" at Bosch as well.

136. Volkswagen and Bosch personnel employed code language for the defeat device, referring to it as the "acoustic function" (in German, "akustikfunktion"). As described above, the roots of the "akustikfunktion"—and likely the cheating—can be traced back to the late 1990s when Audi devised software called the "akustikfunktion" that could switch off certain functions when

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[22] Approximately 50,000 of Bosch's 375,000 employees worked in the diesel technology operations branch of Bosch, and Volkswagen was the biggest diesel manufacturer in the world. *See* Exhibit 16, *Bosch Probes Whether Its Staff Helped VW's Emissions Rigging*, Automotive News (Jan. 27, 2016), http://www.autonews.com/article/20160127/COPY01/301279955/bosch-probes-whether-its-staff-helped-vws-emissions-rigging.

[23] Exhibit 13, Bosch press release, *The brain of diesel injection: New Bosch EDC17 engine management system* (Feb. 28, 2006), http://www.bosch-presse.de/presseforum/details.htm?txtID=2603&locale=en.

[24] Exhibit 19, Georgina Prodham, *Volkswagen probe finds manipulation was open secret in department*, Reuters (Jan. 23, 2016), http://www.reuters.com/article/us-volkswagen-emissions-investigation-idUSKCN0V02E7. *See also* Exhibit 20, Jay Ramey, *VW chairman Poetsch: Company 'tolerated breaches of rules'*, Autoweek (Dec. 10, 2015), http://autoweek.com/article/vw-diesel-scandal/vw-chairman-poetsch-company-tolerated-breaches-rules (it was necessary for the "EA 189 engine to pass U.S. diesel emissions limits within the budget and time frame allotted").

the vehicle was in a test mode.[25] The "akustik" term is derived from the function's ability to modify the noise and vibration produced by the engine. News articles report that, in 2006, Volkswagen further developed this "akustikfunktion" for the affected vehicles.[26]

137. In sum, Bosch worked hand-in-glove with Volkswagen to develop and maintain the akustikfunktion/defeat device. On information and belief, it did so with GM as well.

2. Volkswagen and Bosch conspire to conceal the illegal "akustikfunktion."

138. By 2007, and likely earlier, Bosch was critical not only in developing the "akustikfunktion" but also in concealing it.

139. Bosch was concerned about getting caught participating in the defeat device fraud. As reported in a German newspaper, *Bild am Sonntag*, and a French

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[25] Exhibit 21, Martin Murphy, *Dieselgate's Roots Stretch Back to Audi*, Handelsblatt Global (Apr. 19, 2016), https://global.handelsblatt.com/edition/413/ressort/companies-markets/article/dieselgates-roots-stretch-back-to-audi?ref=MTI5ODU1.

[26] Exhibit 19, Georgina Prodham, *Volkswagen probe finds manipulation was open secret in department*, Reuters (Jan. 23, 2016), http://www.reuters.com/article/us-volkswagen-emissions-investigation-idUSKCN0V02E7. Volkswagen Group Chairman, Hans Dieter Poetsch, explained that a small group of engineers and managers was involved in the creation of the manipulating software. *See* Exhibit 20, Jay Ramey, *VW chairman Poetsch: Company 'tolerated breaches of rules'*, Autoweek (Dec. 10, 2015), http://autoweek.com/article/vw-diesel-scandal/vw-chairman-poetsch-company-tolerated-breaches-rules. *See also* Exhibit 15, Russell Hotten, *Volkswagen: The scandal explained*, BBC (Dec. 10, 2015), http://www.bbc.com/news/business-34324772; Exhibit 22, Matt Burt, *VW emissions scandal: how Volkswagen's 'defeat device' works*, Autocar (Sept. 23, 2015), http://www.autocar.co.uk/car-news/industry/vw-emissions-scandal-how-volkswagens-defeat-device-works.

publication, a Volkswagen internal inquiry found that in 2007, Bosch warned Volkswagen by letter that using the emissions-altering software in production vehicles would constitute an "offense."[27]

3. Volkswagen and Bosch conspire in the U.S. and Germany to elude U.S. regulators who regulated not just Volkswagen diesels but all diesels.

140. The purpose of the defeat device was to evade stringent U.S. emissions standards. Once Bosch and Volkswagen perfected the defeat device, therefore, their attention turned to deceiving U.S. regulators.

141. Bosch's North American subsidiary, defendant Robert Bosch LLC, was also part of and essential to the fraud. Bosch LLC worked closely with Bosch GmbH and Volkswagen in the United States and in Germany to ensure that the non-compliant affected vehicles passed U.S. emissions tests. Bosch LLC employees frequently communicated with U.S. regulators and actively worked to ensure the affected vehicles were approved by regulators.

142. Employees of Bosch LLC, Bosch GmbH, and IAV provided specific information to U.S. regulators about how Volkswagen's vehicles functioned and unambiguously stated that the vehicles met emissions standards. Bosch LLC

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[27] Exhibit 23, *Bosch warned VW about illegal software use in diesel cars, report says*, Automotive News (Sept. 27, 2015), http://www.autonews.com/article/20150927/COPY01/309279989/bosch-warned-vw-about-illegal-software-use-in-diesel-cars-report-says; Exhibit 24, *VW Scandal: Company Warned over Test Cheating Years Ago*, BBC (Sept. 27, 2015), http://www.bbc.com/news/business-34373637.

regularly communicated to its colleagues and clients in Germany about ways to deflect and diffuse questions from US regulators about the affected vehicles—particularly CARB.

4. Bosch keeps Volkswagen's secret safe and pushes "clean" diesel in the U.S.

143. Bosch not only kept Volkswagen's dirty secret safe, it went a step further and actively lobbied lawmakers to push "Clean Diesel" in the U.S., including making affected vehicles available for regulators to drive.

144. As early as 2004, Bosch announced a push to convince U.S. automakers that its diesel technology could meet tougher 2007 U.S. emission standards.[28] Its efforts ended up being a multi-year, multi-million dollar effort involving key players from both Bosch in Germany and Bosch in the U.S.

145. Bosch's promotion of diesel technology specifically targeted the U.S. For example, Bosch put on "California Diesel Days"[29] and "SAE World Congress in Detroit."[30] In 2008, Bosch LLC and Volkswagen America co-sponsored the "Future Motion Made in Germany-Second Symposium on Modern Drive

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[28] Exhibit 25, Edmund Chew, *Bosch boosts US diesel lobbying*, Autonews (Mar. 8, 2004), http://www.autonews.com/article/20040308/SUB/403080876/bosch-boosts-us-diesel-lobbying.

[29] Exhibit 26, *Bosch drives clean diesel in California*, Bosch, http://www.bosch.us/content/language1/html/734_4066.htm?section=28799C0E86C147799E02226E942307F2 (last accessed May 24, 2017).

[30] *See, e.g.*, Exhibit 27, *Bosch Brings Innovation, Green Technology to SAE 2009 World Congress*, Bosch, http://www.bosch.us/content/language1/html/734_7432.htm?section=CDAF31A468D9483198ED8577060384B3 (last accessed May 24, 2017).

Technologies" at the German Embassy in Washington, D.C., with the aim of providing a venue for "stakeholders to gain insight into the latest technology trends and engage in a vital dialogue with industry leaders and policymakers."[31]

146. Bosch LLC hosted multi-day conferences open to many regulators and legislators and held private meetings with regulators in which it proclaimed extensive knowledge of the specifics of Volkswagen technology, including calibrations necessary for the affected vehicles to comply with emissions regulations.

147. For example, in April 2009, Bosch organized and hosted a two-day "California Diesel Days" event in Sacramento, California. Bosch invited a roster of lawmakers, journalists, executives, regulators, and NGOs[32] with the aim of changing perceptions of diesel from "dirty" to "clean." The event featured affected vehicles as ambassadors of "Clean Diesel" technology, including a 2009 Volkswagen Jetta "green car." The stated goals were to "build support for light-duty diesel as a viable solution for achieving California's petroleum and emission reduction objectives."

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[31] Exhibit 28, *Bosch: Clean Diesel is Key Part of Future Technology Mix*, Bosch, http://us.bosch-press.com/tbwebdb/bosch-usa/en-US/PressText.cfm?CFID=60452038&CFTOKEN=9c778a2564be2c9b-56CC21B6-96AB-5F79-32445B13EC121DBE&nh=00&Search=0&id=364 (last accessed May 24, 2017).

[32] Exhibit 26, *Bosch drives clean diesel in California*, Bosch, http://www.bosch.us/content/language1/html/734_4066.htm?section=28799C0E86C147799E02226E942307F2 (last accessed May 24, 2017); *see also* Exhibit 29, *California Diesel Days*, The U.S. Coalition for Advanced Diesel Cars, http://www.californiadieseldays.com/ (last accessed May 24, 2017).

148. In 2009, Bosch also became a founding member of the U.S. Coalition for Advanced Diesel Cars.[33] One of this advocacy group's purposes included "promoting the energy efficiency and environmental benefits of advanced clean diesel technology for passenger vehicles in the U.S. marketplace."[34] This group lobbies Congress, U.S. regulators, and the California Air Resources Board in connection with rules affecting "Clean Diesel" technology.[35]

149. In 2010, Bosch sponsored the Virginia International Raceway with the support of the 2010 Volkswagen Jetta TDI Cup Series. This event included TDI vehicles featuring Bosch technology.[36]

150. In 2012, Audi, BMW, Bosch, Daimler, Porsche, and Volkswagen joined to form The Clearly Better Diesel initiative.[37] The initiative was announced in Berlin by the German Association of the Automotive Industry. Its stated goal

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[33] Exhibit 30, Chrissie Thompson, *New Coalition Aims To Promote Diesel Cars*, Automotive News (Feb. 2, 2009), http://www.autonews.com/article/20090202/OEM06/302029728/new-coalition-aims-to-promote-diesel-cars.

[34] Exhibit 31, *About the Coalition*, The U.S. Coalition for Advanced Diesel Cars, http://cleandieseldelivers.com/about/ (last accessed May 24, 2017).

[35] *Id. See also, e.g.*, Exhibit 32, Letter to Chairman Mary Nichols and CARB concerning a statement made about diesel technology (Jan. 8, 2016), available at http://cleandieseldelivers.com/media/Mary-Nichols-Letter-01082016.pdf.

[36] Exhibit 33, *Volkswagen Jetta TDI Cup Drivers Take to the Track for the First Time in 2010 at VIR*, Volkswagen of America, Inc. (April 23, 2010), available at http://www.prnewswire.com/news-releases/volkswagen-jetta-tdi-cup-drivers-take-to-the-track-for-the-first-time-in-2010-at-vir-91985604.html.

[37] Exhibit 34, *"Clean Diesel Clearly Better" Campaign for Clean Diesel Cars Welcomed*, Diesel Technology Forum (Dec. 12, 2012), available at http://www.prnewswire.com/news-releases/clean-diesel-clearly-better-campaign-for-clean-diesel-cars-welcomed-183261432.html.

was to promote the sale of clean diesel vehicles in the U.S. The initiative's slogan was "Clean Diesel. Clearly Better."

151. In its efforts to promote "Clean Diesel," including the affected vehicles, Bosch GmbH acted on behalf of its global group.

5. Bosch also made the EDC-17 found in Fiat Chrysler vehicles that pollute excessively.

152. To appeal to environmentally conscious consumers, Fiat Chrysler America (FCA) ***vigorously*** markets its EcoDiesel vehicles as "clean diesel" with ultra-low emissions, high fuel economy, and powerful torque and towing capacity. FCA calls its EcoDiesel "ultra clean," "emissions compliant," and claims that "***no NOx***" exits the tailpipe. FCA charges a premium for EcoDiesel-equipped vehicles. For example, selecting the 3.0-liter EcoDiesel engine for the 2016 Dodge Ram 1500 Laramie adds $4,770 to the purchase price. And the 2016 Jeep Grand Cherokee Overland EcoDiesel costs $4,500 more than its gasoline counterpart.

153. These representations are deceptive and false. FCA programmed its EcoDiesel vehicles to significantly reduce the effectiveness of the NOx reduction systems during real-world driving conditions. The EPA has determined that the affected vehicles contain defeat devices. After a lawsuit had already been filed by Plaintiffs' counsel, on January 12, 2017, the EPA issued a notice of violation against FCA because FCA "failed to disclose Auxiliary Emission Control Devices

(AECDs)" in the affected vehicles.[38] The EPA identified eight specific devices that cause the vehicle to perform effectively when being tested for compliance and then reduce the effectiveness of the emissions control system during normal operation and use.

154. "Once again," said CARB Chair Mary D. Nichols about FCA's cheating, "a major automaker made the business decision to skirt the rules and got caught."[39]

155. The same experts that tested the Silverado's performance did on-road testing of the FCA vehicles and confirmed that FCA's so-called EcoDiesel cars produced NOx emissions at an average of 222 mg/mile in city driving (four times the FTP standard of 50 mg/mile) and 353 mg/mile in highway driving (five times higher than the U.S. highway standard of 70 mg/mile). In many instances, NOx values were in excess of 1,600 mg/mile, more than 20 times the standards. This testing occurred before the EPA announcement.

156. Bosch made the EDC-17 for the polluting FCA vehicles.

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[38] Exhibit 35, EPA's January 12, 2017 Notice of Violation to Fiat Chrysler Automobiles, available at https://www.epa.gov/sites/production/files/2017-01/documents/fca-caa-nov-2017-01-12.pdf.

[39] Exhibit 36, EPA News Release, *EPA Notifies Fiat Chrysler of Clean Air Act Violations* (Jan.12, 2017), available at https://www.epa.gov/newsreleases/epa-notifies-fiat-chrysler-clean-air-act-violations.

6. Bosch also made the EDC-17 found in polluting Mercedes diesels.

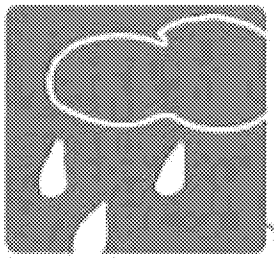
157. Plaintiffs' experts in this case tested the Mercedes diesel vehicles and made the first public disclosure of Mercedes' unlawful conduct through counsel in a civil suit filed in the District of New Jersey. Reportedly as a result of that lawsuit, Mercedes is under investigation by DOJ and German authorities with respect to its BlueTEC diesel vehicles. Over 14 Mercedes diesel models are alleged to produce emissions 8.1 to 19.7 times relevant standards. Bosch supplied the EDC-17 in the polluting Mercedes vehicles.

J. The Damage from Excessive NOx

158. NOx contributes to ground-level ozone and fine particulate matter. According to the EPA, "Exposure to these pollutants has been linked with a range of serious health effects, including increased asthma attacks and other respiratory illnesses that can be serious enough to send people to the hospital. Exposure to ozone and particulate matter have also been associated with premature death due to respiratory-related or cardiovascular-related effects. Children, the elderly, and people with pre-existing respiratory disease are particularly at risk for health effects of these pollutants."

159. The EPA describes the danger of NOx as follows:

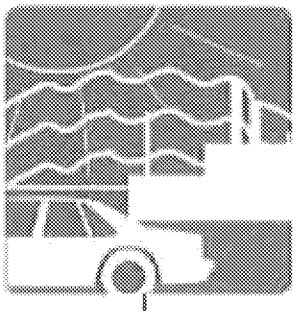
Acid Rain - NO_x and sulfur dioxide react with other substances in the air to form acids which fall to earth as rain, fog, snow, or dry particles. Some may be carried by the wind for hundreds of miles. Acid rain damages forests; causes deterioration of cars, buildings, and historical monuments; and causes lakes and streams to become acidic and unsuitable for many fish.

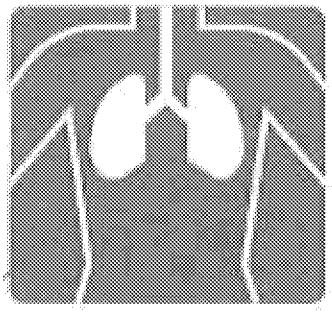


Water Quality Deterioration - Increased nitrogen loading in water bodies, particularly coastal estuaries, upsets the chemical balance of nutrients used by aquatic plants and animals. Additional nitrogen accelerates "eutrophication," which leads to oxygen depletion and reduces fish and shellfish populations. NO_x emissions in the air are one of the largest sources of nitrogen pollution to the Chesapeake Bay.

Toxic Chemicals - In the air, NO_x reacts readily with common organic chemicals, and even ozone, to form a wide variety of toxic products, some of which may cause biological mutations. Examples of these chemicals include the nitrate radical, nitroarenes, and nitrosamines.

Ground-level Ozone (Smog) - is formed when NO_x and volatile organic compounds (VOCs) react in the presence of heat and sunlight. Children, the elderly, people with lung diseases such as asthma, and people who work or exercise outside are susceptible to adverse effects such as damage to lung tissue and reduction in lung function. Ozone can be transported by wind currents and cause health impacts far from the original sources. Millions of Americans live in areas that do not meet the health standards for ozone. Other impacts from ozone include damaged vegetation and reduced crop yields.





Particles - NO_x react with ammonia, moisture, and other compounds to form nitric acid vapor and related particles. Human health concerns include effects on breathing and the respiratory system, damage to lung tissue, and premature death. Small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and aggravate existing heart disease.

Global Warming - One member of the NO_x family, nitrous oxide, is a greenhouse gas. It accumulates in the atmosphere with other greenhouse gases causing a gradual rise in the earth's temperature. This will lead to increased risks to human health, a rise in the sea level, and other adverse changes to plant and animal habitat.

160. A recent study published in NATURE estimates that there are 38,000 deaths worldwide due to excess NOx emissions.

161. GM and Bosch will not be able to make the Affected Vehicles comply with emissions standards without substantially degrading their performance characteristics, including their horsepower and their fuel efficiency. As a result, even if GM and Bosch are able to make Class members' Affected Vehicles EPA-compliant, Class members will nonetheless suffer actual harm and damages because their vehicles will no longer perform as they did when purchased and as advertised. This will necessarily result in a diminution in value of every Affected Vehicle and it will cause owners of Affected Vehicles to pay more for fuel while using their Affected Vehicles.

162. Plaintiffs and members of the Class paid a premium of at least $5,000, as GM charged more for its diesel car than a comparable gas car.

163. As a result of GM's unfair, deceptive, and/or fraudulent business practices, and its failure to disclose that under normal operating conditions the Affected Vehicles are not "clean" diesels, emit more pollutants than do gasoline powered vehicles, and emit more pollutants than permitted under federal and state laws, owners and/or lessees of the Affected Vehicles have suffered losses in money and/or property. Had Plaintiffs and Class members known of the higher emissions at the time they purchased or leased their Affected Vehicles, they would not have

purchased or leased those vehicles, or would have paid substantially less for the vehicles than they did. Moreover, when and if GM recalls the Affected Vehicles and degrades the GM Clean Diesel engine performance and fuel efficiency in order to make the Affected Vehicles compliant with EPA standards, Plaintiffs and Class members will be required to spend additional sums on fuel and will not obtain the performance characteristics of their vehicles when purchased. Moreover, Affected Vehicles will necessarily be worth less in the marketplace because of their decrease in performance and efficiency and increased wear on their cars' engines.

164. Without cheating emissions, GM could not achieve the fuel economy and range that it promises. Moreover, when and if GM recalls the Affected Vehicles and degrades the Duramax engine performance in order to make the Affected Vehicles compliant with EPA standards, Plaintiffs and Class members will be required to spend additional sums on fuel and will not obtain the performance characteristics of their vehicles when purchased. And Affected Vehicles will necessarily be worth less in the marketplace because of their decrease in performance and efficiency and increased wear on their vehicles' engines.

K. The GM Scheme Is Just the Latest in a Worldwide Diesel Emissions Cheating Scandal That Adds Plausibility to the Allegations as Virtually All Diesel Manufacturers Are Falsely Advertising Their Vehicles

165. As noted, the world was shocked to learn that Volkswagen had manufactured over 11 million cars that were on the road in violation of European emissions standards, and over 480,000 vehicles were operating in the U.S. in violation of EPA and state standards. But Volkswagen was not the only manufacturer of vehicles that exceeded emissions standards.

166. In the wake of the major scandal involving Volkswagen and Audi diesel vehicles evading emissions standards with the help of certain software that manipulates emissions controls (called "defeat devices"),[40] scientific literature and reports and testing indicate that most of the diesel vehicle manufactures of so-called "Clean Diesel" vehicles emit far more pollution on the road than in lab tests. The EPA has widened its probe of auto emissions to include, for example, the Mercedes E250 BlueTEC.

[40] Exhibit 37, EPA's Sept. 18, 2015 Notice of Violation to Volkswagen Group of America, Inc., available at https://www.epa.gov/sites/production/files/2015-10/documents/vw-nov-caa-09-18-15.pdf. As detailed in the NOV, software in Volkswagen and Audi diesel vehicles detects when the vehicle is undergoing official emissions testing and turns full emissions controls on only during the test. But otherwise, while the vehicle is running, the emissions controls are suppressed. This results in cars that meet emissions standards in the laboratory or at the state testing station, but during normal operation they emit NOx at up to 40 times the standard allowed under U.S. laws and regulations. Volkswagen has admitted to installing a defeat device in its diesel vehicles.

167. In May 2015, a study conducted on behalf of the Dutch Ministry of Infrastructure and the Environment found that all sixteen vehicles made by a variety of manufacturers, when tested, emitted significantly more NOx on real-world trips while they passed laboratory tests. The report concluded that "[i]n most circumstances arising in normal situations on the road, the system scarcely succeeded in any effective reduction of NOx emissions."[41]

168. The report further remarked:[42]

> It is remarkable that the NOx emission under real-world conditions exceeds the type approval value by [so much]. It demonstrates that the settings of the engine, the EGR and the SCR during a real-world test trip are such that they do not result in low NOx emissions in practice. In other words: ***In most circumstances arising in normal situations on the road, the systems scarcely succeed in any effective reduction of NOx emissions***.

The lack of any "effective reduction of NOx emissions" is a complete contradiction of GM's claim that its vehicles are clean.

169. Other organizations are beginning to take notice of the emissions deception. The Transportation and Environment (T&E) organization, a European group aimed at promoting sustainable transportation, compiled data from "respected testing authorities around Europe." T&E stated in September 2015 that real-world emissions testing showed drastic differences from laboratory tests such

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[41] Exhibit 38, *Detailed investigations and real-world emission performance of Euro 6 diesel passenger cars*, TNO (May 18, 2015), http://publications.tno.nl/publication/34616868/a1Ug1a/TNO-2015-R10702.pdf.

[42] *Id.* at 6 (emphasis added).

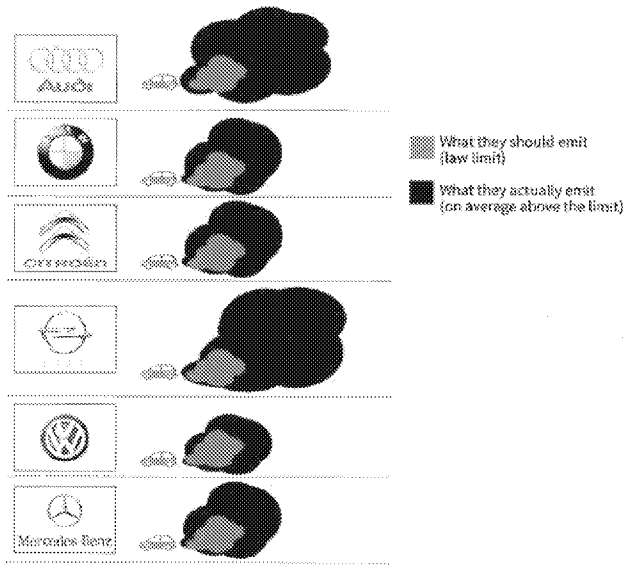
that models tested emitted more pollutants on the road than in their laboratory tests. "For virtually every new model that comes onto the market the gap between test and real-world performance leaps," the report asserts.[43]

170. In a summary report, T&E graphically depicted the widespread failure of most manufacturers:[44]

2. The problem is endemic across the car industry – but the performance of individual models and manufacturers varies widely

In tests by the ICCT[4] 12 out of 13 modern diesel cars failed to achieve the Euro 6 limit in on the road. The worst vehicle, an Audi, emitted 22 times the allowed limit. Emissions are highest in urban areas where most people are exposed to the pollution. On average a new diesel car emits **over** 800mg/km of nitrogen oxides driving in town compared to the limit of 80mg/km. Data obtained on around 20 modern diesel cars by T&E shows every major manufacturer is selling cars that fail to meet Euro 6 limits on the road. A minority of vehicles do meet the limits – but most don't. This is because the industry uses cheaper less effective exhaust treatment systems or fails to configure the best systems in a way that minimizes emissions. The cost of a modern diesel after treatment system is just €300.

Above and beyond the safe limit



Source: T&E

Transport & Environment

[43] Exhibit 39, *VW's cheating is just the tip of the iceberg*, Transport & Environment (Sept. 21, 2015), http://www.transportenvironment.org/publications/vw%E2%80%99s-cheating-just-tip-iceberg.

[44] Exhibit 40, *Five facts about diesel the car industry would rather not tell you*, Transport & Environment (Sept. 2015), http://www.transportenvironment.org/sites/te/files/publications/2015_09_Five_facts_about_diesel_FINAL.pdf.

171. The T&E report found that the current system for testing cars in a laboratory produces "meaningless results."[45]

172. Emissions Analytics is a U.K. company which says that it was formed to "overcome the challenge of finding accurate fuel consumption and emissions figures for road vehicles." With regard to its recent on-road emissions testing, the company explains:[46]

> [I]n the European market, we have found that real-world emissions of the regulated nitrogen oxides are four times above the official level, determined in the laboratory. Real-world emissions of carbon dioxide are almost one-third above that suggested by official figures. For car buyers, this means that fuel economy on average is one quarter worse than advertised. This matters, even if no illegal activity is found.

VI. TOLLING OF THE STATUTE OF LIMITATIONS

A. Discovery Rule Tolling

173. Class members had no way of knowing about GM's deception with respect to the comparatively and unlawfully high emissions of its GM Clean Diesel engine system in the Affected Vehicles. To be sure, GM continues to market the Affected Vehicles as "clean" diesels that have lower emissions than gasoline vehicles and also continues to claim that the Affected Vehicles comply with EPA emissions standards.

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[45] *Id.*

[46] Exhibit 41, Emissions Analytics Press Release (Sept. 28, 2015), available at http://www.abvwc.com/home/emissions-analytics.

174. Within the period of any applicable statutes of limitation, Plaintiffs and members of the proposed Classes could not have discovered through the exercise of reasonable diligence that GM was concealing the conduct complained of herein and misrepresenting the Company's true position with respect to the emission qualities of the Affected Vehicles.

175. Plaintiffs and the other Class members did not discover, and did not know of, facts that would have caused a reasonable person to suspect that GM did not report information within its knowledge to federal and state authorities, its dealerships, or consumers; nor would a reasonable and diligent investigation have disclosed that GM had concealed information about the true emissions of the Affected Vehicles, which was discovered by Plaintiffs only shortly before this action was filed. Nor in any event would such an investigation on the part of Plaintiffs and other Class members have disclosed that GM valued profits over truthful marketing and compliance with the law.

176. For these reasons, all applicable statutes of limitation have been tolled by operation of the discovery rule with respect to claims as to the Affected Vehicles.

B. Fraudulent Concealment Tolling

177. All applicable statutes of limitation have also been tolled by GM's knowing and active fraudulent concealment and denial of the facts alleged herein throughout the period relevant to this action.

178. Instead of disclosing its emissions scheme, or that the quality and quantity of emissions from the Affected Vehicles were far worse than represented, and of its disregard of the law, GM falsely represented that the Affected Vehicles had emissions cleaner than their gasoline powered counterparts, complied with federal and state emissions standards, that the diesel engines were "Clean," and that it was a reputable manufacturer whose representation could be trusted.

C. Estoppel

179. GM was under a continuous duty to disclose to Plaintiffs and the other Class members the true character, quality, and nature of emissions from the Affected Vehicles and of those vehicles' emissions systems.

180. GM knowingly, affirmatively, and actively concealed or recklessly disregarded the true nature, quality, and character of the emissions systems, and the emissions, of the Affected Vehicles.

181. Based on the foregoing, GM is estopped from relying on any statutes of limitations in defense of this action.

VII. CLASS ALLEGATIONS

182. Plaintiffs bring this action on behalf of themselves and as a class action, pursuant to the provisions of Rules 23(a) and (b)(3) of the Federal Rules of Civil Procedure, on behalf of the following class (collectively, the "Class"):

> All persons who purchased or leased a model year 2011-2016 GM Silverado 2500HD or 3500HD, or a GM Sierra 2500HD or 3500HD (the "Affected Vehicles").

183. Excluded from the Class are individuals who have personal injury claims resulting from the high emissions in the Affected Vehicles. Also excluded from the Class are GM and its subsidiaries and affiliates; all persons who make a timely election to be excluded from the Class; governmental entities; the Judge to whom this case is assigned and his/her immediate family; and Plaintiffs' Counsel. Plaintiffs reserve the right to revise the Class definition based upon information learned through discovery.

184. Certification of Plaintiffs' claims for class-wide treatment is appropriate because Plaintiffs can prove the elements of their claims on a class-wide basis using the same evidence as would be used to prove those elements in individual actions alleging the same claim.

185. This action has been brought and may be properly maintained on behalf of the Class proposed herein under Federal Rule of Civil Procedure 23.

186. **Numerosity**. Federal Rule of Civil Procedure 23(a)(1): The members of the Class are so numerous and geographically dispersed that individual joinder

of all Class members is impracticable. For purposes of this complaint, Plaintiffs allege that there are estimated to be 705,000 or more vehicles in the Class. The precise number of Class members is unknown to Plaintiffs but may be ascertained from GM's books and records. Class members may be notified of the pendency of this action by recognized, Court-approved notice dissemination methods, which may include U.S. Mail, electronic mail, Internet postings, and/or published notice.

187. **Commonality and Predominance**: Federal Rule of Civil Procedure 23(a)(2) and 23(b)(3): This action involves common questions of law and fact, which predominate over any questions affecting individual Class members, including, without limitation:

a) Whether GM and Bosch engaged in the conduct alleged herein;

b) Whether GM designed, advertised, marketed, distributed, leased, sold, or otherwise placed Affected Vehicles into the stream of commerce in the United States;

c) Whether the GM engine system in the Affected Vehicles emit pollutants at levels that do not make them "clean" diesels and that do not comply with U.S. EPA requirements;

d) Whether GM and Bosch knew about the comparatively and unlawfully high emissions and, if so, how long GM and Bosch have known;

e) Whether GM designed, manufactured, marketed, and distributed Affected Vehicles with defective or otherwise inadequate emission controls;

f) Whether GM's conduct violates RICO and consumer protection statutes, and constitutes breach of contract and fraudulent concealment, as asserted herein;

g) Whether there is an Enterprise;

h) Whether Bosch participated in the Enterprise;

i) Whether Plaintiffs and the other Class members overpaid for their vehicles; and

j) Whether Plaintiffs and the other Class members are entitled to damages and other monetary relief and, if so, in what amount.

188. **Typicality**: Federal Rule of Civil Procedure 23(a)(3): Plaintiffs' claims are typical of the other Class members' claims because, among other things, all Class members were comparably injured through GM's wrongful conduct as described above.

189. **Adequacy**: Federal Rule of Civil Procedure 23(a)(4): Plaintiffs are adequate Class representatives because their interests do not conflict with the interests of the other members of the Classes they seek to represent; Plaintiffs have retained counsel competent and experienced in complex class action litigation; and

Plaintiffs intend to prosecute this action vigorously. The Classes' interests will be fairly and adequately protected by Plaintiffs and their counsel.

190. **Superiority**: Federal Rule of Civil Procedure 23(b)(3): A class action is superior to any other available means for the fair and efficient adjudication of this controversy, and no unusual difficulties are likely to be encountered in the management of this class action. The damages or other financial detriment suffered by Plaintiffs and the other Class members are relatively small compared to the burden and expense that would be required to individually litigate their claims against GM, so it would be impracticable for the members of the Classes to individually seek redress for GM's wrongful conduct. Even if Class members could afford individual litigation, the court system could not. Individualized litigation creates a potential for inconsistent or contradictory judgments and increases the delay and expense to all parties and the court system. By contrast, the class action device presents far fewer management difficulties and provides the benefits of single adjudication, economy of scale, and comprehensive supervision by a single court.

VIII. CLAIMS

A. Claims Brought on Behalf of the Nationwide RICO Class

COUNT 1

VIOLATIONS OF RACKETEER INFLUENCED AND CORRUPT ORGANIZATIONS ACT (RICO) VIOLATION OF 18 U.S.C. § 1962(C), (D)

191. Plaintiffs incorporate by reference each preceding and succeeding paragraph as though fully set forth herein.

192. Plaintiffs bring this Count individually and on behalf of the Nationwide RICO Class against Defendants GM, Robert Bosch GmbH, and Robert Bosch LLC (collectively, "RICO Defendants").

193. The RICO Defendants are all "persons" under 18 U.S.C. § 1961(3) because they are capable of holding, and do hold, "a legal or beneficial interest in property."

194. Section 1962(c) makes it "unlawful for any person employed by or associated with any enterprise engaged in, or the activities of which affect, interstate or foreign commerce, to conduct or participate, directly or indirectly, in the conduct of such enterprise's affairs through a pattern of racketeering activity." Section 1962(d), in turn, makes it unlawful for "any person to conspire to violate."

195. For many years now, the RICO Defendants have aggressively sought to increase the sales of Affected Vehicles in an effort to bolster revenue, augment profits, and increase GM's share of the diesel vehicle market. Finding it impossible

to achieve their goals lawfully, however, the RICO Defendants resorted instead to orchestrating a fraudulent scheme and conspiracy. In particular, the RICO Defendants, along with other entities and individuals, created and/or participated in the affairs of an illegal enterprise ("Emissions Fraud Enterprise") whose direct purpose was to deceive the regulators and the public into believing the Affected Vehicles were "clean" and "environmentally friendly." As explained in greater detail below, the RICO Defendants' acts in furtherance of the Emissions Fraud Enterprise violate Section 1962(c) and (d).

1. The members of the Emissions Fraud Enterprise

196. Upon information and belief, the Emissions Fraud Enterprise consisted of the following entities and individuals: GM, Robert Bosch GmbH, and Robert Bosch LLC.

197. Robert Bosch GmbH and Robert Bosch LLC (together, "Bosch" or "Bosch Defendants") tested, manufactured, and sold the electronic control module (ECM) that managed the emissions control system used by GM in the Affected Vehicles. This particular ECM is more formally referred to as the Electronic Diesel Control Unit 17.

198. Defendant Bosch GmbH is a multinational engineering and electronics company headquartered in Gerlingen, Germany, which has hundreds of subsidiaries and companies. It wholly owns defendant Bosch LLC, a Delaware

limited liability company headquartered in Farmington Hills, Michigan. As explained above, Bosch's sectors and divisions are grouped by subject matter, not location. Mobility Solutions (formerly Automotive Technology) is the Bosch sector at issue, particularly its Diesel Services division, and it encompasses employees of Bosch GmbH and Bosch LLC. These individuals were responsible for the design, manufacture, development, customization, and supply of the defeat device to GM for use in the Affected Vehicles.

199. Bosch worked with GM, Volkswagen, Mercedes, and FCA to develop and implement a specific and unique set of software algorithms to surreptitiously evade emissions regulations. Bosch customized their EDC Unit 17s for installation in the Affected Vehicles with unique software code to detect when it was undergoing emissions testing, as described above, and did so for other vehicles with defeat devices in Volkswagen and Mercedes vehicles.[47]

200. Bosch's conduct with respect to Volkswagen, outlined below, adds plausibility to its participation in the enterprise described herein. For example, Bosch was well aware that the EDC Unit 17 would be used by automobile manufacturers, including GM, to cheat on emissions testing. Bosch was also critical to the concealment of the defeat device in communications with U.S.

[47] Exhibit 18, Michael Taylor, *EPA Investigating Bosch over VW Diesel Cheater Software*, Car and Driver (Nov. 23, 2015), http://blog.caranddriver.com/epa-investigating-bosch-over-vw-diesel-cheater-software/.

regulators and went even further to actively lobby U.S. lawmakers on behalf of Volkswagen and its "Clean Diesel" vehicles.

201. EDC Unit 17 could not effectively lower NOx emissions to legal levels during normal operating conditions. In order to pass the emissions test, then, EDC Unit 17 is equipped with a "defeat device," which is software that allows the vehicle to determine whether it is being operated under normal conditions or testing conditions.

202. As was publicly reported, the Bosch Defendants, seeking to conceal their involvement in the unlawful Emissions Fraud Enterprise, sent a letter to Volkswagen AG in 2007 stating that Volkswagen Diesels *could not be lawfully operated* if the LNT or SCR after-treatment system was disabled.[48] The exact same logic applies to the GM Affected Vehicles.

203. Indeed, notwithstanding their knowledge that the Volkswagen Diesels *could not be lawfully operated* if the emissions system was disabled, the Bosch Defendants, driven to cement their position as a leading supplier of diesel emissions equipment, went on to sell approximately *eleven million* EDC Unit 17s

[48] Exhibit 42, Stef Shrader, *Feds Are Now Investigating Volkswagen Supplier Bosch Over Dieselgate*, Jalopnik (Nov. 19, 2015), http://jalopnik.com/feds-are-now-investigating-volkswagen-supplier-bosch-ov-1743624448.

to Volkswagen over an eight-year period and sold hundreds of thousands of EDC units to GM for use in Affected Vehicles.[49]

204. The persons and entities described in the preceding section are members of and constitute an "association-in-fact" enterprise.

205. At all relevant times, the Emissions Fraud Enterprise: (a) had an existence separate and distinct from each Defendant; (b) was separate and distinct from the pattern of racketeering in which the RICO Defendants engaged; and (c) was an ongoing organization consisting of legal entities, including GM, the Bosch Defendants, and other entities and individuals associated for the common purpose of designing, manufacturing, distributing, testing, and selling the Affected Vehicles through fraudulent COCs and EOs, false emissions tests, deceptive and misleading marketing and materials, and deriving profits and revenues from those activities. Each member of the Emissions Fraud Enterprise shared in the bounty generated by the enterprise—*i.e.*, by sharing the benefit derived from increased sales revenue generated by the scheme to defraud consumers and franchise dealers alike nationwide.

206. The Emissions Fraud Enterprise functioned by selling vehicles and component parts to the consuming public. Many of these products are legitimate,

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[49] Exhibit 18, Michael Taylor, *EPA Investigating Bosch over VW Diesel Cheater Software*, Car and Driver (Nov. 23, 2015), http://blog.caranddriver.com/epa-investigating-bosch-over-vw-diesel-cheater-software/.

including vehicles that do not contain defeat devices and software capable of allowing the engine to manipulate the software such that the emissions system is turned on or off at certain times. However, the RICO Defendants and their co-conspirators, through their illegal Enterprise, engaged in a pattern of racketeering activity, which involves a fraudulent scheme to increase revenue for Defendants and the other entities and individuals associated-in-fact with the Enterprise's activities through the illegal scheme to sell the Affected Vehicles.

207. The Emissions Fraud Enterprise engaged in and its activities affected interstate and foreign commerce because it involved commercial activities across state boundaries, such as the marketing, promotion, advertisement and sale or lease of the Affected Vehicles throughout the country and the receipt of monies from the sale of the same.

208. Within the Emissions Fraud Enterprise, there was a common communication network by which co-conspirators shared information on a regular basis. The Emissions Fraud Enterprise used this common communication network for the purpose of manufacturing, marketing, testing, and selling the Affected Vehicles to the general public nationwide.

209. Each participant in the Emissions Fraud Enterprise had a systematic linkage to each other through corporate ties, contractual relationships, financial ties, and continuing coordination of activities. Through the Emissions Fraud

Enterprise, the RICO Defendants functioned as a continuing unit with the purpose of furthering the illegal scheme and their common purposes of increasing their revenues and market share, and minimizing losses.

210. The RICO Defendants participated in the operation and management of the Emissions Fraud Enterprise by directing its affairs, as described herein. While the RICO Defendants participated in, and are members of, the enterprise, they have a separate existence from the enterprise, including distinct legal statuses, different offices and roles, bank accounts, officers, directors, employees, individual personhood, reporting requirements, and financial statements.

211. GM exerted substantial control and participated in the affairs of the Emissions Fraud Enterprise by:

a. Designing the Affected Vehicles with defeat devices;

b. Failing to correct or disable the defeat devices;

c. Manufacturing, distributing, and selling the Affected Vehicles that emitted greater pollution than allowable under the applicable regulations;

d. Misrepresenting and omitting (or causing such misrepresentations and omissions to be made) vehicle specifications on COC and EO applications;

e. Introducing the Affected Vehicles into the stream of U.S. commerce without a valid COC and/or EO;

f. Concealing the existence of the defeat devices and the unlawfully high emissions from regulators and the public;

g. Persisting in the manufacturing, distribution, and sale of the Affected Vehicles even after questions were raised about the emissions testing and discrepancies concerning the same;

h. Misleading government regulators as to the nature of the defeat devices and the defects in the Affected Vehicles;

i. Misleading the driving public as to the nature of the defeat devices and the defects in the Affected Vehicles;

j. Designing and distributing marketing materials that misrepresented and concealed the defects in the vehicles;

k. Otherwise misrepresenting or concealing the defective nature of the Affected Vehicles from the public and regulators; and

l. Illegally selling and/or distributing the Affected Vehicles; collecting revenues and profits from the sale of such products; and ensuring that the other RICO Defendants and unnamed co-conspirators complied with the fraudulent scheme.

212. Bosch also participated in, operated, and/or directed the Emissions Fraud Enterprise. Bosch participated in the fraudulent scheme by manufacturing, installing, testing, modifying, and supplying the EDC Unit 17 which operated as a "defeat device" in the Affected Vehicles. Bosch exercised tight control over the coding and other aspects of the defeat device software and closely collaborated with GM to develop, customize, and calibrate the defeat devices. Additionally, Bosch continuously cooperated with GM to ensure that the EDC Unit 17 was fully integrated into the Affected Vehicles. Bosch also participated in the affairs of the Enterprise by concealing the defeat devices on U.S. documentation and in

communications with U.S. regulators. Bosch collected tens of millions of dollars in revenues and profits from the hidden defeat devices installed in the Affected Vehicles.

213. Without the RICO Defendants' willing participation, including Bosch's active involvement in developing and supplying the critical defeat devices for the Affected Vehicles, the Emissions Fraud Enterprise's scheme and common course of conduct would not have been successful.

214. The RICO Defendants directed and controlled the ongoing organization necessary to implement the scheme at meetings and through communications of which Plaintiffs cannot fully know at present because such information lies in the Defendants' and others' hands.

215. The members of the Emissions Fraud Enterprise all served a common purpose; namely, to outsell their law-abiding competitors and increase their revenues through the sale of as many Affected Vehicles (including the emissions components made and sold by Bosch) as possible. Each member of the Emissions Fraud Enterprise shared the bounty generated by the enterprise—*i.e.*, by sharing the benefit derived from increased sales revenue generated by the scheme to defraud. GM sold more Affected Vehicles by utilizing an emissions control system that was cheaper to install and allowed for generous performance and efficiency tuning, all while charging consumers a premium for purportedly "clean" and "fuel

efficient" Affected Vehicles. The Bosch Defendants, in turn, sold more EDC Units because GM manufactured and sold more Affected Vehicles. The RICO Defendants achieved their common purpose by repeatedly misrepresenting and concealing the nature of the Affected Vehicles and the ability of the emissions control systems (including the Bosch-supplied parts) to effectively reduce toxic emissions during normal operating conditions.

2. The Predicate Acts

216. To carry out, or attempt to carry out, the scheme to defraud, the RICO Defendants conducted or participated in the conduct of the affairs of the Emissions Fraud Enterprise through a pattern of racketeering activity that employed the use of mail and wire facilities, in violation of 18 U.S.C. §§ 1341 (mail fraud) and 1343 (wire fraud).

217. Specifically, the RICO Defendants participated in the scheme to defraud by using mail, telephone, and the Internet to transmit writings travelling in interstate or foreign commerce.

218. The RICO Defendants' use of the mails and wires include but are not limited to the transmission, delivery, or shipment of the following by the RICO Defendants or third parties that were foreseeably caused to be sent as a result of Defendants' illegal scheme:

a. Application for certificates submitted to the EPA and CARB;

b. The Affected Vehicles themselves;

c. Component parts for the defeat devices;

d. Essential hardware for the Affected Vehicles;

e. Falsified emission tests;

f. Fraudulently-obtained COCs and EOs;

g. Vehicle registrations and plates as a result of the fraudulently-obtained COCs and EOs;

h. Documents and communications that facilitated the falsified emission tests;

i. False or misleading communications intended to lull the public and regulators from discovering the defeat devices and/or other auxiliary devices;

j. Sales and marketing materials, including advertising, websites, product packaging, brochures, and labeling, which misrepresented and concealed the true nature of the Affected Vehicles;

k. Documents intended to facilitate the manufacture and sale of the Affected Vehicles, including bills of lading, invoices, shipping records, reports and correspondence;

l. Documents to process and receive payment for the Affected Vehicles by unsuspecting franchise dealers, including invoices and receipts;

m. Payments to Bosch;

n. Deposits of proceeds; and

o. Other documents and things, including electronic communications.

219. The RICO Defendants utilized the interstate and international mail and wires for the purpose of obtaining money or property by means of the omissions, false pretense, and misrepresentations described therein.

220. The RICO Defendants also used the Internet and other electronic facilities to carry out the scheme and conceal the ongoing fraudulent activities. Specifically, GM made misrepresentations about the Affected Vehicles on their websites, YouTube, and through ads online, all of which were intended to mislead regulators and the public about the fuel efficiency, emissions standards, and other performance metrics.

221. The RICO Defendants also communicated by U.S. Mail, by interstate facsimile, and by interstate electronic mail with various other affiliates, regional offices, divisions, dealerships, and other third-party entities in furtherance of the scheme.

222. The mail and wire transmissions described herein were made in furtherance of Defendants' scheme and common course of conduct to deceive regulators and consumers and lure consumers into purchasing the Affected Vehicles, which Defendants knew or recklessly disregarded as emitting illegal amounts of pollution, despite their advertising campaign that the Affected Vehicles were "clean" diesel cars.

223. Many of the precise dates of the fraudulent uses of U.S. Mail and interstate wire facilities have been deliberately hidden and cannot be alleged without access to Defendants' books and records. However, Plaintiffs have described the types of, and in some instances, occasions on which the predicate

acts of mail and/or wire fraud occurred. They include thousands of communications to perpetuate and maintain the scheme, including the things and documents described in the preceding paragraphs.

224. The RICO Defendants have not undertaken the practices described herein in isolation, but as part of a common scheme and conspiracy. In violation of 18 U.S.C. § 1962(d), the RICO Defendants conspired to violate 18 U.S.C. § 1962(c), as described herein. Various other persons, firms, and corporations, including third-party entities and individuals not named as defendants in this Complaint, have participated as co-conspirators with the RICO Defendants in these offenses and have performed acts in furtherance of the conspiracy to increase or maintain revenues, increase market share, and/or minimize losses for the Defendants and their unnamed co-conspirators throughout the illegal scheme and common course of conduct.

225. The RICO Defendants aided and abetted others in the violations of the above laws, thereby rendering them indictable as principals in the 18 U.S.C. §§ 1341 and 1343 offenses.

226. To achieve their common goals, the RICO Defendants hid from the general public the unlawfulness and emission dangers of the Affected Vehicles and obfuscated the true nature of the defect even after regulators raised concerns. The RICO Defendants suppressed and/or ignored warnings from third parties,

whistleblowers, and governmental entities about the discrepancies in emissions testing and the defeat devices present in the Affected Vehicles.

227. The RICO Defendants and each member of the conspiracy, with knowledge and intent, have agreed to the overall objectives of the conspiracy and participated in the common course of conduct to commit acts of fraud and indecency in designing, manufacturing, distributing, marketing, testing, and/or selling the Affected Vehicles (and the defeat devices contained therein).

228. Indeed, for the conspiracy to succeed, each of the RICO Defendants and their co-conspirators had to agree to implement and use the similar devices and fraudulent tactics—specifically, complete secrecy about the defeat devices in the Affected Vehicles.

229. The RICO Defendants knew and intended that government regulators, as well as Plaintiffs and Class members, would rely on the material misrepresentations and omissions made by them about the Affected Vehicles. The RICO Defendants knew and intended that Plaintiffs and the Class would incur costs and damages as a result. As fully alleged herein, Plaintiffs and the Class relied upon Defendants' representations and omissions that were made or caused by them. Plaintiffs' reliance is made obvious by the fact that: (1) they purchased hundreds of thousands of vehicles that never should have been introduced into the U.S. stream of commerce and whose worth is far less than was paid. In addition,

the EPA, CARB, and other regulators relied on the misrepresentations and material omissions made or caused to be made by the RICO Defendants; otherwise, GM could not have obtained valid COCs and EOs to sell the Affected Vehicles.

230. The RICO Defendants' conduct in furtherance of this scheme was intentional. Plaintiffs and the Class were harmed as a result of the RICO Defendants' intentional conduct. Plaintiffs, the Class, regulators, and consumers, among others, relied on the RICO Defendants' material misrepresentations and omissions.

231. As described herein, the RICO Defendants engaged in a pattern of related and continuous predicate acts for many years. The predicate acts constituted a variety of unlawful activities, each conducted with the common purpose of defrauding Plaintiffs and other Class members and obtaining significant monies and revenues from them and through them while providing Affected Vehicles worth significantly less than the invoice price paid. The predicate acts also had the same or similar results, participants, victims, and methods of commission. The predicate acts were related and not isolated events.

232. The predicate acts all had the purpose of generating significant revenue and profits for the RICO Defendants at the expense of Plaintiffs, the Class, and consumers. The predicate acts were committed or caused to be committed by the RICO Defendants through their participation in the Emissions Fraud Enterprise

and in furtherance of its fraudulent scheme, and were interrelated in that they involved obtaining Plaintiffs' and Class members' funds, artificially inflating the brand and dealership goodwill values, and avoiding the expenses associated with remediating the Affected Vehicles.

233. During the design, manufacture, testing, marketing, and sale of the Affected Vehicles, the RICO Defendants shared technical, marketing, and financial information that plainly revealed the emissions control systems in the Affected Vehicles as the ineffective, illegal, and fraudulent piece of technology they were and are. Nevertheless, the RICO Defendants shared and disseminated information that deliberately represented Affected Vehicles as "clean," "environmentally friendly," and "fuel efficient."

234. By reason of and as a result of the conduct of the RICO Defendants, and in particular its pattern of racketeering activity, Plaintiffs and the Class have been injured in multiple ways, including but not limited to:

a. Overpayment for Affected Vehicles, in that Plaintiffs and the Class at the time of purchase believed they were paying for vehicles that met certain emission and fuel efficiency standards and obtained vehicles that did not meet these standards and were worth less than what was paid; and

b. The value of the Affected Vehicles has diminished, thus reducing their sale and resale value, and has resulted in a loss of property for Plaintiffs and the Class.

235. The RICO Defendants' violations of 18 U.S.C. § 1962(c) and (d) have directly and proximately caused injuries and damages to Plaintiffs and the Class, and Plaintiffs and the Class are entitled to bring this action for three times their actual damages, as well as injunctive/equitable relief, costs, and reasonable attorneys' fees pursuant to 18 U.S.C. § 1964(c). Each of the RICO Defendants knew, understood, and intended for members of the Class to purchase the Affected Vehicles, and knew, understood, and foresaw that revelation of the truth would injure members of the Class.

B. Claims Brought on Behalf of the California Class

COUNT 2

VIOLATIONS OF THE CALIFORNIA UNFAIR COMPETITION LAW
(CAL. BUS. & PROF. CODE § 17200 *ET SEQ.*)

236. Plaintiffs (for purposes of all California Class Counts) incorporate by reference all paragraphs as though fully set forth herein.

237. This claim is brought by Plaintiffs on behalf of residents of California who are members of the Class.

238. California's Unfair Competition Law (UCL), CAL. BUS. & PROF. CODE § 17200 *et seq.*, proscribes acts of unfair competition, including "any

unlawful, unfair or fraudulent business act or practice and unfair, deceptive, untrue or misleading advertising."

239. GM's conduct, as described herein, was and is in violation of the UCL. GM's conduct violates the UCL in at least the following ways:

i. By failing to disclose that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions;

ii. By selling and leasing Affected Vehicles that suffer from a defective emissions control system and that emit unlawfully high levels of pollutants under normal driving conditions;

iii. By knowingly and intentionally concealing from Plaintiffs and the other Class members that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions and that the Affected Vehicles suffer from a defective emissions control system and emit unlawfully high levels of pollutants under normal driving conditions;

iv. By marketing Affected Vehicles as reduced emissions vehicles possessing functional and defect-free, EPA-compliant diesel engine systems;

vii. By violating other California laws, including California consumer protection laws and California laws governing vehicle emissions and emission testing requirements.

240. GM intentionally and knowingly misrepresented material facts regarding the Affected Vehicles with an intent to mislead Plaintiffs and the Class.

241. In purchasing or leasing the Affected Vehicles, Plaintiffs and the other Class members were deceived by GM's failure to disclose the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions, that the emissions controls were defective, and that the Affected Vehicles emitted unlawfully high levels of pollutants, including NOx, as described above.

242. Plaintiffs were also deceived by GM's portrayal of these vehicles as turning NOx into a "fine mist" (misleading since the emissions were not a fine mist but at times an environmental hazard), having "lower emissions" (misleading as at times they were materially and offensively high), accomplishing a "reasonable reduction in emissions" (misleading as at material times the emissions are high and environmentally offensive), and reducing emissions by a "whopping" amount (only under limited circumstances).

243. Plaintiffs and Class members reasonably relied upon GM's false misrepresentations. They had no way of knowing that GM's representations were false and gravely misleading. As alleged herein, GM engaged in extremely sophisticated methods of deception. Plaintiffs and Class members did not, and could not, unravel GM's deception on their own.

244. GM knew or should have known that its conduct violated the UCL.

245. GM owed Plaintiffs and the Class a duty to disclose the truth about its emissions systems manipulation because GM:

a. Possessed exclusive knowledge that it manipulated the emissions system in the Affected Vehicles to turn off or limit effectiveness in normal driving conditions;

b. Intentionally concealed the foregoing from Plaintiffs and the Class; and/or

c. Made incomplete representations that it manipulated the emissions system in the Affected Vehicles to turn off or limit effectiveness in normal driving conditions, while purposefully withholding material facts from Plaintiffs and the Class that contradicted these representations.

246. GM had a duty to disclose that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions, emits pollutants at a much higher rate than gasoline powered vehicles, and that the emissions far exceeded those expected by a reasonable consumer. Plaintiffs and the other Class members relied on GM's material representations and/or omissions that the Affected Vehicles they were purchasing were reduced emission vehicles, efficient, and free from defects.

247. GM's conduct proximately caused injuries to Plaintiffs and the other Class members.

248. Plaintiffs and the other Class members were injured and suffered ascertainable loss, injury-in-fact, and/or actual damage as a proximate result of GM's conduct in that Plaintiffs and the other Class members overpaid for their Affected Vehicles and did not receive the benefit of their bargain, and/or their Affected Vehicles have suffered a diminution in value. These injuries are the direct and natural consequence of GM's misrepresentations and omissions.

249. GM's violations present a continuing risk to Plaintiffs as well as to the general public. GM's unlawful acts and practices complained of herein affect the public interest.

250. GM's misrepresentations and omissions alleged herein caused Plaintiffs and the other Class members to make their purchases or leases of their Affected Vehicles. Absent those misrepresentations and omissions, Plaintiffs and the other Class members would not have purchased or leased these vehicles, would not have purchased or leased these Affected Vehicles at the prices they paid, and/or would have purchased or leased less expensive alternative vehicles that did not contain defective GM Clean Diesel engine systems that failed to comply with EPA and California emissions standards.

251. Accordingly, Plaintiffs and the other Class members have suffered injury in fact, including lost money or property, as a result of GM's misrepresentations and omissions.

252. Plaintiffs request that this Court enter such orders or judgments as may be necessary to restore to Plaintiffs and members of the Class any money it acquired by unfair competition, including restitution and/or restitutionary disgorgement, as provided in CAL. BUS. & PROF. CODE § 17203 and CAL. CIV. CODE § 3345; and for such other as may be appropriate.

COUNT 3

VIOLATIONS OF THE CALIFORNIA FALSE ADVERTISING LAW (CAL. BUS. & PROF. CODE § 17500 *ET SEQ.*)

253. Plaintiffs incorporate by reference all paragraphs as though fully set forth herein.

254. This claim is brought by Plaintiffs on behalf of residents of California who are members of the class.

255. CAL. BUS. & PROF. CODE § 17500 states: "It is unlawful for any . . . corporation . . . with intent directly or indirectly to dispose of real or personal property . . . to induce the public to enter into any obligation relating thereto, to make or disseminate or cause to be made or disseminated . . . from this state before the public in any state, in any newspaper or other publication, or any advertising device, . . . or in any other manner or means whatever, including over the Internet,

any statement . . . which is untrue or misleading, and which is known, or which by the exercise of reasonable care should be known, to be untrue or misleading."

256. GM caused to be made or disseminated through California and the United States, through advertising, marketing and other publications, statements that were untrue or misleading, and which were known, or which by the exercise of reasonable care should have been known to GM, to be untrue and misleading to consumers, including Plaintiffs and the other Class members.

257. GM has violated § 17500 because the misrepresentations and omissions regarding the functionality, reliability, environmental-friendliness, and lawfulness of Affected Vehicles as set forth in this Complaint were material and likely to deceive a reasonable consumer.

258. Plaintiffs and the other Class members have suffered an injury in fact, including the loss of money or property, as a result of GM's unfair, unlawful, and/or deceptive practices. In purchasing or leasing their Affected Vehicles, Plaintiffs and the other Class members relied on the misrepresentations and/or omissions of GM with respect to the functionality, reliability, environmental-friendliness, and lawfulness of the Affected Vehicles. GM's representations turned out not to be true because the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions and the Affected Vehicles are distributed with GM Clean Diesel engine systems that include defective emissions

controls and a "Defeat Device." Had Plaintiffs and the other Class members known this, they would not have purchased or leased their Affected Vehicles and/or paid as much for them. Accordingly, Plaintiffs and the other Class members overpaid for their Affected Vehicles and did not receive the benefit of their bargain.

259. All of the wrongful conduct alleged herein occurred, and continues to occur, in the conduct of GM's business. GM's wrongful conduct is part of a pattern or generalized course of conduct that is still perpetuated and repeated, both in the State of California and nationwide.

260. The facts concealed and omitted by GM to Plaintiffs and the other California Class members are material in that a reasonable consumer would have considered them to be important in deciding whether to purchase or lease the Affected Vehicles or pay a lower price. Had Plaintiffs and the other California Class members known of the higher emissions at the time they purchased or leased their Affected Vehicles, they would not have purchased or leased those vehicles, or would have paid substantially less for the vehicles than they did.

261. Plaintiffs have provided GM with notice of its violations of the CLRA pursuant to CAL. CIV. CODE § 1782(a). The notice was transmitted to GM on May 23, 2017.

262. Plaintiffs' and the other California Class members' injuries were proximately caused by GM's fraudulent and deceptive business practices.

263. Therefore, Plaintiffs and the other California Class members are entitled to equitable relief and will amend this action and seek monetary relief under the CLRA.

264. Plaintiffs, individually and on behalf of the other Class members, request that this Court enter such orders or judgments as may be necessary to restore to Plaintiffs and the other Class members any money GM acquired by unfair competition, including restitution and/or restitutionary disgorgement and for such other relief as may be appropriate.

COUNT 4

BREACH OF CONTRACT (BASED ON CALIFORNIA LAW)

265. Plaintiffs incorporate by reference all paragraphs as though fully set forth herein.

266. This claim is brought by Plaintiffs on behalf of residents of California who are members of the class.

267. GM's misrepresentations and omissions alleged herein, including GM's failure to disclose the existence of the GM Clean Diesel engine system's defect and/or defective design of the emissions controls, caused Plaintiffs and the other Class members to make their purchases or leases of their Affected Vehicles. Absent those misrepresentations and omissions, Plaintiffs and the other Class members would not have purchased or leased these Affected Vehicles, would not

have purchased or leased these Affected Vehicles at the prices they paid, and/or would have purchased or leased less expensive alternative vehicles that did not contain the defective GM Clean Diesel engine system and which were not marketed as including such a system. Accordingly, Plaintiffs and the other Class members overpaid for their Affected Vehicles and did not receive the benefit of their bargain.

268. Each and every sale or lease of an Affected Vehicle constitutes a contract between GM and the purchaser or lessee. GM breached these contracts by selling or leasing to Plaintiffs and the other Class members defective Affected Vehicles and by misrepresenting or failing to disclose that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions and the existence of the GM Clean Diesel engine system's defect and/or defective design of the emissions controls, including information known to GM, rendering each Affected Vehicle non-EPA-compliant, and thus less valuable than vehicles not equipped with the defective GM Clean Diesel engine system.

269. As a direct and proximate result of GM's breach of contract, Plaintiffs and the Class have been damaged in an amount to be proven at trial, which shall include, but is not limited to, all compensatory damages, incidental and consequential damages, and other damages allowed by law.

COUNT 5

FRAUDULENT CONCEALMENT (BASED ON CALIFORNIA LAW)

270. Plaintiffs incorporate by reference all paragraphs as though fully set forth herein.

271. This claim is brought by Plaintiffs on behalf of residents of California who are members of the class.

272. GM intentionally concealed that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions, that the Affected Vehicles had defective emissions controls, emitted pollutants at a higher level than gasoline powered vehicles, emitted pollutants higher than a reasonable consumer would expect in light of GM's advertising campaign, emitted unlawfully high levels of pollutants such as NOx, and were non-compliant with EPA emission requirements, or GM acted with reckless disregard for the truth and denied Plaintiffs and the other Class members information that is highly relevant to their purchasing decision.

273. GM further affirmatively misrepresented to Plaintiffs in advertising and other forms of communication, including standard and uniform material provided with each car, that the Affected Vehicles it was selling had no significant defects, were Earth-friendly and low emission vehicles, complied with EPA regulations, and would perform and operate properly when driven in normal usage.

274. GM knew these representations were false when made.

275. The Affected Vehicles purchased or leased by Plaintiffs and the other Class members were, in fact, defective, emitting pollutants at a much higher rate than gasoline powered vehicles and at a much higher rate than a reasonable consumer would expect in light of GM's advertising campaign, non-EPA-compliant, and unreliable because the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions.

276. GM had a duty to disclose that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions and that these Affected Vehicles were defective, employed a "Defeat Device," emitted pollutants at a much higher rate than gasoline powered vehicles, that the emissions far exceeded those expected by a reasonable consumer, were non-EPA-compliant and unreliable, because Plaintiffs and the other Class members relied on GM's material representations that the Affected Vehicles they were purchasing were reduced emission vehicles, efficient, and free from defects.

277. As alleged in this Complaint, at all relevant times, GM has held out the Affected Vehicles to be reduced emissions and EPA-compliant. GM disclosed certain details about the GM Clean Diesel engine, but nonetheless, GM intentionally failed to disclose the important facts that the NOx reduction system in the Affected Vehicles turns off or is limited during normal driving conditions and

that the Affected Vehicles had defective emissions controls, deploy a "Defeat Device," emitted higher levels of pollutants than expected by a reasonable consumer, emitted unlawfully high levels of pollutants, and were non-compliant with EPA emissions requirements, making other disclosures about the emission system deceptive.

278. The truth about the defective emissions controls and GM's manipulations of those controls, unlawfully high emissions, the "Defeat Device," and non-compliance with EPA emissions requirements was known only to GM; Plaintiffs and the Class members did not know of these facts and GM actively concealed these facts from Plaintiffs and Class members.

279. Plaintiffs and Class members reasonably relied upon GM's deception. They had no way of knowing that GM's representations were false and/or misleading. As consumers, Plaintiffs and Class members did not, and could not, unravel GM's deception on their own. Rather, GM intended to deceive Plaintiffs and Class members by concealing the true facts about the Affected Vehicle emissions.

280. GM also concealed and suppressed material facts concerning what is evidently the true culture of GM—one characterized by an emphasis on profits and sales above compliance with federal and state clean air laws and emissions regulations that are meant to protect the public and consumers. It also emphasized

profits and sales above the trust that Plaintiffs and Class members placed in its representations. Consumers buy diesel cars from GM because they feel they are clean diesel cars. They do not want to be spewing noxious gases into the environment. And yet, that is precisely what the Affected Vehicles are doing.

281. GM's false representations were material to consumers, because they concerned the quality of the Affected Vehicles, because they concerned compliance with applicable federal and state law and regulations regarding clean air and emissions, and also because the representations played a significant role in the value of the vehicles. As GM well knew, its customers, including Plaintiffs and Class members, highly valued that the vehicles they were purchasing or leasing were fuel efficient, clean diesel cars with reduced emissions, and they paid accordingly.

282. GM had a duty to disclose the emissions defect, defective design of the emissions controls, and violations with respect to the Affected Vehicles because details of the true facts were known and/or accessible only to GM, because GM had exclusive knowledge as to such facts, and because GM knew these facts were not known to or reasonably discoverable by Plaintiffs or Class members. GM also had a duty to disclose because it made general affirmative representations about the qualities of its vehicles with respect to emissions, starting with references to them as *reduced emissions* diesel cars and as compliant with all laws in each

state, which were misleading, deceptive, and incomplete without the disclosure of the additional facts set forth above regarding the actual emissions of its vehicles, its actual philosophy with respect to compliance with federal and state clean air laws and emissions regulations, and its actual practices with respect to the vehicles at issue. Having volunteered to provide information to Plaintiffs and Class members, GM had the duty to disclose not just the partial truth, but the entire truth. These omitted and concealed facts were material because they directly impact the value of the Affected Vehicles purchased or leased by Plaintiffs and Class members. Whether a manufacturer's products pollute, comply with federal and state clean air laws and emissions regulations, and whether that manufacturer tells the truth with respect to such compliance or non-compliance are material concerns to a consumer, including with respect to the emissions certifications testing their vehicles must pass. GM represented to Plaintiffs and Class members that they were purchasing or leasing *reduced emission* diesel vehicles, when in fact, they were purchasing or leasing defective, high emission, and unlawfully high emission vehicles.

283. GM actively concealed and/or suppressed these material facts, in whole or in part, to pad and protect its profits and to avoid the perception that its vehicles were not clean diesel vehicles and did not or could not comply with federal and state laws governing clean air and emissions, which perception would

hurt the brand's image and cost GM money, and it did so at the expense of Plaintiffs and Class members.

284. GM has still not made full and adequate disclosures, and continues to defraud Plaintiffs and Class members by concealing material information regarding the emissions qualities of its referenced vehicles.

285. Plaintiffs and Class members were unaware of the omitted material facts referenced herein, and they would not have acted as they did if they had known of the concealed and/or suppressed facts, in that they would not have purchased purportedly reduced emissions diesel cars manufactured by GM, and/or would not have continued to drive their heavily polluting vehicles, or would have taken other affirmative steps in light of the information concealed from them. Plaintiffs' and Class members' actions were justified. GM was in exclusive control of the material facts, and such facts were not generally known to the public, Plaintiffs, or Class members.

286. Because of the concealment and/or suppression of the facts, Plaintiffs and Class members have sustained damage because they own vehicles that are diminished in value as a result of GM's concealment of the true quality and quantity of those vehicles' emissions and GM's failure to timely disclose the defect or defective design of the GM Clean Diesel engine system, the actual emissions qualities and quantities of GM-branded vehicles, and the serious issues engendered

by GM's corporate policies. Had Plaintiffs and Class members been aware of the true emissions facts with regard to the Affected Vehicles, and the Company's disregard for the truth and compliance with applicable federal and state law and regulations, Plaintiffs and Class members who purchased or leased new or certified previously owned vehicles would have paid less for their vehicles or would not have purchased or leased them at all.

287. The value of Plaintiffs' and Class members' vehicles has diminished as a result of GM's fraudulent concealment of the defective emissions controls of the Affected Vehicles, and of the unlawfully high emissions of the Affected Vehicles, and of the non-compliance with EPA emissions requirements, all of which has greatly tarnished the GM brand name attached to Plaintiffs' and Class members' vehicles and made any reasonable consumer reluctant to purchase any of the Affected Vehicles, let alone pay what otherwise would have been fair market value for the vehicles.

288. Accordingly, GM is liable to Plaintiffs and Class members for damages in an amount to be proven at trial.

289. GM's acts were done wantonly, maliciously, oppressively, deliberately, with intent to defraud, and in reckless disregard of Plaintiffs' and Class members' rights and the representations that GM made to them in order to enrich GM. GM's conduct warrants an assessment of punitive damages in an

amount sufficient to deter such conduct in the future, which amount is to be determined according to proof.

C. Claims Brought on Behalf of the Louisiana Class

COUNT 6

VIOLATION OF THE LOUISIANA UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION LAW (LA. REV. STAT. § 51:1401 *ET SEQ.*)

290. Plaintiffs reallege and incorporate by reference all paragraphs as though fully set forth herein.

291. This claim is brought by Plaintiffs on behalf of residents of Louisiana who are members of the Class

292. GM, Plaintiffs, and the Louisiana Class members are "persons" within the meaning of the LA. REV. STAT. § 51:1402(8).

293. Plaintiffs and Louisiana Class members are "consumers" within the meaning of LA. REV. STAT. § 51:1402(1).

294. GM engaged in "trade" or "commerce" within the meaning of LA. REV. STAT. § 51:1402(9).

295. The Louisiana Unfair Trade Practices and Consumer Protection Law ("Louisiana CPL") makes unlawful "deceptive acts or practices in the conduct of any trade or commerce." LA. REV. STAT. § 51:1405(A). New GM participated in misleading, false, or deceptive acts that violated the Louisiana CPL.

296. New GM also engaged in unlawful trade practices by employing deception, deceptive acts or practices, fraud, misrepresentations, or concealment, suppression or omission of any material fact with intent that others rely upon such concealment, suppression or omission, in connection with the sale of Affected Vehicles.

297. GM's unfair or deceptive acts or practices were likely to and did in fact deceive reasonable consumers.

298. GM intentionally and knowingly misrepresented material facts regarding the Affected Vehicles with intent to mislead Plaintiffs and the Louisiana Class.

299. GM knew or should have known that its conduct violated the Louisiana CPL.

300. GM owed Plaintiffs a duty to disclose the emissions in the Affected Vehicles, because GM:

a. Possessed exclusive knowledge;

b. Intentionally concealed the foregoing from Plaintiffs; and/or

c. Made incomplete representations about the emissions and performance of the Affected Vehicles, while purposefully withholding material facts from Plaintiffs that contradicted these representations.

301. Plaintiffs and the Louisiana Class suffered ascertainable loss caused by GM's misrepresentations and its concealment of and failure to disclose material information.

302. As a direct and proximate result of GM's violations of the Louisiana CPL, Plaintiffs and the Louisiana Class have suffered injury-in-fact and/or actual damage.

303. Pursuant to LA. REV. STAT. § 51:1409, Plaintiffs and the Louisiana Class seek to recover actual damages in an amount to be determined at trial; treble damages for GM's knowing violations of the Louisiana CPL; an order enjoining GM's unfair, unlawful, and/or deceptive practices; declaratory relief; attorneys' fees; and any other just and proper relief available under LA. REV. STAT. § 51:1409.

COUNT 7

FRAUDULENT CONCEALMENT (BASED ON LOUISIANA LAW)

304. Plaintiffs reallege and incorporate by reference all paragraphs as though fully set forth herein.

305. This claim is brought by Plaintiffs on behalf of residents of Louisiana who are members of the Class.

306. GM concealed and suppressed material facts concerning the quality of its vehicles and the emissions system in the Affected Vehicles.

307. Because of the concealment and/or suppression of the facts, Plaintiffs and the Louisiana Class sustained damage because they overpaid for their vehicles and own vehicles that diminished in value as a result of GM's concealment. Had they been aware of the true facts, Plaintiffs and Class members would not have purchase or leased their Affected Vehicles or would have paid less.

D. Claims Brought on Behalf of the Other State Classes

COUNT 8

VIOLATION OF THE ALABAMA DECEPTIVE TRADE PRACTICES ACT (ALA. CODE § 8-19-1 *ET SEQ.*)

308. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

309. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Alabama who are members of the Class.

310. The Alabama Deceptive Trade Practices Act (Alabama DTPA) declares several specific actions to be unlawful, including: "engaging in any other unconscionable, false, misleading, or deceptive act or practice in the conduct of trade or commerce." ALA. CODE § 8-19-5.

311. Plaintiffs and Alabama Class members are "consumers" within the meaning of ALA. CODE. § 8-19-3(2).

312. Plaintiffs, Alabama Class members, and GM are "persons" within the meaning of ALA. CODE § 8-19-3(3).

313. Each defendant was and is engaged in "trade or commerce" within the meaning of ALA. CODE § 8-19-3(8).

314. Pursuant to ALABAMA CODE § 8-19-10, Plaintiffs will amend to seek monetary relief against Defendants measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $100 for each plaintiff.

315. Plaintiffs also will amend to seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, attorneys' fees, and any other just and proper relief available under ALA. CODE. § 8-19-1 *et seq.*

316. On May 23, 2017, Plaintiffs sent a letter complying with ALA. CODE § 8-19-10(e) to Defendants. Should Defendants fail to remedy their unlawful conduct within the requisite period, Plaintiffs will amend to seek all damages and relief to which they are entitled.

COUNT 9

VIOLATION OF THE ALASKA UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION ACT (ALASKA STAT. ANN. § 45.50.471 *ET SEQ.*)

317. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

318. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Alaska who are members of the class.

319. The Alaska Unfair Trade Practices and Consumer Protection Act (Alaska CPA) declared unfair methods of competition and unfair or deceptive acts or practices in the conduct of trade or commerce unlawful, including "using or employing deception, fraud, false pretense, false promise, misrepresentation, or knowingly concealing, suppressing, or omitting a material fact with intent that others rely upon the concealment, suppression or omission in connection with the sale or advertisement of goods or services whether or not a person has in fact been misled, deceived or damaged." ALASKA STAT. ANN. § 45.50.471.

320. Pursuant to ALASKA STAT ANN. § 45.50.531, Plaintiffs will amend their Complaint to seek monetary relief against each Defendant measured as the greater of (a) three times the actual damages in an amount to be determined at trial or (b) $500 for each plaintiff.

321. Plaintiffs also will amend to seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices pursuant to ALASKA STAT. ANN. § 45.50.535(b)(1), attorneys' fees, and any other just and proper relief available under the Alaska CPA.

322. On May 23, 2017, Plaintiffs sent a letter complying with ALASKA STAT. ANN. § 45.50.535(b)(1) to Defendants.

COUNT 10

VIOLATION OF THE ARIZONA CONSUMER FRAUD ACT (ARIZONA REV. STAT. § 44-1521 *ET SEQ.*)

323. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

324. This claim is brought by Plaintiffs on behalf of residents of Arizona who are members of the class.

325. The Arizona Consumer Fraud Act (Arizona CFA) provides that "[t]he act, use or employment by any person of any deception, deceptive act or practice, fraud . . . , misrepresentation, or concealment, suppression or omission of any material fact with intent that others rely upon such concealment, suppression or omission, in connection with the sale . . . of any merchandise whether or not any person has in fact been misled, deceived or damaged thereby, is declared to be an unlawful practice." Ariz. Rev. Stat. § 44-1522(A).

326. Defendants, Plaintiffs, and Class members are "persons" within the meaning of the Arizona CFA, ARIZ. REV. STAT. § 44-1521(6).

327. Each Affected Vehicle at issue is "merchandise" within the meaning of ARIZ. REV. STAT. § 44-1521(5).

328. Defendants' conduct, as set forth above, occurred in the conduct of trade or commerce.

329. Pursuant to the Arizona CFA, Plaintiffs seek monetary relief against each Defendant in an amount to be determined at trial. Plaintiffs also seek punitive damages because each Defendant engaged in aggravated and outrageous conduct with an evil mind.

330. Plaintiffs also seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, attorneys' fees, and any other just and proper relief available under the Arizona CFA.

COUNT 11

VIOLATION OF THE ARKANSAS DECEPTIVE TRADE PRACTICES ACT (ARK. CODE ANN. § 4-88-101 *ET SEQ.*)

331. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

332. This claim is brought by Plaintiffs on behalf of residents of Arkansas who are members of the class.

333. The Arkansas Deceptive Trade Practices Act (Arkansas DTPA) prohibits "[d]eceptive and unconscionable trade practices," which include but are not limited to "[e]ngaging in any . . . unconscionable false, or deceptive act or practice in business, commerce, or trade." ARK. CODE. ANN. § 4-88-107(a)(10).

The Arkansas DTPA also prohibits, in connection with the sale or advertisement of any goods, "(1) the act, use, or employment by any person of any deception, fraud, or pretense; or (2) the concealment, suppression, or omission of any material fact with intent that other rely upon the concealment, suppression, or omission." ARK CODE. ANN. § 4-88-108.

334. Defendants, Plaintiffs, and Class members are "persons" within the meaning of ARK. CODE. ANN. § 4-88-102(5).

335. Each Affected Vehicle at issue constitutes "goods" within the meaning of ARK. CODE ANN. § 4-88-102(4).

336. Plaintiffs seek monetary relief against Defendants in an amount to be determined at trial. Plaintiffs also seek punitive damages because Defendants acted wantonly in causing Plaintiffs' and Class members' injuries, or with such a conscious indifference to the consequences that malice may be inferred.

337. Plaintiffs also seek an order enjoining Defendants' unfair, unlawful, and/or deceptive practices, attorneys' fees, and any other just and proper relief available under the Arkansas DTPA.

COUNT 12

VIOLATION OF THE COLORADO CONSUMER PROTECTION ACT (COLO. REV. STAT. § 6-1-101 *ET SEQ.*)

338. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

339. This claim is brought by Plaintiffs on behalf of residents of Colorado who are members of the class.

340. The Colorado Consumer Protection Act (Colorado CPA) prohibits deceptive practices in the course of a person's business, including but not limited to "fail[ing] to disclose material information concerning goods, services, or property which information was known at the time of an advertisement or sale if such failure to disclose such information was intended to induce the consumer to enter into a transaction." COLO. REV. STAT. § 6-1-105.

341. Each Defendant is a "person" under COLO. REV. STAT. § 6-1-102(6).

342. Plaintiffs and Colorado Class members are "consumers" for purposes of COL. REV. STAT § 6-1-113(1)(a).

343. Each Defendant's conduct, as set forth above, occurred in the conduct of trade or commerce.

344. Pursuant to COLO. REV. STAT. § 6-1-113, Plaintiffs seek monetary relief against each Defendant measured as the greater of (a) actual damages in an

amount to be determined at trial and discretionary trebling of such damages, or (b) statutory damages in the amount of $500 for each plaintiff or class member.

345. Plaintiffs also seek an order enjoining each Defendant's unfair, unlawful, or deceptive practices, declaratory relief, attorneys' fees, and any other just and proper remedy under the Colorado CPA.

COUNT 13

VIOLATION OF THE CONNECTICUT UNFAIR TRADE PRACTICES ACT (CONN. GEN. STAT. § 42-110A *ET SEQ.*)

346. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

347. This claim is brought by Plaintiffs on behalf of residents of Connecticut who are members of the class.

348. The Connecticut Unfair Trade Practices Act (Connecticut UTPA) provides: "No person shall engage in unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce." CONN. GEN. STAT. § 42-110b(a).

349. Plaintiffs, Connecticut Class members, and Defendants are each a "person" within the meaning of CONN. GEN. STAT. § 42-110a(3).

350. Defendants' challenged conduct occurred in "trade" or "commerce" within the meaning of CONN. GEN. STAT. § 42-110a(4).

351. Plaintiffs and Connecticut Class members are entitled to recover their actual damages, punitive damages, and attorneys' fees pursuant to CONN. GEN. STAT. § 42-110g.

352. Defendants acted with reckless indifference to another's rights, or wanton or intentional violation of another's rights, and otherwise engaged in conduct amounting to a particularly aggravated, deliberate disregard for the rights of others. Therefore, punitive damages are warranted.

COUNT 14

VIOLATION OF THE DELAWARE CONSUMER FRAUD ACT (DEL. CODE TIT. 6, § 2513 *ET SEQ.*)

353. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

354. This claim is brought by Plaintiffs on behalf of residents of Delaware who are members of the class.

355. The Delaware Consumer Fraud Act (Delaware CFA) prohibits the "act, use, or employment by any person of any deception, fraud, false pretense, false promise, misrepresentation, or the concealment, suppression, or omission of any material fact with intent that others rely upon such concealment, suppression, or omission, in connection with the sale, lease or advertisement of any merchandise, whether or nor any person has in fact been misled, deceived, or damaged thereby." DEL. CODE TIT. 6, § 2513(a).

356. Each Defendant is a "person" within the meaning of DEL. CODE TIT. 6, § 2511(7).

357. Defendants' actions, as set forth above, occurred in the conduct of trade or commerce.

358. Plaintiffs seek damages under the Delaware CFA for injury resulting from the direct and natural consequences of each Defendant's unlawful conduct. *See, e.g.*, *Stephenson v. Capano Dev., Inc.*, 462 A.2d 1069, 1077 (Del. 1980). Plaintiffs also seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, declaratory relief, attorneys' fees, and any other just and proper relief available under the Delaware CFA.

359. Defendants engaged in gross, oppressive, or aggravated conduct justifying the imposition of punitive damages.

COUNT 15

VIOLATION OF THE GEORGIA FAIR BUSINESS PRACTICES ACT
(GA. CODE ANN. § 10-1-390 *ET SEQ.*)

360. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

361. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Georgia who are members of the class.

362. The Georgia Fair Business Practices Act (Georgia FBPA) declares "[u]nfair or deceptive acts or practices in the conduct of consumer transactions and consumer acts or practices in trade or commerce" to be unlawful, GA. CODE. ANN. § 101-393(b), including but not limited to "representing that goods or services have sponsorship, approval, characteristics, ingredients, uses, benefits, or quantities that they do not have"; "[r]epresenting that goods or services are of a particular standard, quality, or grade . . . if they are of another"; and "[a]dvertising goods or services with intent not to sell them as advertised." GA. CODE. ANN. § 10-1-393(b).

363. Plaintiffs and Georgia Class members are "consumers" within the meaning of GA. CODE. ANN. § 10-1-393(b).

364. Each Defendant engaged in "trade or commerce" within the meaning of GA. CODE. ANN. § 10-1-393(b).

365. Once the statutory notice period has expired, Plaintiffs will amend to seek damages and exemplary damages (for intentional violations) per GA. CODE. ANN. § 10-1-399(a).

366. Plaintiffs will also amend to seek an order enjoining Defendants' unfair, unlawful, and/or deceptive practices, attorneys' fees, and any other just and proper relief available under the Georgia FBPA per GA. CODE. ANN. § 10-1-399.

367. On May 23, 2017, Plaintiffs sent a letter complying with GA. CODE ANN. § 10-1-399(b) to Defendants.

COUNT 16

VIOLATION OF THE GEORGIA UNIFORM DECEPTIVE TRADE PRACTICES ACT (GA. CODE. ANN § 10-1-370 *ET SEQ.*)

368. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

369. This claim is brought by Plaintiffs on behalf of residents of Georgia who are members of the class.

370. Georgia's Uniform Deceptive Trade Practices Act (Georgia UDTPA) prohibits "deceptive trade practices," which include "representing that goods or services have sponsorship, approval, characteristics, ingredients, uses, benefits, or quantities that they do not have"; "[r]epresenting that goods or services are of a particular standard, quality, or grade . . . if they are of another"; and "[a]dvertising goods or services with intent not to sell them as advertised." GA. CODE ANN. § 10-1-393(b).

371. Defendant, Plaintiffs, and Georgia Class members are "persons" within the meaning of GA. CODE ANN. § 10-1-371(5).

372. The Plaintiffs seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, attorneys' fees, and any other just and proper relief available under GA. CODE ANN. § 10-1-373.

COUNT 17

VIOLATION OF THE HAWAII ACT § 480-2(A) (HAW. REV. STAT. § 480 *ET SEQ.*)

373. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

374. This claim is brought by Plaintiffs on behalf of residents of Hawaii who are members of the class.

375. HAWAII ACT § 480-2(a) prohibits "unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce."

376. Each Defendant is a "person" under HAW. REV. STAT. § 480-1.

377. Plaintiffs and Hawaii Class members are "consumer[s]" as defined by HAW. REV. STAT. § 480-1, who purchased or leased the Affected Vehicles at issue.

378. Pursuant to HAW. REV. STAT. § 480-13, Plaintiffs seek monetary relief against each Defendant measured as the greater of (a) $1,000 and (b) threefold actual damages in an amount to be determined at trial.

379. Under HAW. REV. STAT. § 480-13.5, Plaintiffs seek an additional award against each Defendant of up to $10,000 for each violation directed at a Hawaii elder. Each Defendant knew or should have known that its conduct was directed to one or more Plaintiffs who are elders. Defendants' conduct caused one or more of these elders to suffer a substantial loss of property set aside for retirement or for personal or family care and maintenance, or assets essential to the

health or welfare of the elder. Plaintiffs who are elders are substantially more vulnerable to Defendants' conduct because of age, poor health or infirmity, impaired understanding, restricted mobility, or disability, and each of them suffered a substantial physical, emotional, or economic damage resulting from each Defendant's conduct.

COUNT 18

VIOLATION OF THE IDAHO CONSUMER PROTECTION ACT (IDAHO CODE ANN. § 48-601 *ET SEQ.*)

380. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

381. This claim is brought by Plaintiffs on behalf of residents of Idaho who are members of the class.

382. The Idaho Consumer Protection Act (Idaho CPA) prohibits deceptive business practices, including but not limited to (1) representing that the Affected Vehicles have characteristics, uses, and benefits which they do not have; (2) representing that the Affected Vehicles are of a particular standard, quality, and grade when they are not; (3) advertising the Affected Vehicles with the intent not to sell them as advertised; (4) engaging in acts or practices which are otherwise misleading, false, or deceptive to the consumer; and (5) engaging in any unconscionable method, act or practice in the conduct of trade or commerce. *See* IDAHO CIV. CODE § 48-603.

383. Each Defendant is a "person" under IDAHO CODE ANN. § 48-602(1).

384. Defendants' acts or practices as set forth above occurred in the conduct of "trade" or "commerce" under IDAHO CODE ANN. § 48-602(2).

385. Pursuant to IDAHO CODE § 48-608, Plaintiffs seek monetary relief against each Defendant measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $1,000 for each plaintiff.

386. Plaintiffs also seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, attorneys' fees, and any other just and proper relief available under the Idaho CPA.

387. Plaintiffs also seek punitive damages against Defendants because each Defendant's conduct evidences an extreme deviation from reasonable standards. Defendants' unlawful conduct constitutes malice, oppression, and fraud warranting punitive damages.

COUNT 19

VIOLATION OF THE INDIANA DECEPTIVE CONSUMER SALES ACT (IND. CODE § 24-5-0.5-3)

388. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

389. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Indiana who are members of the class.

390. Indiana's Deceptive Consumer Sales Act (Indiana DCSA) prohibits a person from engaging in a "deceptive business practice[s]" or acts, including but not limited to "(1) That such subject of a consumer transaction has sponsorship, approval, performance, characteristics, accessories, uses, or benefits that they do not have, or that a person has a sponsorship, approval, status, affiliation, or connection it does not have; (2) That such subject of a consumer transaction is of a particular standard, quality, grade, style or model, if it is not and if the supplier knows or should reasonably know that it is not; . . . (7) That the supplier has a sponsorship, approval or affiliation in such consumer transaction that the supplier does not have, and which the supplier knows or should reasonably know that the supplier does not have; . . . (b) Any representations on or within a product or its packaging or in advertising or promotional materials which would constitute a deceptive act shall be the deceptive act both of the supplier who places such a representation thereon or therein, or who authored such materials, and such suppliers who shall state orally or in writing that such representation is true if such other supplier shall know or have reason to know that such representation was false."

391. Each Defendant is a "person" within the meaning of IND. CODE § 25-5-0.5-2(a)(2) and a "supplier" within the meaning of IND. CODE § 24-5-0.5-2(a)(3).

392. Plaintiffs' vehicle purchases are "consumer transactions" within the meaning of IND. CODE § 24-5-0.5-2(a)(3).

393. Pursuant to IND. CODE § 24-5-0.5-4, once the statutory notice period has expired, Plaintiffs will seek monetary relief against each Defendant measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $500 for each plaintiff, including treble damages up to $1,000 for Defendants' willfully deceptive acts.

394. Plaintiffs will also amend to seek punitive damages based on the outrageousness and recklessness of each Defendant's conduct.

395. On May 23, 2017, Plaintiffs sent a letter complying with IND. CODE § 24-5-0.5-5(a) to Defendants.

COUNT 20

VIOLATION OF THE IOWA PRIVATE RIGHT OF ACTION FOR CONSUMER FRAUDS ACT (IOWA CODE § 714H.1 *ET SEQ.*)

396. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

397. This claim is brought by Plaintiffs on behalf of residents of Iowa who are members of the class.

398. The Iowa Private Right of Action for Consumer Frauds Act (Iowa CFA) prohibits any "practice or act the person knows or reasonably should know is an unfair practice, deception, fraud, false pretense, or false promise, or the misrepresentation, concealment, suppression, or omission of a material fact, with the intent that others rely upon the unfair practice, deception, fraud, false pretense, false promise, misrepresentation, concealment, suppression or omission in connection with the advertisement, sale, or lease of consumer merchandise." IOWA CODE § 714H.3.

399. Each Defendant is a "person" under IOWA CODE § 714H.2(7).

400. Plaintiffs and Iowa Class members are "consumers" as defined by IOWA CODE § 714H.2(3) who purchased or leased one or more Affected Vehicles.

401. Pursuant to IOWA CODE § 714H.5, Plaintiffs seek an order enjoining each Defendant's unfair and/or deceptive acts or practices, actual damages, statutory damages up to three times the amount of actual damages awarded as a result of each Defendant's willful and wanton disregard for the rights of others, attorneys' fees, and other such equitable relief as the court deems necessary to protect the public from further violations of the Iowa CFA.

COUNT 21

VIOLATION OF THE KANSAS CONSUMER PROTECTION ACT (KAN. STAT. ANN. § 50-623 *ET SEQ.*)

402. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

403. This claim is brought by Plaintiffs on behalf of residents of Kansas who are members of the class.

404. The Kansas Consumer Protection Act (Kansas CPA) states "[n]o supplier shall engage in any deceptive act or practice in connection with a consumer transaction." KAN. STAT. ANN. § 50-626(a). Deceptive acts or practices include but are not limited to "the willful use, in any oral or written representation, of exaggeration, falsehood, innuendo or ambiguity as to a material fact" and "the willful failure to state a material fact, or the willful concealment, suppression or omission of a material fact." KAN. STAT. ANN. § 50-626.

405. Plaintiffs and Kansas Class members are "consumers" within the meaning of KAN. STAT. ANN. § 50-624(b) who purchased or leased one or more Affected Vehicles.

406. Each sale or lease of an Affected Vehicle to Plaintiffs was a "consumer transaction" within the meaning of KAN. STAT. ANN. § 50-624(c).

407. Pursuant to KAN. STAT. ANN. § 50-634, Plaintiffs seek monetary relief against each Defendant measured as the greater of (a) actual damages in an amount

to be determined at trial and (b) statutory damages in the amount of $10,000 for each plaintiff.

408. Plaintiffs also seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, declaratory relief, attorneys' fees, and any other just and proper relief available under KAN. STAT. ANN. § 50-623 *et seq.*

COUNT 22

VIOLATION OF THE KENTUCKY CONSUMER PROTECTION ACT (KY. REV. STAT. ANN. § 367.110 *ET SEQ.*)

409. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

410. This claim is brought by Plaintiffs on behalf of residents of Kentucky who are members of the class.

411. The Kentucky Consumer Protection Act (Kentucky CPA) makes unlawful "[u]nfair, false, misleading, or deceptive acts or practices in the conduct of any trade or commerce . . . ." KY. REV. STAT. ANN. § 367.170(1).

412. Defendant, Plaintiffs, and Kentucky Class members are "persons" within the meaning of KY. REV. STAT. ANN. § 367.110(1).

413. Each Defendant engaged in "trade" or "commerce" within the meaning of KY. REV. STAT. ANN. § 367.110(2).

414. Pursuant to KY. REV. STAT. ANN. § 367.220, Plaintiffs seek to recover actual damages in an amount to be determined at trial, an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, declaratory relief, attorneys' fees, and any other just and proper relief available under KY. REV. STAT. ANN. § 367.220.

COUNT 23

VIOLATION OF THE MAINE UNFAIR TRADE PRACTICES ACT (ME. REV. STAT. ANN. TIT. 5, § 205-A *ET SEQ.*)

415. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

416. This claim is brought by Plaintiffs on behalf of residents of Maine who are members of the class.

417. The Maine Unfair Trade Practices Act (Maine UTPA) makes unlawful "[u]nfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce." ME. REV. STAT. ANN. TIT. 5, § 207.

418. Defendant, Plaintiffs, and Maine Class members are "persons" within the meaning of ME. REV. STAT. ANN. TIT. § 5, 206(2).

419. Defendants are engaged in "trade" or "commerce" within the meaning of ME. REV. STAT. ANN. TIT. § 5, 206(3).

420. Pursuant to ME. REV. STAT. ANN. TIT. 5, § 213, Plaintiffs seek an order enjoining each Defendant's unfair and/or deceptive acts or practices.

421. On May 23, 2017, Plaintiffs sent a letter complying with ME. REV. STAT. ANN. TIT. 5, § 213(1-A) to Defendants. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Maryland who are members of the class.

COUNT 24

VIOLATION OF THE MARYLAND CONSUMER PROTECTION ACT
(MD. CODE, COM. LAW § 13-101 *ET SEQ.*)

422. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

423. This claim is brought by Plaintiffs on behalf of residents of Maryland who are members of the class.

424. The Maryland Consumer Protection Act (Maryland CPA) provides that a person may not engage in any unfair or deceptive trade practice in the sale or lease of any consumer good, including "failure to state a material fact if the failure deceives or tends to deceive" and "[d]eception, fraud, false pretense, false premise, misrepresentation, or knowing concealment, suppression, or omission of any material fact with the intent that a consumer rely on the same," MD. CODE, COM. LAW § 13-301, regardless of whether the consumer is actually deceived or damaged, MD. CODE, COM. LAW § 13-302.

425. Defendants, Plaintiffs, and Maryland Class members are "persons" within the meaning of MD. CODE, COM. LAW § 13-101(h).

426. Pursuant to MD. CODE, COM. LAW § 13-408, Plaintiffs seek actual damages, attorneys' fees, and any other just and proper relief available under the Maryland CPA.

COUNT 25

VIOLATION OF THE MASSACHUSETTS GENERAL LAW CHAPTER 93(A)
(MASS. GEN. LAWS CH. 93A, § 1 *ET SEQ.*)

427. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

428. On May 23, 2017, Plaintiffs sent a letter complying with MASS. GEN. LAWS CH. 93A, § 9(3) to Defendants.

COUNT 26

VIOLATION OF THE MICHIGAN CONSUMER PROTECTION ACT
(MICH. COMP. LAWS § 445.903 *ET SEQ.*)

429. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

430. This claim is brought by Plaintiffs on behalf of residents of Michigan who are members of the class.

431. The Michigan Consumer Protection Act (Michigan CPA) prohibits "[u]nfair, unconscionable, or deceptive methods, acts, or practices in the conduct of trade or commerce," including "[f]ailing to reveal a material fact, the omission of which tends to mislead or deceive the consumer, and which fact could not reasonably be known by the consumer"; "[m]aking a representation of fact or statement of fact material to the transaction such that a person reasonably believes the represented or suggested state of affairs to be other than it actually is"; or "[f]ailing to reveal facts that are material to the transaction in light of representations of fact made in a positive manner." MICH. COMP. LAWS § 445.903(1).

432. Plaintiffs and Michigan Class members are "person[s]" within the meaning of the MICH. COMP. LAWS § 445.902(1)(d).

433. Each Defendant is a "person" engaged in "trade or commerce" within the meaning of the MICH. COMP. LAWS § 445.902(1)(d) and (g).

434. Plaintiffs seek injunctive relief to enjoin Defendants from continuing their unfair and deceptive acts; monetary relief against each Defendant measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $250 for each plaintiff; reasonable attorneys' fees; and any other just and proper relief available under MICH. COMP. LAWS § 445.911.

435. Plaintiffs also seek punitive damages because each Defendant carried out despicable conduct with willful and conscious disregard of the rights of others. Defendants' conduct constitutes malice, oppression, and fraud warranting punitive damages.

COUNT 27

VIOLATION OF THE MINNESOTA PREVENTION OF CONSUMER FRAUD ACT (MINN. STAT. § 325F.68 *ET SEQ.*)

436. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

437. This claim is brought by Plaintiffs on behalf of residents of Minnesota who are members of the class.

438. The Minnesota Prevention of Consumer Fraud Act (Minnesota CFA) prohibits "[t]he act, use, or employment by any person of any fraud, false pretense, false promise, misrepresentation, misleading statement or deceptive practice, with the intent that others rely thereon in connection with the sale of any merchandise, whether or not any person has in fact been misled, deceived, or damaged thereby." MINN. STAT. § 325F.69(1).

439. Each purchase or lease of an Affected Vehicle constitutes "merchandise" within the meaning of MINN. STAT. § 325F.68(2).

440. Pursuant to MINN. STAT. § 8.31(3a), Plaintiffs seek actual damages, attorneys' fees, and any other just and proper relief available under the Minnesota CFA.

441. Plaintiffs also seek punitive damages under MINN. STAT. § 549.20(1)(a) given the clear and convincing evidence that each Defendant's acts show deliberate disregard for the rights of others.

COUNT 28

VIOLATION OF THE MINNESOTA DECEPTIVE TRADE PRACTICES ACT (MINN. STAT. § 325D.43-48 *et seq.*)

442. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

443. This claim is brought by Plaintiffs on behalf of residents of Minnesota who are members of the class.

444. The Minnesota Deceptive Trade Practices Act (Minnesota DTPA) prohibits deceptive trade practices, which include "[t]he act, use, or employment by any person of any fraud, false pretense, false promise, misrepresentation, misleading statement or deceptive practice, with the intent that others rely thereon in connection with the sale of any merchandise, whether or not any person has in fact been misled, deceived, or damaged thereby." MINN. STAT. § 325F.69(1).

445. Pursuant to MINN. STAT. § 8.31(3a), Plaintiffs seek actual damages, attorneys' fees, and any other just and proper relief available under the Minnesota CFA.

446. Plaintiffs also seek punitive damages under MINN. STAT. § 549.20(1)(a) given the clear and convincing evidence that Defendants' acts show deliberate disregard for the rights of others.

COUNT 29

VIOLATION OF THE MISSISSIPPI CONSUMER PROTECTION ACT
(MISS. CODE. ANN. § 75-24-1 *et seq.*)

447. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

448. This claim is brought by Plaintiffs on behalf of residents of Mississippi who are members of the class.

449. The Mississippi Consumer Protection Act (Mississippi CPA) prohibits "unfair or deceptive trade practices in or affecting commerce." MISS. CODE ANN. § 75-24-5(1). Unfair or deceptive practices include but are not limited to "(e) Representing that goods or services have sponsorship, approval, characteristics, ingredients, uses, benefits, or quantities that they do not have or that a person has a sponsorship, approval, status, affiliation, or connection that he does not have"; "(g) Representing that goods or services are of a particular

standard, quality, or grade, or that goods are of a particular style or model, if they are of another"; and "(i) Advertising goods or services with intent not to sell them as advertised." MISS. CODE ANN. § 75-24-5(2).

450. Plaintiffs seek actual damages in an amount to be determined at trial any other just and proper relief available under the Mississippi CPA.

COUNT 30

VIOLATION OF THE MONTANA UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION ACT OF 1973 (MONT. CODE ANN. § 30-14-101 *ET SEQ.*)

451. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

452. This claim is brought by Plaintiffs on behalf of residents of Montana who are members of the class.

453. The Montana Unfair Trade Practices and Consumer Protection Act (Montana CPA) makes unlawful any "unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce." MONT. CODE ANN. § 30-14-103.

454. Defendant, Plaintiffs, and Montana Class members are "persons" within the meaning of MONT. CODE ANN. § 30-14-102(6).

455. Plaintiffs and Montana Class members are "consumer[s]" under MONT. CODE ANN. § 30-14-102(1).

456. The sale or lease of each Affected Vehicle at issue occurred within "trade and commerce" within the meaning of MONT. CODE ANN. § 30-14-102(8), and each Defendant committed deceptive and unfair acts in the conduct of "trade and commerce" as defined in that statutory section.

457. Because Defendants' unlawful methods, acts, and practices have caused Plaintiffs to suffer an ascertainable loss of money and property, Plaintiffs seek from each Defendant: the greater of actual damages or $500; discretionary treble damages; and reasonable attorneys' fees.

458. Plaintiffs additionally seek an order enjoining each Defendant's unfair, unlawful, and/or deceptive practices, and any other relief the Court considers necessary or proper, under MONT. CODE ANN. § 30-14-133.

COUNT 31

VIOLATION OF THE NEBRASKA CONSUMER PROTECTION ACT
(NEB. REV. STAT. § 59-1601 *ET SEQ.*)

459. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

460. This claim is brought by Plaintiffs on behalf of residents of Nebraska who are members of the class.

461. The Nebraska Consumer Protection Act (Nebraska CPA) prohibits "unfair or deceptive acts or practices in the conduct of any trade or commerce." NEB. REV. STAT. § 59-1602.

462. Defendant, Plaintiffs, and Nebraska Class members are "person[s]" under NEB. REV. STAT. § 59-1601(1).

463. Defendants' actions as set forth herein occurred in the conduct of trade or commerce as defined under NEB. REV. STAT. § 59-1601(2).

464. Because Defendants' conduct caused injury to Plaintiffs' property through violations of the Nebraska CPA, Plaintiffs seek recovery of actual damages as well as enhanced damages up to $1,000, an order enjoining each Defendant's unfair or deceptive acts and practices, costs of Court, reasonable attorneys' fees, and any other just and proper relief available under NEB. REV. STAT. § 59-1609.

COUNT 32

VIOLATION OF THE NEVADA DECEPTIVE TRADE PRACTICES ACT (NEV. REV. STAT. § 598.0903 *ET SEQ.*)

465. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

466. This claim is brought by Plaintiffs on behalf of residents of Nevada who are members of the class.

467. The Nevada Deceptive Trade Practices Act (Nevada DTPA) prohibits deceptive trade practices. NEV. REV. STAT. § 598.0915 provides that a person engages in a "deceptive trade practice" if, in the course of business or occupation, the person "[k]nowingly makes a false representation as to the characteristics, ingredients, uses, benefits, alterations or quantities of goods or services for sale or lease or a false representation as to the sponsorship, approval, status, affiliation or connection of a person therewith"; "[r]epresents that goods or services for sale or lease are of a particular standard, quality or grade, or that such goods are of a particular style or model, if he or she knows or should know that they are of another standard, quality, grade, style or model"; "[a]dvertises goods or services with intent not to sell or lease them as advertised"; or "[k]nowingly makes any other false representation in a transaction." NEV. REV. STAT. §§ 598.0915–598.0925.

468. Accordingly, Plaintiffs seek their actual damages, punitive damages, an order enjoining Defendants' deceptive acts or practices, costs of Court, attorney's fees, and all other appropriate and available remedies under the Nevada DTPA. NEV. REV. STAT. § 41.600.

COUNT 33

VIOLATION OF THE NEW HAMPSHIRE CONSUMER PROTECTION ACT (N.H. REV. STAT. ANN. § 358-A:1 *ET SEQ.*)

469. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

470. This claim is brought by Plaintiffs on behalf of residents of New Hampshire who are members of the class.

471. The New Hampshire Consumer Protection Act (New Hampshire CPA) prohibits a person, in the conduct of any trade or commerce, from "using any unfair or deceptive act or practice," including "but . . . not limited to, the following: . . . [r]epresenting that goods or services have . . . characteristics, . . . uses, benefits, or quantities that they do not have"; "[r]epresenting that goods or services are of a particular standard, quality, or grade, . . . if they are of another"; and "[a]dvertising goods or services with intent not to sell them as advertised." N.H. REV. STAT. § 358-A:2.

472. Defendant, Plaintiffs, and New Hampshire Class members are "persons" under N.H. REV. STAT. ANN. § 358-A:1.

473. Defendants' actions as set forth herein occurred in the conduct of trade or commerce as defined under N.H. REV. STAT. ANN. § 358-A:1.

474. Because Defendants' willful conduct caused injury to Plaintiffs' property through violations of the New Hampshire CPA, Plaintiffs seek recovery of actual damages or $1,000, whichever is greater; treble damages; costs and reasonable attorneys' fees; an order enjoining each Defendant's unfair and/or deceptive acts and practices; and any other just and proper relief under N.H. REV. STAT. ANN. § 358-A:10.

COUNT 34

VIOLATION OF THE NEW JERSEY CONSUMER FRAUD ACT (N.J. STAT. ANN. § 56:8-1 *et seq.*)

475. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

476. This claim is brought by Plaintiffs on behalf of residents of New Jersey who are members of the class.

477. The New Jersey Consumer Fraud Act (New Jersey CFA) makes unlawful "[t]he act, use or employment by any person of any unconscionable commercial practice, deception, fraud, false pretense, false promise, misrepresentation, or the knowing concealment, suppression or omission of any material fact with the intent that others rely upon such concealment, suppression or omission, in connection with the sale or advertisement of any merchandise or real estate, or with the subsequent performance of such person as aforesaid, whether or

not any person has in fact been misled, deceived or damaged thereby." N.J. STAT. ANN. § 56:8-2.

478. Defendant, Plaintiffs, and New Jersey Class members are "persons" within the meaning of N.J. STAT. ANN. § 56:8-1(d).

479. Defendants engaged in "sales" of "merchandise" within the meaning of N.J. STAT. ANN. § 56:8-1(c), (d).

480. Plaintiffs are entitled to recover legal and/or equitable relief, including an order enjoining Defendants' unlawful conduct, treble damages, costs, and reasonable attorneys' fees pursuant to N.J. STAT. ANN. § 56:8-19, and any other just and appropriate relief.

COUNT 35

VIOLATION OF THE NEW MEXICO UNFAIR TRADE PRACTICES ACT (N.M. STAT. ANN. § 57-12-1 *ET SEQ.*)

481. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

482. This claim is brought by Plaintiffs on behalf of residents of New Mexico who are members of the class.

483. The New Mexico Unfair Trade Practices Act (New Mexico UTPA) makes unlawful "a false or misleading oral or written statement, visual description or other representation of any kind knowingly made in connection with the sale,

lease, rental or loan of goods or services . . . by a person in the regular course of the person's trade or commerce, that may, tends to or does deceive or mislead any person," including but not limited to "failing to state a material fact if doing so deceives or tends to deceive." N.M. STAT. ANN. § 57-12-2(D).

484. Defendant, Plaintiffs, and New Mexico Class members are "person[s]" under N.M. STAT. ANN. § 57-12-2.

485. Defendants' actions as set forth herein occurred in the conduct of trade or commerce as defined under N.M. STAT. ANN. § 57-12-2.

486. Because Defendants' unconscionable, willful conduct caused actual harm to Plaintiffs, Plaintiffs seek recovery of actual damages or $100, whichever is greater; discretionary treble damages; punitive damages; and reasonable attorneys' fees and costs, as well as all other proper and just relief available under N.M. STAT. ANN. § 57-12-10.

COUNT 36

VIOLATION OF THE NEW YORK GENERAL BUSINESS LAW (N.Y. GEN. BUS. LAW §§ 349–350)

487. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

488. This claim is brought by Plaintiffs on behalf of residents of New York who are members of the class.

489. The New York General Business Law (New York GBL) makes unlawful "[d]eceptive acts or practices in the conduct of any business, trade or commerce." N.Y. GEN. BUS. LAW § 349.

490. Plaintiffs and New York Class members are "persons" within the meaning of N.Y. GEN. BUS. LAW § 349(h).

491. Each Defendant is a "person," "firm," "corporation," or "association" within the meaning of N.Y. GEN. BUS. LAW § 349.

492. Defendants' deceptive acts and practices, which were intended to mislead consumers who purchased or leased an Affected Vehicle, was conduct directed at consumers.

493. Because Defendants' willful and knowing conduct caused injury to Plaintiffs, Plaintiffs seek recovery of actual damages or $50, whichever is greater; discretionary treble damages up to $1,000; punitive damages; reasonable attorneys' fees and costs; an order enjoining Defendants' deceptive conduct; and any other just and proper relief available under N.Y. GEN. BUS. LAW § 349.

COUNT 37

VIOLATION OF THE NORTH CAROLINA UNFAIR AND DECEPTIVE ACTS AND PRACTICES ACT (N.C. GEN. STAT. § 75-1.1 *ET SEQ.*)

494. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

495. This claim is brought by Plaintiffs on behalf of residents of North Carolina who are members of the class.

496. North Carolina's Unfair and Deceptive Acts and Practices Act (the North Carolina Act) broadly prohibits "unfair or deceptive acts or practices in or affecting commerce." N.C. GEN. STAT. § 75-1.1(a).

497. Defendants engaged in "commerce" within the meaning of N.C. GEN. STAT. § 75-1.1(b).

498. Plaintiffs seek an order for treble their actual damages, an order enjoining Defendants' unlawful acts, costs of Court, attorney's fees, and any other just and proper relief available under the North Carolina Act, N.C. GEN. STAT. § 75-16.

COUNT 38

VIOLATION OF THE NORTH DAKOTA CONSUMER FRAUD ACT (N.D. CENT. CODE § 51-15-02)

499. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

500. This claim is brought by Plaintiffs on behalf of residents of North Dakota who are members of the class.

501. The North Dakota Consumer Fraud Act (North Dakota CFA) makes unlawful "[t]he act, use, or employment by any person of any deceptive act or practice, fraud, false pretense, false promise, or misrepresentation, with the intent

that others rely thereon in connection with the sale or advertisement of any merchandise." N.D. CENT. CODE § 51-15-02.

502. Defendant, Plaintiffs, and North Dakota Class members are "persons" within the meaning of N.D. CENT. CODE § 51-15-02(4).

503. Defendants' engaged in the "sale" of "merchandise" within the meaning of N.D. CENT. CODE § 51-15-02(3), (5).

504. Defendants knowingly committed the conduct described above and therefore, under N.D. CENT. CODE § 51-15-09, Defendants are liable to Plaintiffs for treble damages in amounts to be proven at trial, as well as attorneys' fees, costs, and disbursements. Plaintiffs further seek an order enjoining each Defendant's unfair and/or deceptive acts or practices, and other just and proper available relief under the North Dakota CFA.

COUNT 39

VIOLATION OF THE OHIO CONSUMER SALES PRACTICES ACT (OHIO REV. CODE ANN. § 1345.01 *et seq.*)

505. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

506. This claim is brought by Plaintiffs on behalf of residents of Ohio who are members of the class.

507. Ohio Consumer Sales Practices Act (Ohio CSPA), OHIO REV. CODE ANN. § 1345.02, broadly prohibits unfair or deceptive acts or practices in

connection with a consumer transaction. Specifically, and without limitation of the broad prohibition, the Act prohibits (1) representing that Affected Vehicles have characteristics, uses, benefits, and qualities which they do not have, (2) representing that Affected Vehicles are of a particular standard, quality, and grade when they are not, (3) advertising Affected Vehicles with the intent not to sell them as advertised, and (4) engaging in acts or practices which are otherwise unfair, misleading, false, or deceptive to the consumer. OHIO REV. CODE ANN. § 1345.02.

508. The Ohio Attorney General has made available for public inspection prior state court decisions which have held that the acts and omissions of GM in this Complaint, including but not limited to the failure to honor both implied warranties and express warranties, the making and distribution of false, deceptive, and/or misleading representations, and the concealment and/or non-disclosure of a dangerous defect, constitute deceptive sales practices in violation of the OCSPA. These cases include, but are not limited to, the following:

a. *Mason v. Mercedes Benz USA, LLC* (OPIF #10002382);

b. *State ex rel. Betty D. Montgomery v. Volkswagen Motor Co.* (OPIF #10002123);

c. *State ex rel. Betty D. Montgomery v. Bridgestone/Firestone, Inc.* (OPIF #10002025);

d. *Bellinger v. Hewlett-Packard Co.*, No. 20744, 2002 Ohio App. LEXIS 1573 (Ohio Ct. App. Apr. 10, 2002) (OPIF #10002077);

e. *Borror v. MarineMax of Ohio*, No. OT-06-010, 2007 Ohio App. LEXIS 525 (Ohio Ct. App. Feb. 9, 2007) (OPIF #10002388);

f. *State ex rel. Jim Petro v. Craftmatic Organization, Inc.* (OPIF #10002347);

g. *Mark J. Craw Volkswagen, et al. v. Joseph Airport Toyota, Inc.* (OPIF #10001586);

h. *State ex rel. William J. Brown v. Harold Lyons, et al.* (OPIF #10000304);

i. *Brinkman v. Mazda Motor of America, Inc.* (OPIF #10001427);

j. *Khouri v. Don Lewis* (OPIF #100001995);

k. *Mosley v. Performance Mitsubishi aka Automanage* (OPIF #10001326);

l. *Walls v. Harry Williams dba Butch's Auto Sales* (OPIF #10001524); and

m. *Brown v. Spears* (OPIF #10000403).

509. Each Defendant is a "supplier" as that term is defined in OHIO REV. CODE ANN. § 1345.01(C).

510. Plaintiffs and Ohio Class members are "consumers" as that term is defined in OHIO REV. CODE ANN. § 1345.01(D), and their purchase or lease of one or more Affected Vehicles is a "consumer transaction" within the meaning of OHIO REV. CODE ANN. § 1345.01(A).

511. As a result of the foregoing wrongful conduct, Plaintiffs have been damaged in an amount to be proven at trial and seek all just and proper remedies, including but not limited to actual and statutory damages, an order enjoining

Defendants' deceptive and unfair conduct, treble damages, court costs, and reasonable attorneys' fees, pursuant to OHIO REV. CODE ANN. § 1345.09 *et seq.*

COUNT 40

VIOLATION OF THE OKLAHOMA CONSUMER PROTECTION ACT (OKLA. STAT. TIT. 15, § 751 *ET SEQ.*)

512. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

513. This claim is brought by Plaintiffs on behalf of residents of Oklahoma who are members of the class.

514. The Oklahoma Consumer Protection Act (Oklahoma CPA) declares unlawful, *inter alia*, the following acts or practices when committed in the course of business: making a "misrepresentation, omission or other practice that has deceived or could reasonably be expected to deceive or mislead a person to the detriment of that person" and "any practice which offends established public policy or if the practice is immoral, unethical, oppressive, unscrupulous or substantially injurious to consumers." OKLA. STAT. TIT. 15, §§ 752–753.

515. Plaintiffs and Oklahoma Class members are "persons" under OKLA. STAT. TIT. 15, § 752.

516. Each Defendant is a "person," "corporation," or "association" within the meaning of OKLA. STAT. TIT. 15, § 15-751(1).

517. The sale or lease of an Affected Vehicle to Plaintiffs was a "consumer transaction" within the meaning of OKLA. STAT. TIT. 15, § 752 and each Defendants' actions as set forth herein occurred in the conduct of trade or commerce.

518. Defendants' acts were made knowingly, intentionally, and with malice. Defendants demonstrated a complete lack of care and were in reckless disregard for the rights of Plaintiffs and the other Class members. Plaintiffs and the other Class members are therefore entitled to an award of punitive damages to the extent permitted under applicable law.

519. Defendants' conduct as alleged herein was unconscionable because (1) Defendants, knowingly or had reason to know, took advantage of consumers reasonably unable to protect their interests because of their ignorance of GM's fraudulent omissions and representations; (2) at the time the consumer transaction was entered into, Defendants knew or had reason to know that price the consumers were charged grossly exceeded the price at which they would have paid if they had known of the Defendants' scheme, and (3) Defendant knew or had reason to know that the transaction Defendants induced the consumers to enter into was excessively one-sided in favor of each Defendant.

520. Because Defendants' unconscionable conduct caused injury to Plaintiffs, Plaintiffs seek recovery of actual damages, discretionary penalties up to

$2,000 per violation, and reasonable attorneys' fees, under OKLA. STAT. TIT. 15, § 761.1. Plaintiffs further seek an order enjoining each Defendant's unfair and/or deceptive acts or practices, and any other just and proper relief available under the Oklahoma CPA.

COUNT 41

VIOLATION OF THE OREGON UNLAWFUL TRADE PRACTICES ACT (OR. REV. STAT. § 646.605 *ET SEQ.*)

521. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

522. This claim is brought by Plaintiffs on behalf of residents of Oregon who are members of the class.

523. The Oregon Unfair Trade Practices Act (Oregon UTPA) prohibits a person from, in the course of the person's business, doing any of the following: representing that goods have characteristics uses, benefits, or qualities that they do not have; representing that goods are of a particular standard or quality if they are of another; advertising goods or services with intent not to provide them as advertised; and engaging in any other unfair or deceptive conduct in trade or commerce. OR. REV. STAT. § 646.608(1).

524. Each Defendant is a person within the meaning of OR. REV. STAT. § 646.605(4).

525. Each Affected Vehicle is a "good" obtained primarily for personal family or household purposes within the meaning of OR. REV. STAT. § 646.605(6).

526. Plaintiffs are entitled to recover the greater of actual damages or $200 pursuant to OR. REV. STAT. § 646.638(1). Plaintiffs are also entitled to punitive damages because Defendants engaged in conduct amounting to a particularly aggravated, deliberate disregard of the rights of others.

COUNT 42

VIOLATION OF THE PENNSYLVANIA UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION LAW (73 PA. CONS. STAT. § 201-1 *et seq.*)

527. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

528. This claim is brought by Plaintiffs on behalf of residents of Pennsylvania who are members of the class.

529. The Pennsylvania Unfair Trade Practices and Consumer Protection Law (Pennsylvania CPL) prohibits unfair or deceptive acts or practices, including representing that goods or services have characteristics, benefits or qualities that they do not have; representing that goods or services are of a particular standard, quality or grade if they are of another; advertising goods or services with intent not to sell them as advertised; and engaging in any other fraudulent or deceptive

conduct which creates a likelihood of confusion or misunderstanding. 73 P.S. § 201-2(4).

530. Defendant, Plaintiffs, and Pennsylvania Class members are "persons" within the meaning of 73 PA. CONS. STAT. § 201-2(2).

531. Plaintiffs purchased or leased Affected Vehicles primarily for personal, family, or household purposes within the meaning of 73 PA. CONS. STAT. § 201-9.2.

532. All of the acts complained of herein were perpetrated by Defendants in the course of trade or commerce within the meaning of 73 PA. CONS. STAT. § 201-2(3).

533. Defendants are liable to Plaintiffs for treble their actual damages or $100, whichever is greater, and attorneys' fees and costs. 73 PA. CONS. STAT. § 201-9.2(a). Plaintiffs are also entitled to an award of punitive damages given that Defendants' conduct was malicious, wanton, willful, oppressive, or exhibited a reckless indifference to the rights of others.

COUNT 43

VIOLATION OF THE RHODE ISLAND UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION ACT (R.I. GEN. LAWS § 6-13.1 *ET SEQ.*)

534. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

535. This claim is brought by Plaintiffs on behalf of residents of Rhode Island who are members of the class.

536. Rhode Island's Unfair Trade Practices and Consumer Protection Act (Rhode Island CPA) prohibits "unfair or deceptive acts or practices in the conduct of any trade or commerce," including "[e]ngaging in any act or practice that is unfair or deceptive to the consumer" and "[u]sing any other methods, acts or practices which mislead or deceive members of the public in a material respect." R.I. GEN. LAWS § 6-13.1-1(6).

537. Defendant, Plaintiffs, and Rhode Island Class members are "persons" within the meaning of R.I. GEN. LAWS § 6-13.1-1(3).

538. Defendants were engaged in "trade" and "commerce" within the meaning of R.I. GEN. LAWS § 6-13.1-1(5).

539. Plaintiffs purchased or leased Affected Vehicles primarily for personal, family, or household purposes within the meaning of R.I. GEN. LAWS § 6-13.1-5.2(a).

540. Plaintiffs are entitled to recover the greater of actual damages or $200 pursuant to R.I. GEN. LAWS § 6-13.1-5.2(a). Plaintiffs also seek punitive damages at the discretion of the Court.

COUNT 44

VIOLATION OF THE SOUTH CAROLINA UNFAIR TRADE PRACTICES ACT (S.C. CODE ANN. § 39-5-10 *ET SEQ.*)

541. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

542. This claim is brought by Plaintiffs on behalf of residents of South Carolina who are members of the class.

543. The South Carolina Unfair Trade Practices Act (South Carolina UTPA) prohibits "unfair or deceptive acts or practices in the conduct of any trade or commerce." S.C. CODE ANN. § 39-5-20(a).

544. Each Defendant is a "person" under S.C. CODE ANN. § 39-5-10.

545. Pursuant to S.C. CODE ANN. § 39-5-140(a), Plaintiffs seek monetary relief to recover their economic losses. Because Defendants' actions were willful and knowing, Plaintiffs' damages should be trebled.

546. Plaintiffs further allege that Defendants' malicious and deliberate conduct warrants an assessment of punitive damages because Defendants carried out despicable conduct with willful and conscious disregard of the rights of others. Defendants' unlawful conduct constitutes malice, oppression, and fraud warranting punitive damages.

547. Plaintiffs further seek an order enjoining each Defendant's unfair or deceptive acts or practices.

COUNT 45

VIOLATION OF THE SOUTH DAKOTA DECEPTIVE TRADE PRACTICES AND CONSUMER PROTECTION LAW (S.D. CODIFIED LAWS § 37-24-6)

548. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

549. This claim is brought by Plaintiffs on behalf of residents of South Dakota who are members of the class.

550. The South Dakota Deceptive Trade Practices and Consumer Protection Law (South Dakota CPL) prohibits deceptive acts or practices, which include "[k]nowingly act[ing], us[ing], or employ[ing] any deceptive act or practice, fraud, false pretense, false promises, or misrepresentation or to conceal, suppress, or omit any material fact in connection with the sale or advertisement of any merchandise, regardless of whether any person has in fact been misled, deceived, or damaged thereby." S.D. CODIFIED LAWS §§ 37-24-6(1), 37-24-31.

551. Under S.D. CODIFIED LAWS § 37-24-31, Plaintiffs are entitled to a recovery of their actual damages suffered as a result of Defendants' acts and practices.

COUNT 46

VIOLATIONS OF THE TEXAS DECEPTIVE TRADE PRACTICES AND CONSUMER PROTECTION ACT (TEX. BUS. & COM. CODE § 17.4 ET SEQ.)

552. Plaintiffs incorporate by reference all paragraphs as though fully set forth herein.

553. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of the Texas Class.

554. Plaintiffs and the Texas Class members are individuals with assets of less than $25 million (or are controlled by corporations or entities with less than $25 million in assets). *See* TEX. BUS. & COM. CODE § 17.41.

555. The Texas Deceptive Trade Practices-Consumer Protection Act ("Texas DTPA") provides a private right of action to a consumer where the consumer suffers economic damage as the result of either (i) the use of false, misleading, or deceptive act or practice specifically enumerated in TEX. BUS. & COM. CODE § 17.46(b); or (ii) "an unconscionable action or course of action by any person." TEX. BUS. & COM. CODE § 17.50(a)(2) & (3). The Texas DTPA declares several specific actions to be unlawful, including: "(5) Representing that goods or services have. sponsorship, approval, characteristics, ingredients, uses, benefits, or qualities that they do not have"; "(7) Representing that goods or services are of a

particular standard, quality, or grade, or that goods are of a particular style or model, if they are of another"; and "(9) advertising goods or services with intent not to sell them as advertised." An "unconscionable action or course of action" means "an act or practice which, to a consumer's detriment, takes advantage of the lack of knowledge, ability, experience, or capacity of the consumer to a grossly unfair degree." TEX. BUS. & COM. CODE § 17.45(5). As detailed herein, GM has engaged in an unconscionable action or course of action and thereby caused economic damages to the Texas Class.

556. In the course of business, GM willfully failed to disclose and actively concealed the conduct discussed herein and otherwise engaged in activities with a tendency or capacity to deceive. GM also engaged in unlawful trade practices by employing deception, deceptive acts or practices, fraud, misrepresentations, or concealment, suppression, or omission of any material fact with intent that others rely upon such concealment, suppression, or omission, in connection with the sale of Affected Vehicles.

557. GM's unfair or deceptive acts or practices were likely to and did in fact deceive reasonable consumers, including Plaintiffs and the other Texas Class members, about the true performance of the Affected Vehicles, the devaluing of the environmental impacts of its vehicles at GM, and the true value of the Affected Vehicles.

558. GM intentionally and knowingly misrepresented material facts regarding the Affected Vehicles with intent to mislead Plaintiffs and the Texas Class.

559. GM knew or should have known that their conduct violated the Texas DTPA.

560. GM owed Plaintiffs and Texas Class members a duty to disclose the true environmental impact, performance, fuel mileage, and reliability of the Affected Vehicles, because GM:

a. Possessed exclusive knowledge that they were selling and distributing Affected Vehicles throughout the United States that did not perform as advertised;

b. Intentionally concealed the foregoing from Plaintiffs and the Texas Class; and/or

c. Made incomplete representations about the environmental friendliness, fuel mileage, towing capacity, and performance of the Affected Vehicles while purposefully withholding material facts from Plaintiffs and the Texas Class that contradicted these representations.

561. Because GM fraudulently concealed the defective emissions treatment system, the value of the Affected Vehicles has greatly diminished. In light of the stigma attached to the Affected Vehicles by GM's conduct, they are now worth significantly less than they otherwise would be.

562. GM's omissions and/or misrepresentations about the emissions treatment system of the Affected Vehicles were material to Plaintiffs and the Texas Class.

563. Plaintiffs and the Texas Class suffered ascertainable loss caused by GM's misrepresentations and their concealment of and failure to disclose material information. Class members who purchased the Affected Vehicles either would have paid less for their vehicles or would not have purchased or leased them at all but for GM's violations of the Texas DTPA.

564. GM had an ongoing duty to all GM customers to refrain from unfair and deceptive practices under the Texas DTPA. All owners of Affected Vehicles suffered ascertainable loss in the form of the diminished value of their vehicle as a result of GM's deceptive and unfair acts and practices made in the course of GM's business.

565. GM's violations present a continuing risk to Plaintiffs as well as to the general public. GM's unlawful acts and practices complained of herein affect the public interest.

566. As a direct and proximate result of GM's violations of the Texas DTPA, Plaintiffs and the Texas Class have suffered injury-in-fact and/or actual damage.

567. Pursuant to TEX. BUS. & COM. CODE § 17.50(a)(1) and (b), once the notice period expires, Plaintiffs will amend to seek monetary relief against GM measured as actual damages in an amount to be determined at trial, treble damages for GM's knowing violations of the Texas DTPA, and any other just and proper relief available under the Texas DTPA.

568. Alternatively, or additionally, pursuant to TEX. BUS. & COM. CODE § 17.50(b)(3) & (4), Plaintiffs are also entitled to disgorgement or to rescission or to any other relief necessary to restore any money or property that was acquired from them based on violations of the Texas DTPA or which the Court deems proper.

569. On May 23, 2017, Plaintiffs sent a letter complying with TEX. BUS. & COM. CODE ANN. § 17.505 to Defendants. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Texas who are members of the class.

COUNT 47

VIOLATION OF THE UTAH CONSUMER SALE PRACTICES ACT (UTAH CODE ANN. § 13-11-1 *et seq.*)

570. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

571. This claim is brought by Plaintiffs on behalf of residents of Utah who are members of the class.

572. The Utah Consumer Sales Practices Act (Utah CSPA) makes unlawful any "deceptive act or practice by a supplier in connection with a consumer transaction," including but not limited to indicating that the subject of a consumer transaction has sponsorship, approval, performance characteristics, accessories, uses, or benefits, if it has not; indicating that the subject of a consumer transaction is of a particular standard, quality, grade, style, or model, if it is not; and "indicat[ing] that a specific price advantage exists, if it does not." UTAH CODE ANN. § 13-11-4.

573. Defendants knew, or had reason to know, that consumers would rely on their failure to disclose the defects in its emissions system. Defendants therefore engaged in an unconscionable act within the meaning of UTAH CODE ANN. § 13-11-5.

574. Pursuant to UTAH CODE ANN. § 13-11-4, Plaintiffs seek monetary relief measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $2,000 for each Plaintiff; reasonable attorneys' fees; and any other just and proper relief available under the Utah CSPA.

COUNT 48

VIOLATION OF THE VERMONT CONSUMER FRAUD ACT (VT. STAT. ANN. TIT. 9, § 2451 *ET SEQ.*)

575. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

576. This claim is brought by Plaintiffs on behalf of residents of Vermont who are members of the class.

577. The Vermont Consumer Fraud Act (Vermont CFA) makes unlawful "[u]nfair methods of competition in commerce, and unfair or deceptive acts or practices in commerce." VT. STAT. ANN. TIT. 9, § 2453(a).

578. Defendants were sellers within the meaning of VT. STAT. ANN. TIT. 9, § 2451(a)(c).

579. Plaintiffs are entitled to recover "appropriate equitable relief" and "the amount of [their] damages, or the consideration or the value of the consideration given by [them], reasonable attorney's fees, and exemplary damages not exceeding three times the value of the consideration given by [them]," pursuant to VT. STAT. ANN. TIT. 9, § 2461(b).

COUNT 49

VIOLATION OF THE VIRGINIA CONSUMER PROTECTION ACT (VA. CODE ANN. § 59.1-196 *ET SEQ.*)

580. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

581. This claim is brought by Plaintiffs on behalf of residents of Virginia who are members of the class.

582. The Virginia Consumer Protection Act (Virginia CPA) lists prohibited "practices," which include "[u]sing any other deception, fraud, false pretense, false promise, or misrepresentation in connection with a consumer transaction." VA. CODE ANN. § 59.1-200.

583. Each Defendant is a "supplier" under VA. CODE ANN. § 59.1-198.

584. Each sale and lease of an Affected Vehicle was a "consumer transaction" within the meaning of VA. CODE ANN. § 59.1-198.

585. Pursuant to VA. CODE ANN. § 59.1-204, Plaintiffs seek monetary relief against each Defendant measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $500 for each Plaintiff. Because Defendants' conduct was committed willfully and knowingly, Plaintiffs are entitled to recover, for each plaintiff, the greater of (a) three times actual damages or (b) $1,000.

586. Plaintiffs also seek an order enjoining each Defendant's unfair and/or deceptive acts or practices, punitive damages, and attorneys' fees, and any other just and proper relief available under VA. CODE ANN. § 59.1-204 *et seq.*

COUNT 50

VIOLATION OF THE WASHINGTON CONSUMER PROTECTION ACT (WASH. REV. CODE ANN. § 19.86.010 *ET SEQ.*)

587. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

588. This claim is brought by Plaintiffs on behalf of residents of Washington who are members of the class.

589. The Washington Consumer Protection Act (Washington CPA) broadly prohibits "[u]nfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce." WASH. REV. CODE. ANN. § 19.96.010.

590. Defendants committed the acts complained of herein in the course of "trade" or "commerce" within the meaning of WASH. REV. CODE. ANN. § 19.96.010.

591. Defendants are liable to Plaintiffs for damages in amounts to be proven at trial, including attorneys' fees, costs, and treble damages, as well as any

other remedies the Court may deem appropriate under WASH. REV. CODE. ANN. § 19.86.090.

COUNT 51

VIOLATION OF THE WEST VIRGINIA CONSUMER CREDIT AND PROTECTION ACT (W. VA. CODE § 46A-1-101 *ET SEQ.*)

592. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

593. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of West Virginia who are members of the class.

594. Each Defendant is a "person" under W. VA. CODE § 46A-1-102(31).

595. Plaintiffs and West Virginia Class members are "consumers" as defined by W. VA. CODE §§ 46A-1-102(12) and 46A-6-102(2), who purchased or leased one or more Affected Vehicles.

596. Defendants engaged in trade or commerce as defined by W. VA. CODE § 46A-6-102(6).

597. The West Virginia Consumer Credit and Protection Act (West Virginia CCPA) prohibits "unfair or deceptive acts or practices in the conduct of any trade or commerce." W. VA. CODE § 46A-6-104. Without limitation, "unfair or deceptive" acts or practices include:

> (I) Advertising goods or services with intent not to sell them as advertised;
>
> (L) Engaging in any other conduct which similarly creates a likelihood of confusion or of misunderstanding;
>
> (M) The act, use or employment by any person of any deception, fraud, false pretense, false promise or misrepresentation, or the concealment, suppression or omission of any material fact with intent that others rely upon such concealment, suppression or omission, in connection with the sale or advertisement of any goods or services, whether or not any person has in fact been misled, deceived or damaged thereby; [and]
>
> (N) Advertising, printing, displaying, publishing, distributing or broadcasting, or causing to be advertised, printed, displayed, published, distributed or broadcast in any manner, any statement or representation with regard to the sale of goods or the extension of consumer credit including the rates, terms or conditions for the sale of such goods or the extension of such credit, which is false, misleading or deceptive or which omits to state material information which is necessary to make the statements therein not false, misleading or deceptive.

W. VA. CODE § 46A-6-102(7).

598. Pursuant to W. VA. CODE § 46A-6-106, once the statutory notice period has expired, Plaintiffs will amend to seek monetary relief against the Defendants measured as the greater of (a) actual damages in an amount to be determined at trial and (b) statutory damages in the amount of $200 per violation of the West Virginia CCPA for each Plaintiff.

599. Plaintiffs will also amend to seek punitive damages against the Defendants because they carried out despicable conduct with willful and conscious

disregard of the rights of others, subjecting Plaintiffs to cruel and unjust hardship as a result.

600. Plaintiffs further seek an order enjoining the Defendants' unfair or deceptive acts or practices, restitution, punitive damages, costs of Court, attorney's fees under W. VA. CODE § 46A-5-101 *et seq.*, and any other just and proper relief available under the West Virginia CCPA.

601. On May 23, 2017, Plaintiffs sent a letter complying with W. VA. CODE § 46A-6-106(b) to Defendants. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of West Virginia who are members of the class.

COUNT 52

VIOLATION OF THE WISCONSIN DECEPTIVE TRADE PRACTICES ACT (WIS. STAT. § 110.18)

602. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

603. This claim is brought by Plaintiffs on behalf of residents of Wisconsin who are members of the class.

604. The Wisconsin Deceptive Trade Practices Act (Wisconsin DTPA) prohibits a "representation or statement of fact which is untrue, deceptive or misleading." WIS. STAT. § 100.18(1).

605. Each Defendant is a "person, firm, corporation or association" within the meaning of WIS. STAT. § 100.18(1).

606. Plaintiffs and Wisconsin Class members are members of "the public" within the meaning of WIS. STAT. § 100.18(1). Plaintiffs purchased or leased one or more Affected Vehicles.

607. Plaintiffs are entitled to damages and other relief provided for under WIS. STAT. § 100.18(11)(b)(2). Because Defendants' conduct was committed knowingly and/or intentionally, Plaintiffs are entitled to treble damages.

608. Plaintiffs also seek court costs and attorneys' fees under WIS. STAT. § 110.18(11)(b)(2).

COUNT 53

VIOLATION OF THE WYOMING CONSUMER PROTECTION ACT (WYO. STAT. § 40-12-105 *ET SEQ.*)

609. Plaintiffs hereby incorporate by reference the allegations contained in the preceding paragraphs of this complaint.

610. This claim is included here for notice purposes only. Once the statutory notice period has expired, Plaintiffs will amend their complaint to bring this claim on behalf of residents of Wyoming who are members of the class.

611. Pursuant to WYO. STAT. § 40-12-108(a), once the statutory notice period has expired, Plaintiffs will amend to seek monetary relief against the Defendants measured as actual damages in an amount to be determined at trial, in addition to any other just and proper relief available under the Wyoming CPA.

612. On May 23, 2017, Plaintiffs sent a letter complying with WYO. STAT. § 45-12-109 to Defendants. If Defendants fail to remedy their unlawful conduct, Plaintiffs will seek all damages and relief to which Plaintiffs are entitled.

613. Pursuant to applicable state statutes, Plaintiffs will mail a copy of this action to the Attorney General's office for the states of Connecticut, Illinois, Louisiana, Missouri, New Jersey, Oregon, Texas, Utah, and Washington.

REQUEST FOR RELIEF

WHEREFORE, Plaintiffs, individually and on behalf of members of the Nationwide RICO Class and State Classes, respectfully request that the Court enter judgment in their favor and against Defendants, as follows:

A. Certification of the proposed Nationwide RICO Class and State Classes, including appointment of Plaintiffs' counsel as Class Counsel;

B. Restitution, including at the election of Class members, recovery of the purchase price of their Affected Vehicles, or the overpayment or diminution in value of their Affected Vehicles;

C. Damages, including punitive damages, costs, and disgorgement in an amount to be determined at trial, except that monetary relief under certain consumer protection statutes, as stated above, shall be limited prior to completion of the applicable notice requirements;

D. An order requiring Defendants to pay both pre- and post-judgment interest on any amounts awarded;

E. An award of costs and attorneys' fees; and

F. Such other or further relief as may be appropriate.

DEMAND FOR JURY TRIAL

Plaintiffs hereby demand a jury trial for all claims so triable.

DATED: May 25, 2017

Respectfully Submitted,

By */s/ Steve W. Berman*

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Attorneys for Plaintiffs and the Proposed Class

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4	GM - Five Diesel Myths Debunked
5	GMC - 2016 Sierra 2500 information
6	Chevrolet - Using Diesel Exhaust Fluid with the Duramax
7	Duramax Hub - 6.6L Duramax LML
8	2015 GMC Sierra 2500HD brochure
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13	Bosch Press Release - The brain of diesel injection
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15	BBC - Volkswagen: The scandal explained
16	Automotive News - Bosch probes whether its staff helped VW's emissions rigging
17	ESCRYPT - Reliable Protection for ECUs
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19	Reuters - Volkswagen probe finds manipulation was open secret in department

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21	Handelsblatt Global - Dieselgate's Roots Stretch Back to Audi
22	Autocar - VW emissions scandal: how Volkswagen's 'defeat device' works
23	Automotive News - Bosch warned VW about illegal software use in diesel cars, report says
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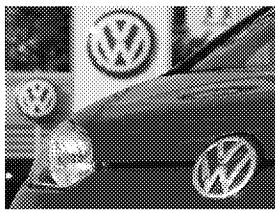
EXHIBIT 1

Volkswagen emission scandal widens: 11 million cars affected

Nathan Bomey , USA TODAY Published 6:23 a.m. ET Sept. 22, 2015 | **Updated 5:40 p.m. ET Sept. 22, 2015**

Investors crush Volkswagen shares as company sets aside $7.3 billion to address software that manipulates emissions tests.



(Photo: Julian Stratenschulte, European Pressphoto Agency)

Volkswagen's emissions scandal ballooned Tuesday as the company admitted that software designed to fool regulators affects 11 million vehicles worldwide and could cost more than $7 billion to address, threatening to undermine its new position as the world's largest automaker.

The automaker's deception immediately qualifies as one of the most expensive automotive scandals in recent memory and could jeopardize CEO Martin Winterkorn's job as his contract comes up for renewal.

The company's crisis dragged down stocks in Germany, undermined Volkswagen's claims of environmentally advanced diesel engineering and threatened to reverse the automaker's sales gains on Toyota as the world's biggest vehicle maker — a title it seized in the first six months of 2015.

Unlike General Motors' accidental ignition-switch defect, which killed more than 120 people, Volkswagen engineers intentionally designed cars to circumvent regulators.

While Volkswagen's transgression hasn't killed anyone, it has sown distrust among consumers.

"This could damage the Volkswagen brand globally for years to come," said former automotive marketing executive Peter De Lorenzo, blogger at Autoextremist.com, in an interview. "Trust and belief in the brand has been broken."

Winterkorn pledged to regain the public's trust and "find out exactly what happened" amid speculation that he could lose his job over the crisis. Winterkorn's contract, coincidentally, is up for renewal at the automaker's board meeting Friday (/story/money/cars/2015/09/02/volkswagen-ceo-gets-contract-extension/71564856/). A subcommittee will meet Wednesday to recommend whether the full board should extend the CEO's deal.

He apologized Tuesday for the second time in four days, but gave no indication that he'll consider resigning. He said, "We are asking for trust as we move forward."

"We are working very hard on the necessary technical solutions," he said, according to an English translation of his remarks provided by Volkswagen. "And we will do everything we can to avert damage to our customers and employees. I give you my word: we will do all of this with the greatest possible openness and transparency."

Analysis: Deception fuels Volkswagen emissions scandal (http://www.usatoday.com/story/money/cars/2015/09/22/analysis-deception-fuels-volkswagen-emissions-scandal/72608782/)

Investors crushed the German automaker's stock, driving shares down 20%, a day after the stock plunged 19% (/story/money/cars/2015/09/21/volkswagen-stock-epa-emissions-diesel-cars/72551936/).

The crisis began Friday when the U.S. Environmental Protection Agency accused Volkswagen of installing sophisticated software on nearly 500,000 U.S. vehicles to manipulate emissions tests.

The technology tricks regulators into believing that four-cylinder diesel cars comply with emissions standards, but the cars are actually emitting harmful pollutants at rates of up to 40 times acceptable standards. Volkswagen quickly halted sales of the cars after the allegations surfaced.

The U.S. Justice Department has opened a criminal probe into the automaker's actions. The EPA has an investigation, and foreign regulators are expected to launch their own probes.

Analysis: Deception fuels Volkswagen emissions scandal (http://www.usatoday.com/story/money/cars/2015/09/22/analysis-deception-fuels-volkswagen-emissions-scandal/72608782/)

Volkswagen acknowledged "a notable deviation between bench test results and actual road use" in the affected vehicles.

Volkswagen said it would set aside 6.5 billion euro, or $7.3 billion, in its third quarter to address the matter and warned that the amount could change. In the U.S., the EPA could fine Volkswagen up to $37,500 per car, which would equal a maximum fine of $18 billion.

The scandal raises serious questions about whether high-level executives knew about the software, which had been installed on some nameplates for at least six consecutive model years.

Earlier this month, a subcommittee of Volkswagen's board recommended that the full panel extend Winterkorn's contract through 2018. The official renewal at Friday's board meeting was viewed at the time as a routine matter, but now it may be up in the air.

Winterkorn kept his job earlier this year after then-chairman Ferdinand Piech tried to displace him. Piech exited the company shortly after his failed effort.

De Lorenzo, the automotive marketing veteran, said Winterkorn will be forced to answer questions about his knowledge of the emissions scandal.

"He's very much detailed-oriented. He's always regaled his underlings with his depth of knowledge of detailed items that they would assume he wouldn't bother with," De Lorenzo said. "I think heads will roll and this could bring down Winterkorn and some of his trusted lieutenants."

Dave Sullivan, an analyst with AutoPacific, said the "chances of him coming out unscathed have got to be very small."

The EPA has said the software affected the four-cylinder diesel versions of the 2009 to 2015 Jetta, Beetle and Golf; the 2014 and 2015 Passat; and the 2009 to 2015 Audi A3.

The episode is likely to trigger a recall and a flurry of consumer lawsuits. It may prompt the company to compensate individual car owners or other measures.

U.S. Sen. Bill Nelson, D-Fla., called on the Federal Trade Commission to investigate Volkswagen's marketing of "clean diesel" vehicles.

EPA officials have pledged to punish Volkswagen. The crisis took on an additional political bent Tuesday afternoon when Democratic presidential candidate Hillary Clinton tweeted about the scandal: "Outrageous. When companies put profits ahead of safety and the environment, there should be consequences."

Volkswagen's sheer size may help the company navigate the crisis without jeopardizing its future. The company had 12.7 billion euros in operating profit in 2014, as well as 592,586 employees globally.

Brian Moody, site editor for AutoTrader.com, said Volkswagen took the right step by apologizing quickly.

"Doing it the way they're doing it it makes sense," he said in an interview. "I think they'll get past it quicker. I think taking the head-on approach will be better for them in the long run."

Still, the scandal may endanger the reputation of diesel cars in the U.S., where many consumers still view the cars skeptically. A gallon of diesel fuel cost 22 cents more than a gallon of unleaded gasoline in the U.S. as of Tuesday afternoon, according to GasBuddy.com.

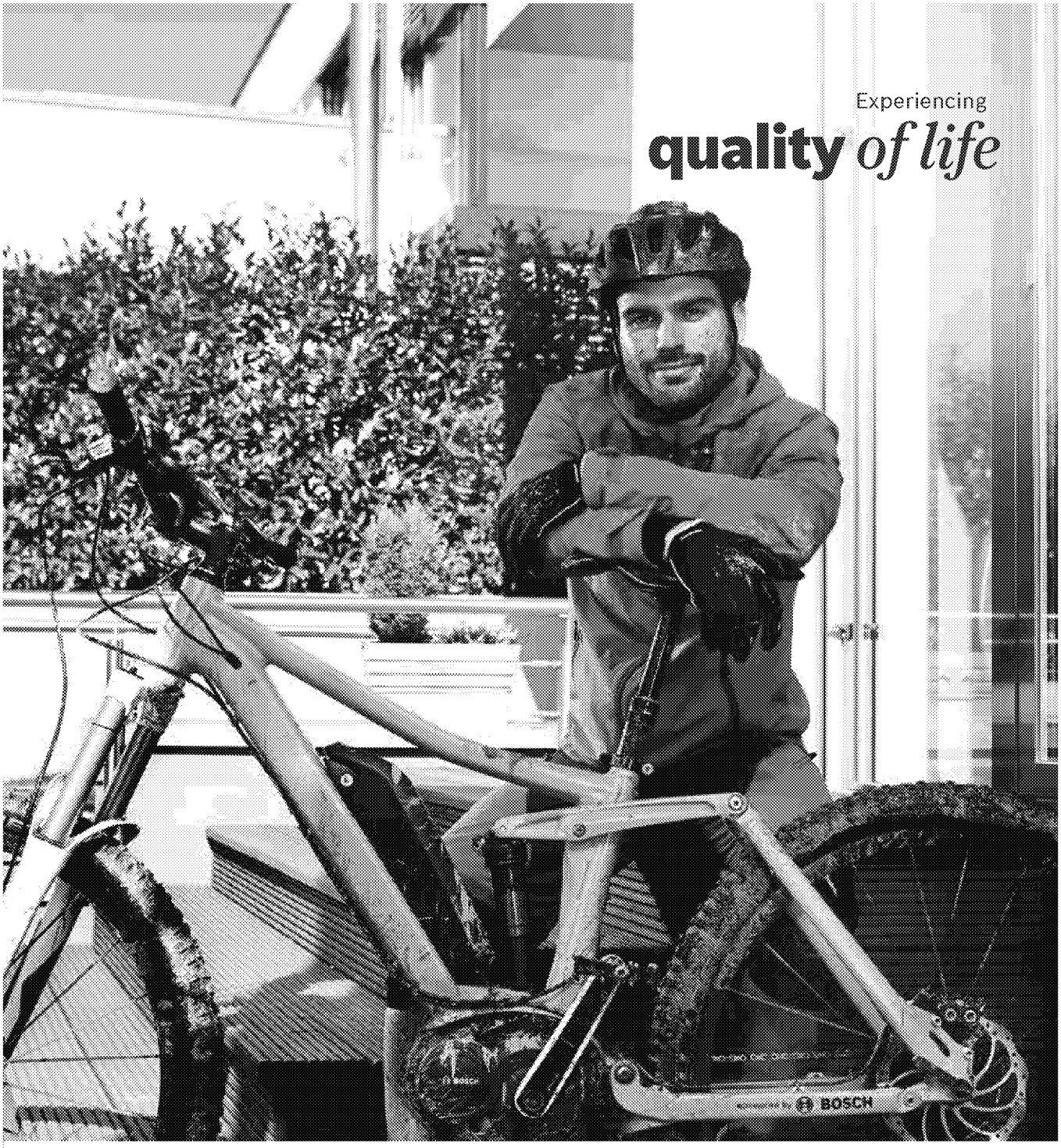
What's more, European regulators are expected to place Volkswagen under intense scrutiny. And the scandal could bode poorly for Volkswagen in the world's largest vehicle market, China, where Volkswagen is No. 1 by market share.

"The problem is the Chinese are starting to realize they have got to do something with their air and this could have an effect on the relationship the Chinese have with Volkswagen," Sullivan said.

Follow USA TODAY reporter Nathan Bomey on Twitter @NathanBomey (http://twitter.com/NathanBomey).

Read or Share this story: http://usat.ly/1Kslnkt

EXHIBIT 2



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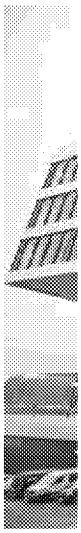
Message from Hot Heinz
Networked household appliances



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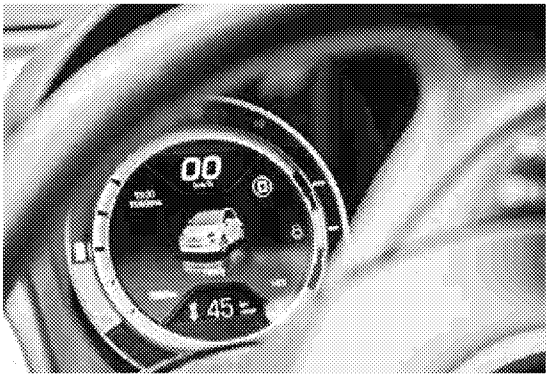

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A continent of opportunities
Growth market Africa

Research *unlimited*

Renningen research campus

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To read the online annual report on your PC or tablet, go to:
annual-report.bosch.com

Quality *of life*

We have made it our goal to create products that spark enthusiasm, improve quality of life, and conserve natural resources. Join us as we explore our customers' and associates' different living conditions and cultures in various regions of the world. Their personal stories show how people have enhanced their quality of life – on their own initiative, or together with the help of family and friends. We also play a role in this – with our products and services, but most importantly thanks to our associates. Their commitment and ideas are the source of technology that is "Invented for life," and that has a positive impact on individuals and society as a whole.

Quality of life means different things to different people. Even so, certain topics are clearly fundamental for everyone. As a part of the Better Life Index, the Organization for Economic Cooperation and Development (OECD) has identified eleven areas that are key to quality of life, including health, safety, education, environment, community, housing, and jobs. In this magazine, these topics are flagged by symbols. The stories show where Bosch technology that is "Invented for life" is helping improve quality of life. Perhaps you'll recognize how we have improved yours.

Healthcare

"I have to be able to see every thread in a sari to make sure it's perfect. Without good eyesight, I might as well close up shop."

Basapere Lakshmaraanya, general manager of a sari-weaving mill in India

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Education

Many Bosch apprentices contribute their knowledge, give children a helping hand, and in this way have the opportunity to improve their own social skills.

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Safety

"The process ends with a further thorough check for quality and safety. As many as ten camera systems test the vials for scratches on the glass, particles in the liquid, and properly fitted caps – and that's not all."

Dr. Johannes Rauschnabel, Bosch pharmaceuticals expert

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Jobs

"Now that I have a secure job, it's easier for me to plan ahead."

John Ndungo, the first associate of Bosch Thermotechnology Kenya

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Environment

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One important goal is creating livable cities without excessive traffic noise and particulate matter.

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Community

"With the solar mirrors, we've created something very special – and it has brought the whole town closer together."

Knut Jacobsen, manager of Rjukan Hytteby tourist cabins, Norway

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Living

One of the main advantages of the Home Connect app is the remote control function that can be used on the go. "I also feel more secure knowing exactly which appliance is currently on or off."

Claudia Häpp, Home Connect project manager

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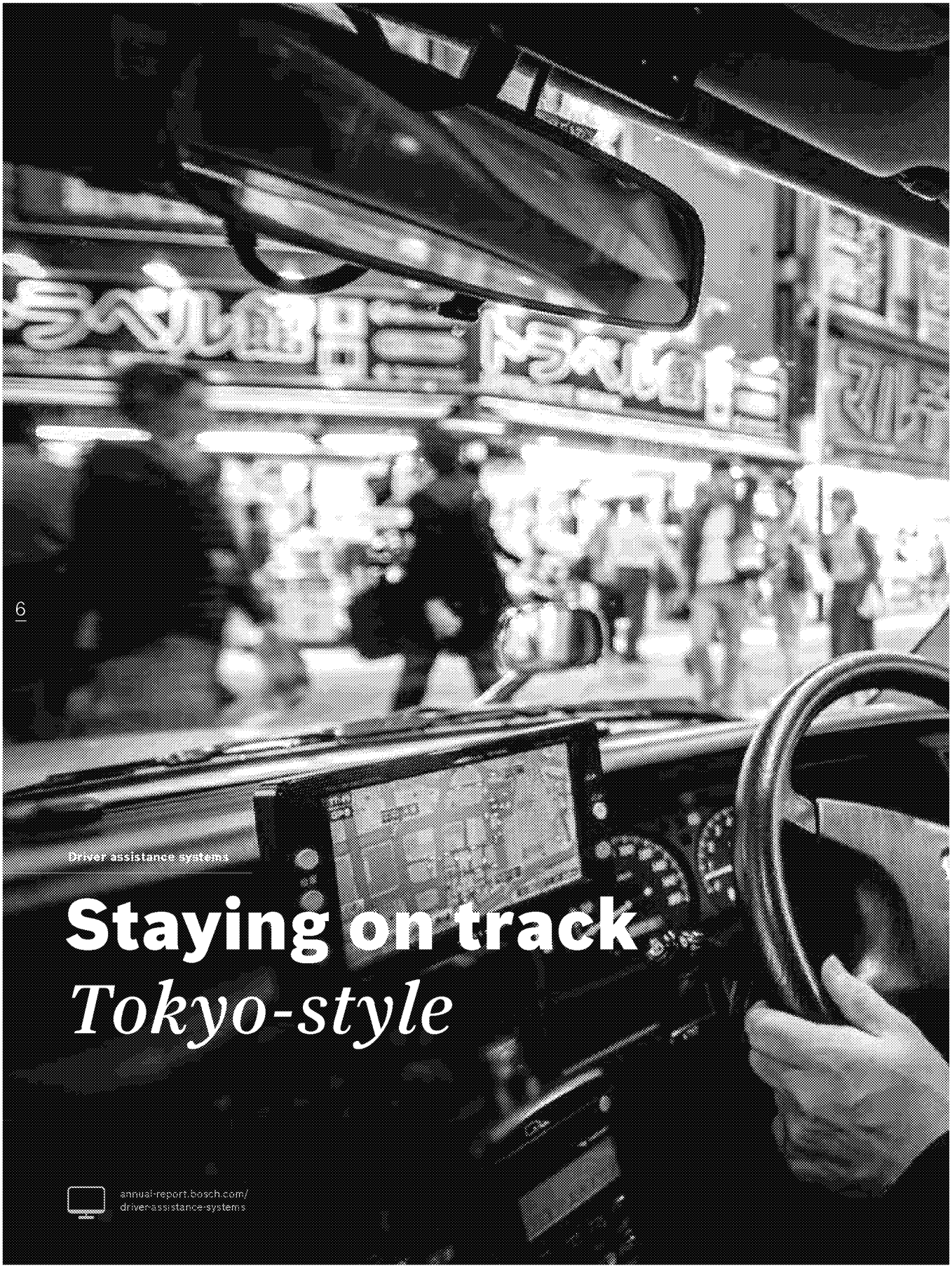
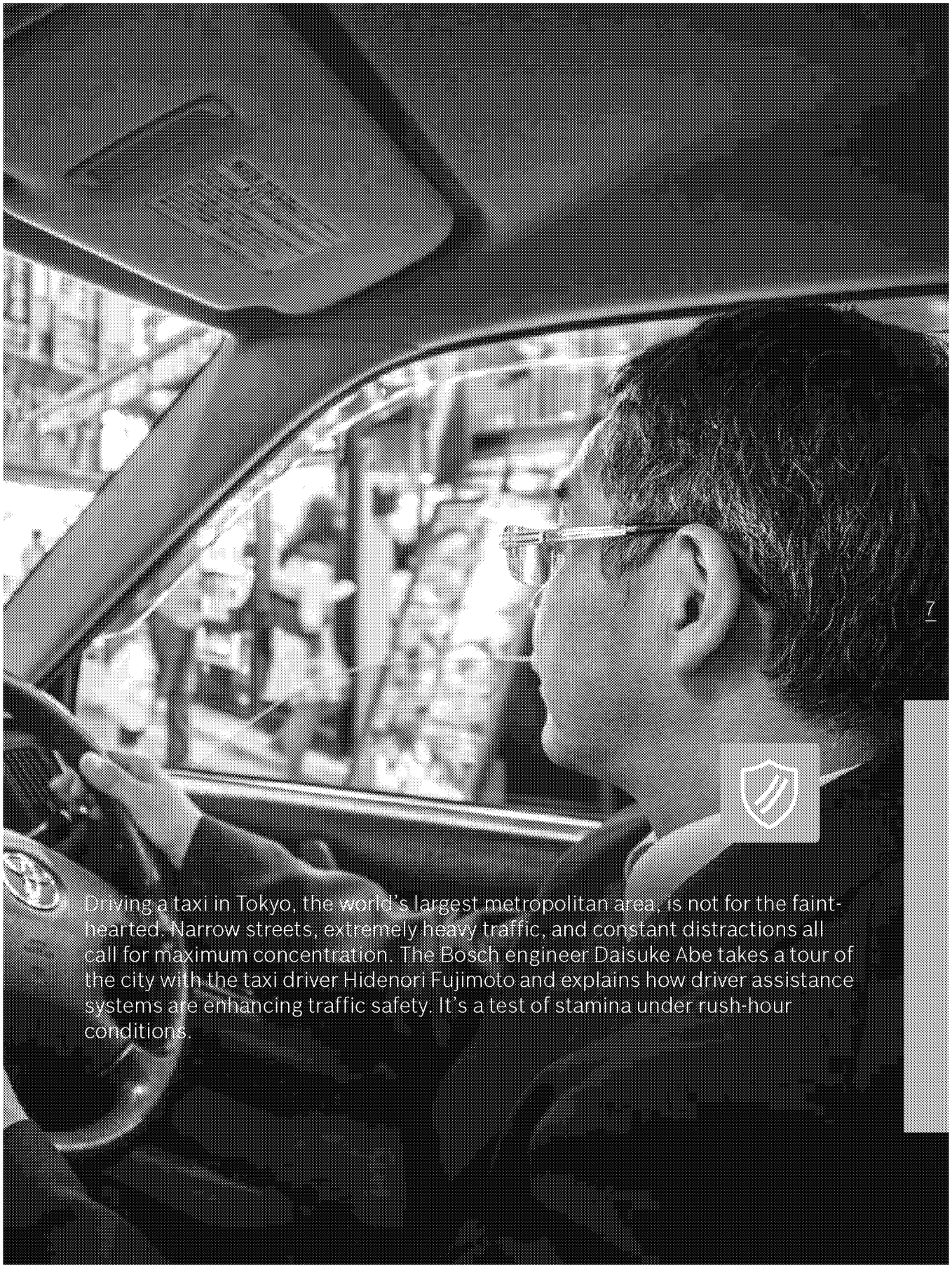


Staying on track
Tokyo-style

annual-report.bosch.com/
driver-assistance-systems



Driving a taxi in Tokyo, the world's largest metropolitan area, is not for the faint-hearted. Narrow streets, extremely heavy traffic, and constant distractions all call for maximum concentration. The Bosch engineer Daisuke Abe takes a tour of the city with the taxi driver Hidenori Fujimoto and explains how driver assistance systems are enhancing traffic safety. It's a test of stamina under rush-hour conditions.

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driver-assistance-systems

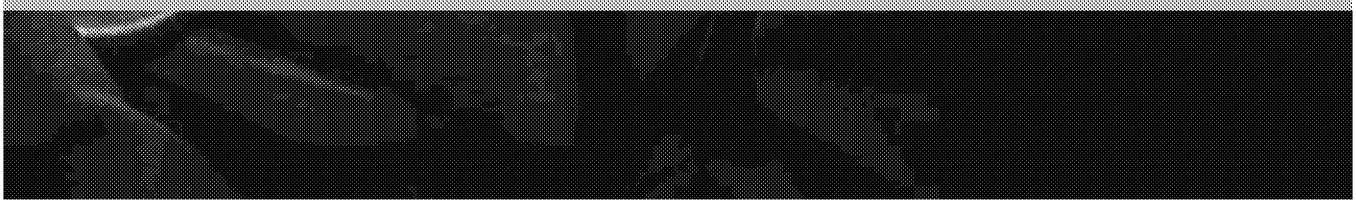
25 times per second, a microcomputer monitors the signals sent out by the ESP® sensors and calculates whether the driver's steering commands correspond to the actual direction of travel.

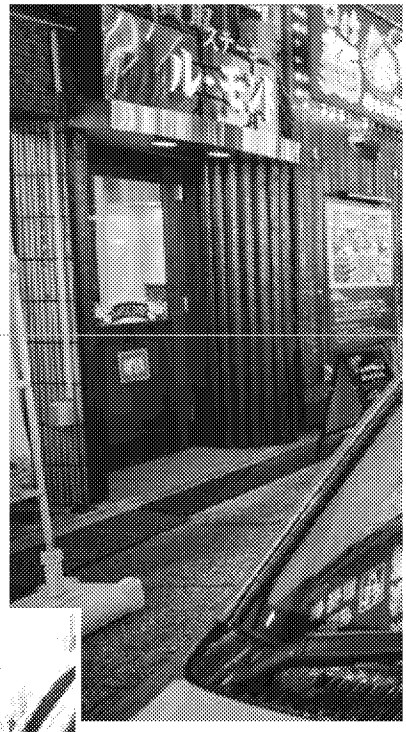
"Driving convenience is closely linked to assistance systems, as they help drivers in critical situations in which they are no longer able to react quickly enough to prevent a collision."

Daisuke Abe, expert for driver assistance systems in Japan

30 to 200

kph: the speed range within which drivers are supported by standard ACC adaptive cruise control





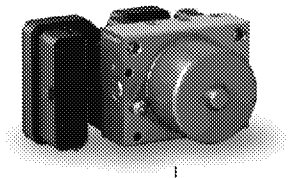
"The hardest part of my job is to constantly stay alert."

Hidenori Fujimoto, taxi driver

Rush hour in Tokyo is always nerve-wracking. Even for someone who is not driving but observing the urban spectacle from the back seat of a taxi. The glow from the neon signs bathes the driver's face in ever-changing colors, though the non-stop flashing of the lights seems pleasantly softened from inside the car. The same is true of the constant din of the traffic, which blends with the music emanating from stores' loudspeakers and the cuckoo-like warnings from the crossing signals. Taxi trips in the world's largest metropolitan area are a multiple assault on the senses, and a mesmerizing adventure for any foreigner. For Hidenori Fujimoto, though, they are his challenging everyday work environment. The main thing is not to get distracted. In this traffic maelstrom, his orange taxi with the little crown on the radiator grill seems like a pinball in one of the city's many *pachinko* parlors – with the significant difference that he must on no account bump into other objects. Getting around safely takes a certain inner composure. The driver only gets truly agitated when he is forced to wait at a taxi stand for a while. After all, he earns his living by keeping his car constantly on the move. It is the city's contagious rhythm that has had an impact on him. "It's impossible not to be affected by Tokyo's pace," Fujimoto says as he starts his shift at dusk.

His passenger, Daisuke Abe, the general manager of the driver assistance engineering department at Bosch Japan, got in at Bosch headquarters in Shibuya in order to experience for himself all the challenges a taxi driver faces in this city. Going back in time a couple of hours, we find Abe behind the wheel of a car on one of the beltways skirting the center of Tokyo. Unlike the taxi, Abe's VW Golf, a demonstration vehicle, is equipped with all key driver assistance systems. In the increasing turmoil the Golf experiences approaching Tokyo's inner districts, one particular system, the lane-change assist, comes in handy more than once.

In the rapidly flowing traffic, Abe can trust in the car's camera-controlled lane-keeping function, which ensures he'll never unintentionally drift out of his lane. Especially in monotonous situations, this function enhances safety for everyone on the road. With 37 million people living within a radius of 50 kilometers, Tokyo is coming up against the limits of mobility. Nowadays, it's not only parked cars that must be stacked on top of one another, but also entire roads. Prospective car buyers in Tokyo can only register their vehicle if they can prove they have their own parking spot.



ABS for China

They're practical, agile, and roomy. But the main reason minibuses are such a popular means of transport in China is because they offer all this for comparatively little money. The serious accidents involving them are mounting, though. It's no wonder: after all, their cheap price usually comes at the cost of safety. And the vehicles – which are used commercially and as family cars – are often laden to the gills, making them difficult to control in critical situations. The Chinese government wants to tackle the growing problem with new legislation, and make certain safety systems mandatory in the future. ABS has been a legal requirement in all new minibuses since January 2015. With three-channel ABS, Bosch offers a solution that enables enhanced safety at a bearable price. Designed specifically for Asian minibus manufacturers, this antilock braking system makes do with three instead of four wheel-speed sensors. These measure how fast the wheels are spinning and recognize when one is about to lock, at which point ABS intervenes. To ensure that the safety mechanism works with three wheel-speed sensors instead of four, the system includes software that was specially developed for this segment. In this way, the solution for this market's specific demands can be offered at a competitive price.

Daisuke Abe, general manager, driver assistance engineering department, Bosch Japan.

Emergency braking system: A brief moment of inattentiveness or distraction is often all it takes to cause a rear-end collision. At 80 kph, a distracted driver who takes his eyes off the road for only a second travels

more than 22 meters.

In critical situations, a driver often only has a few fractions of a second to take evasive action in order to avoid a rear-end collision.

Stereo-video cameras enable a number of functions that make driving safer and more comfortable. These include automatic emergency braking, traffic jam assistant, intelligent headlight control, lane departure warning system and lane keeping assistant, traffic sign recognition, and, in the future, a construction zone assistant. This ability to completely register the vehicle's surroundings in three dimensions is also the basis for a future automated driving function.

Keeping everyone safe is the number one priority – especially for Daisuke Abe. He works with experts at major Japanese automakers on systems designed to both achieve this social goal and to satisfy customers' requirements. "What Japanese car buyers look for first of all are features that make driving as stress-free as possible," he says. "We believe that continuous safety improvements are the crucial cornerstone on which to build that. That's why our driver assistance systems offer enhanced comfort and safety, with functions such as ACC adaptive cruise control and automatic emergency braking for situations in which the driver is no longer able to react quickly enough to prevent a collision." The traffic jam indicators that look like digital tapeworms on the display boards along the overpasses change color steadily, from green to yellow and then to red. The Golf has come to a standstill. As the traffic crawls ahead, Abe activates the traffic jam assist. At speeds of up to 60 kph, it drives off, accelerates, and brakes automatically, keeps the car in its lane, and maintains a safe distance to the vehicle in front. This Bosch system first went into series production in spring 2015. Although drivers must always be ready to reassume control of the car, the system nonetheless offers them increased safety in rush-hour traffic.

Scene change, back to the taxi. Hidenori Fujimoto would also appreciate having electronic systems that help the driver make decisions: "The hardest part of my job is to constantly stay alert. There's not much space in Tokyo, so you always have to concentrate. Pedestrians get very close to you in the traffic, and cyclists keep coming out of nowhere and crossing in front of you." What a boon it would be to have the predictive emergency braking system Abe is describing from the back seat. This vital safety

Daisuke Abe at the wheel of the VW demo vehicle: the activated traffic jam assistant offers him increased safety. Capable of working at speeds of up to 60 kph, the system drives off, accelerates, and brakes automatically, and keeps the car in its lane.

system can prevent rear-end collisions and accidents involving pedestrians in city traffic. It works by linking up sensors that monitor the vehicle's surroundings with the ESP® electronic stability program. With the help of a radar sensor and a camera, it continuously analyzes the traffic situation ahead of the vehicle.

What an asset, especially around Shibuya Crossing, the busiest intersection in the world. Here, each traffic signal phase allows pedestrians to cross back and forth among five streets – sometimes as many as 500,000 people on a single day. It's a prime example of how the many individual streams of traffic can cross each other in the megacity of Tokyo. Everyone in them must remain aware of the others and be able to trust in them to a certain extent; otherwise the mass of urban traffic wouldn't be able to move. It is based on a combination of rigorous rules and practiced processes. The taxi driver wipes the sweat off his brow. Shibuya Crossing is his territory, yet no matter how often he has to pass through it, the experience is always extraordinary. For the lives and work of professional drivers such as him, technical innovations have an especially large impact, and this impact will grow in the future.

After the taxi has passed the intersection, it turns off into one of Tokyo's "wards," neighborhoods designed to be impenetrable tangles of lanes and alleys. These labyrinths originated during wartime – the idea was to confuse potential invaders. Today's urban traffic must also find its way around these narrow quarters, and cars are frequently forced to turn due to the many one-way streets. In this situation, side view assist, the world's first ultrasound-based system for monitoring the blind spot, would be invaluable. Two ultrasound sensors on each side of the vehicle serve as electronic eyes, monitoring the area three meters alongside and diagonally to the rear of the vehicle. If a vehicle is detected in this area, a symbol in the side mirror indicates the potential hazard.

"We want to make the roads safer for all users."

Daisuke Abe, expert for driver assistance systems in Japan

"At Bosch, we believe that future mobility will be automated, connected, and electric. Automated driving affects every aspect of the vehicle and will increase safety, fuel efficiency, and comfort. Our expertise in powertrain development and driver assistance systems will help make automated driving a reality. We are pleased to work on this fascinating and innovative project together with pioneering companies such as Tesla and Google. We appreciate the opportunity to supply Google with major components of the electrical powertrain, including the electric motor and power electronics, as well as long-range radar sensors for its self-driving car project."

Dr. Volkmar Denner, chairman of the Bosch board of management

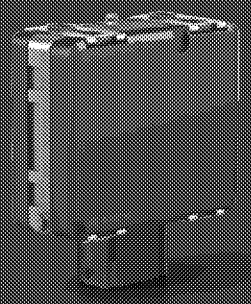
Over 50,000 taxis cruise the streets of Tokyo, four times as many as in New York City. The oldest taxi company has been in business for more than a century. When it started, Tokyo had three million residents and fewer than 300 automobiles on the roads. The first taxis were welcomed enthusiastically by *The Japan Times*, which wrote: "This will certainly improve the quality of life in the city." The new cabs faced the challenges of the narrow streets and, tougher still, of sharing space with the countless rickshaws. Consideration for others is a value Japanese culture has long lived and breathed. Every trip through the city sharpens Daisuke Abe's perception of the complexity of his tasks, although he rarely gets the perspective he has today, from the passenger's seat.

He and his colleagues are working to develop functions that enhance both active and passive safety: "We want to make the roads safer for all users." Challenges such as vehicle safety are what brought him to Bosch when he finished his degree: "It was always my dream to work in the automotive industry. But rather than one particular brand, I wanted to work for a supplier, and help drive innovations forward there."

Nighttime in Tokyo belongs to the taxis, especially between one and five in the morning when the subway stops running. "It's the best time for us, but you do get tired," Hidenori Fujimoto says. During the drive with Daisuke Abe, he was often amazed by the things his technically savvy passenger described, such as the benefits of the driver drowsiness detection function. Based on steering-angle information, this function constantly analyzes drivers' steering behavior to recognize phases when they do not steer and then make abrupt corrections – a common sign of flagging concentration and increasing fatigue. If it detects such a phase, the system emits a warning signal. From his nighttime trips to the suburbs, Fujimoto knows how dangerous microsleep can be. As Tokyo slowly awakens, taxi 136 closes its door for the last time. There is certainly a lot to be said for arriving home safe and sound – not only in Tokyo.

Automatic emergency braking rear

Life saver *in reverse*



Mid-range radar rear: this sensor variant is mounted at the rear of the vehicle.

Children love to play outdoors, which sometimes also means behind parked cars. Some large vehicles have such extensive blind spots, however, that even a driver who conscientiously checks every mirror might not be able to see a small child standing directly behind the rear bumper. And once the car starts moving, an accident can happen in a flash...

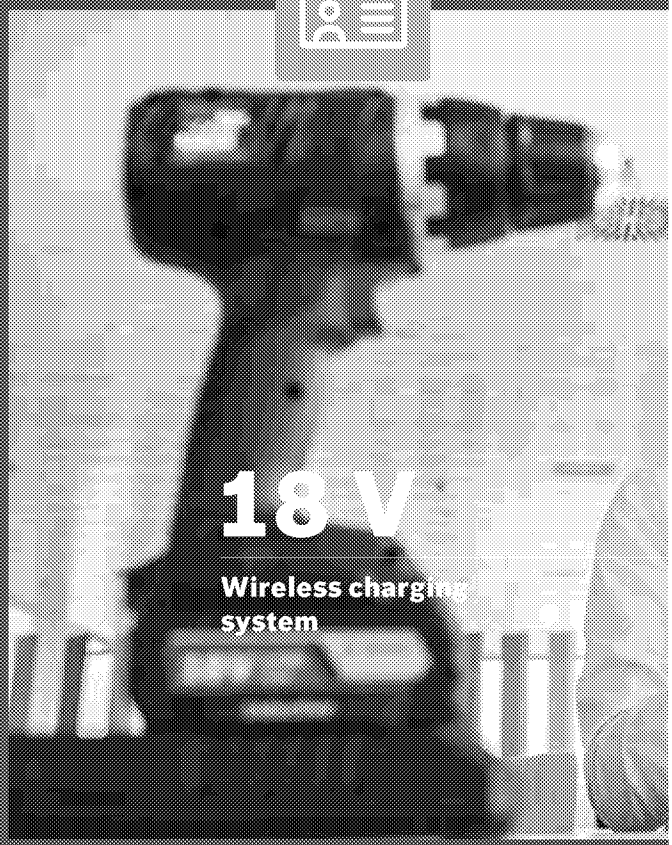
Financed by the Australian government and the state of Victoria, Bosch Australia's driver assistance systems specialists have developed what they call a back-over avoidance concept. It helps minimize risks precisely in the kind of situation described above, where drivers' field of view is severely restricted.

This automatic emergency braking function for cars that are backing up harnesses the radar and ultrasound sensors that are already used in various driver assistance systems for safely changing lanes, parking, and identifying blind spots. The function begins monitoring as soon as the reverse gear is engaged, and intervenes at speeds up to 15 kph. If the sensors detect someone in the path of a vehicle backing up and determine that a collision is unavoidable, the system instantly and automatically engages the brake. With a range of about ten meters, the sensors can monitor standard driveways and other areas with pedestrian traffic such as supermarket parking lots, where the risk of such accidents is greatest. The automatic emergency braking function also provides additional protection against collisions when the driver inadvertently puts the vehicle into reverse, or starts to accelerate while backing up in a dangerous situation.

On average, nearly 70 children under the age of 15 are seriously injured every year in Australia by vehicles backing up at home. After producing encouraging results, it is hoped that the project can now leave the study stage and be offered to automakers. The Society of Automotive Engineers Australasia has recognized the Bosch innovation with a platinum award for excellence in mobility engineering, its highest honor.

Distance *no object*

Through high-powered wireless charging, Bosch Power Tools is set to revolutionize the use of battery-operated appliances in the near future. The first step has already been taken with a wireless charging system for professional power tools. Developed in response to requests by tradespeople, it promises to make their everyday work more efficient.



Dr. Maik Rabe holds the future in his hand – a conventional cordless screwdriver with a new-generation battery pack. As the man behind the development of professional battery-powered tools, Rabe aims to use this machine to refute a commonly held belief that hardly anyone has dared question, not even in their wildest dreams – that electricity only flows through cables and contact points. And he has succeeded.

The trailblazing appliance lies on the table before him, a plastic housing that is connected to the mains, but has no visible contacts. Rabe holds the cordless screwdriver a few millimeters away from this charger. Even though they are not actually touching (the screwdriver similarly has no electrical contacts), the battery is still being charged. It's almost as if the energy is being drawn through the air. The technical term for this process is inductive charging. A coil in the transmitter generates a magnetic field. When the coil in the screwdriver's rechargeable battery comes within the range of this magnetic field, a voltage is induced, generating a flow of current that is then stored in the battery.

The Bosch wireless charging system works without any electrical contact points between the battery pack and the charger, without cables, and even remotely, provided the charger and tool are not too far apart. When the cordless screwdriver is not being used, the tradesperson simply places it on top of the charger. That way, the battery is replenished during any pauses between operation. A humbler version of the system can be found in electric toothbrushes, which rest on their plastic stands between brushings so that they are fully charged when next needed. However, the amount of energy required to power an electric toothbrush is very small. Plus, there is no rush to recharge a toothbrush. Under these conditions, a cordless screwdriver would not receive the energy it requires. Making inductive charging capable of handling high levels of power uptake was therefore one of the challenges the Bosch developers had to deal with – but one they managed to overcome to meet customers' needs.

As Rabe points out, "One problem professional tradespeople have is the availability of a power supply on site." True, the power-hungry tools that had to be plugged into the mains five years ago can now be battery operated. But this has come at a cost – increasingly large and heavy chargers. Often, backup batteries are needed. And if the tradespeople forget

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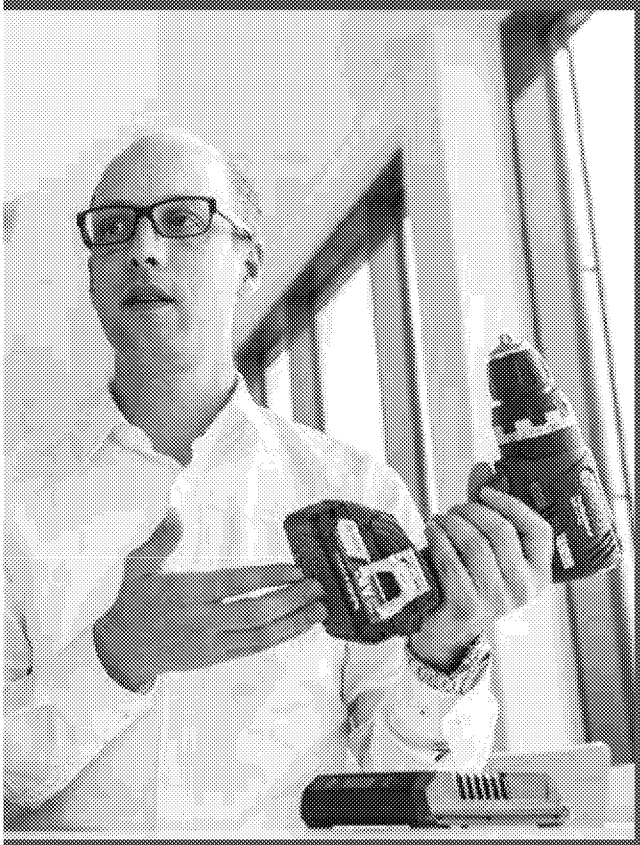
inductive-charging

to recharge, work can come grinding to a frustrating halt. Even without these involuntary interruptions, the recharging process adversely affects productivity.

Bosch approaches this problem in two ways. First, battery performance is being constantly improved. As early as mid-



2015, wireless battery packs will be available with a capacity of four ampere hours, instead of the two that have been standard up to now. As a result, it will also be possible to use batteries in tools that require more energy, such as angle grinders. Secondly, the charging process is being simplified and integrated into existing workflows. For this purpose, tradespeople were polled and their usage patterns analyzed. The findings revealed that professionals have a problem with plug-in contacts, since these are sensitive to dirt. In the current solution, the only contact is between plastic (the battery) and plastic (the charger). Plus, the backup battery is no longer necessary. The new system is also more compact and robust than its predecessors. When developing it, the greatest challenge to solve was that metal objects get very hot if they are caught between the battery pack and the charger during the recharging process. For safety's sake, it had to be ensured that the charger could detect metal and, if it did, would immediately terminate the charging process and indicate a fault.

The charging system for cordless screwdrivers is currently available for stationary applications, allowing customers to install it in a production line or workshop. There are also plans for the charging station to be integrated into workbenches, removing the clutter of chargers and cables from the work surface. The mobile version is scheduled to reach the market in 2015. Being able to use travel times to recharge was high up on customers' wish lists. With the Bosch system, the journey to a job site is usually sufficient to charge a cordless screwdriver for a day's work – including a reserve battery. Packed into its plastic case, the cordless screwdriver is secured near the charger, which is powered by the vehicle battery. In this way, the tool is recharged during the trip, without having to be removed from its case. The upshot is that tradespeople save time and don't have to hunt for power outlets on site.

It goes without saying that there is talk at Bosch about how the advantages of the wireless charging system can be harnessed in other fields. Maik Rabe believes this is entirely viable.

> *"In each case, the concern is to find the easiest way to get the energy into the battery. Our solution is ready for use wherever and whenever."*
>
> Dr. Maik Rabe, Bosch expert for cordless professional tools

There is no reason why the Bosch system could not be built into desks to recharge laptops wirelessly, or allow electric can openers and beaters to function entirely without cables in the kitchen. And if the system were built into cars, cellphones and laptops could be charged wirelessly there as well – the possibilities are endless. Rabe believes it all comes down to one thing: "The success of a product depends on whether a manufacturer can offer the right solution to a customer's problem and spark the customer's enthusiasm at the same time."

Research *unlimited*

Can a researcher's working environment foster creativity and new ideas? Bosch thinks so – and has built a state-of-the-art facility to prove it. The facility incorporates the latest wisdom from industrial and organizational science, as well as the needs and wishes of associates. During a walk across the Renningen site, the developers Anja Englert and Franz Lärmer talk about their previous working environments as well as their hopes and expectations for the new research campus.

Building 120, second floor. A generous balcony overlooking the Renningen research campus. Behind Lärmer and Englert, the high-rise building towers into the sky.

Lärmer: Is that where you'll be working?

Englert: That's right, I'll be sitting on the fourth floor, in the back left corner, together with the rest of my "functional safety" team.

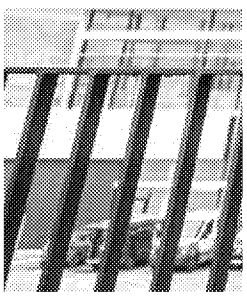
Lärmer: I would have really liked to have a shared office space with my team at our last location. You can't imagine how the flow of information is interrupted when the group is split by even a single wall!

Englert: It was the same for us. Online, we use the Bosch Connect social business network, especially with international colleagues. But when it comes to those short daily updates on project progress, we prefer to do them face-to-face.

Lärmer: Physical proximity is important. At the same time, I often need peace and quiet – for instance, when I have to conduct a confidential phone call with the patents department. I'm happy that I won't need to book a room in advance for such things anymore, but can just go and find one when I need it. Then I'll just take my smartphone along...

Englert: ...and maybe your laptop too? My colleagues and I often retreat to the small blue room over there – the one with bar tables and stools. That way, when a short conversation turns into a longer discussion about something work-related, we don't disturb anyone.

Lärmer: I find bar tables so practical, by the way. When you just want to have a five-minute conversation with someone, they encourage you to keep it short – unlike when you're sitting on that sofa there. I think bar tables are a better idea.



***Dr. Anja Englert** (31) is a physics graduate and has been working at Bosch for two years. She researches systems safety in the User Technologies unit, specifically taking human behavior into account. She is also developing a crowd-funding model within the research department. The model uses online channels to evaluate and attract financing for exciting ideas.*

***Dr. Franz Lärmer** (54) is also a physicist. For decades, he has been one of Bosch's most prominent inventors. In the early 1990s, he developed a process that revolutionized the production of MEMS sensors, and which is still used worldwide. He has filed nearly 200 patents for this and other inventions. Lärmer is currently heading up a project in the area of medical technology*

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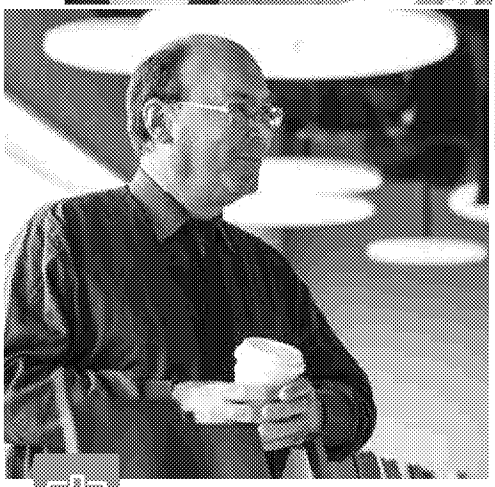
1,800 pieces of **machinery and equipment** from 270 laboratories changed location.

45,700 **researchers and developers** work on innovations at Bosch. They include just under 1,400 academics working worldwide in the corporate sector for research and advance engineering. Of these, roughly 1,200 work in Renningen.

Some **5 billion euros** were invested by Bosch in research and development in 2016 – around 10 percent of sales revenue.

12,000 boxes were packed so that Bosch researchers previously working at various locations around the greater Stuttgart area could move to the new Renningen campus.

Bosch associates file an average of **18 patents per day.**



"Imagine the potential! When the chemist working on project X runs into the engineer from project Y, the result could be something completely new and unexpected."

Dr. Franz Laxner, physicist at Bosch

Renningen

At its new center for research and advance engineering in Renningen, Bosch has brought together more than 1,200 researchers and developers as well as some 500 students. In around two and a half years, the new research campus was built on a tract of land just outside Stuttgart. Associates who were previously split between three locations in the greater Stuttgart area have just started working together on the new campus. Renningen is the new heart of corporate research and advance engineering, whose international network spans locations in China, Germany, India, Japan, Russia, Singapore, and the United States.

In Renningen, the planning and design process took account of the latest insights from research into the working environments of the future. A core team of associates was involved in the process from the beginning and contributed their ideas and wishes.

The planners were also careful to take sustainability and eco-friendliness into account. For instance, rainwater is collected in the campus's two lakes and later used to supply cooling towers. This saves more than 20,000 cubic meters of fresh water annually – the equivalent of 200,000 bathtubs full. And solar panels on the roofs generate enough electricity for 100 four-person families.

The Renningen campus comprises 14 buildings on an approximately 43-hectare site. This is about the size of 60 football fields – plenty of space for inventions that improve quality of life. The Bosch CEO Volkmar Denner is certain of one thing: "The Renningen location will enhance the Bosch Group's innovative strength."

The labs next door: the new location offers researchers the possibility to quickly and efficiently discuss ideas with technicians.

Englert: Me, I like a more relaxed atmosphere. So it's good that each department can decide for itself how it wants to equip its meeting rooms. What I think we're all going to find is that our physical workplaces are not so rigidly defined anymore: sometimes we'll work at our desks, sometimes in one of the other rooms here, sometimes in the lab. .

Lärmer: Yeah, my team will be able to work much more flexibly. For them, it's ideal that they can quickly pop over to the lab two doors down, or head down to the workshop to talk directly to the technicians.

Englert: Or sit and work on our laptops. Though I prefer to do that at my desk, or outside in the summer, using wifi. But this is a great spot for spontaneous meetings.

Lärmer: And it's those spontaneous meetings that often result in the best ideas. Imagine the potential! When the chemist working on project X runs into the engineer from project Y, the result could be something completely new and unexpected.

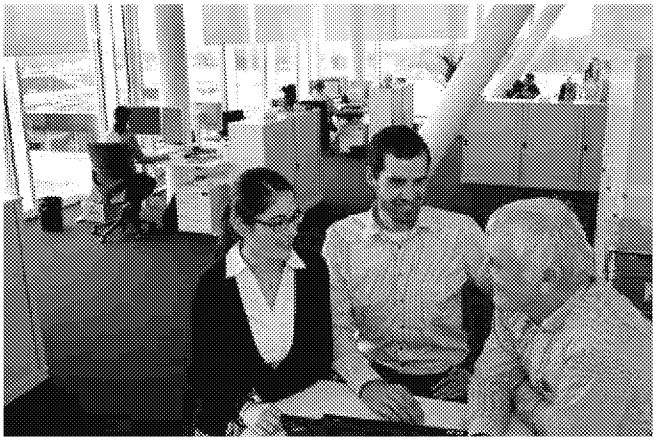
Englert: And when you're standing around the coffee machine, hierarchies are not so important.

Lärmer: True. I can imagine that it might be easier for an associate to ask their supervisor for advice in such a setting. These kinds of opportunities for chance encounters didn't use to exist in my department.

A few steps further: one of the eight communication zones on the Renningen campus. 100 square meters to talk or relax. Lärmer tries his luck on the basketball court. To the left is a table that can sit 15 people comfortably.

Lärmer: We can celebrate birthdays with our colleagues here.

Englert and Lärmer stroll on across the campus. They pass the lakes which also serve as catchment basins and entice passers-by to linger on their grassy banks. Behind them is the associate cafeteria. The large windows looking onto the terrace can be opened.



For the researchers Regina Schrembs, Sven Dose, and Karlheinz Häcker, it's simple to move back and forth between workshop and office on the new campus.

Englert: Over here in the bistro, I can grab a cup of coffee and a sandwich outside of the cafeteria's opening times. For me, rigid working hours don't fit with the idea of a modern working culture. I'm also happy that I can occasionally work from home. For example, exchanges over Bosch Connect work great from my workplace at home.

Lärmer: Do you have children?

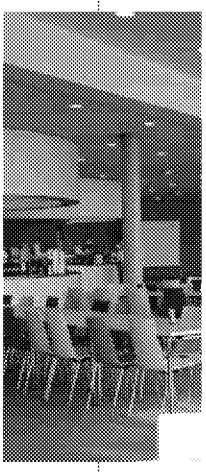
Englert: Yes, Johanna is three, and Valentin just turned one. So the flexibility I have here also helps me with the job of looking after them. Usually, however, they're in daycare here in Renningen – something that Bosch offers in cooperation with the city.

Lärmer: I spend most of my time in the office, since I want to be available for my associates. That said, I do frequently read work-related articles at home. Where you do your work is less important – good ideas can come to you anywhere.

Englert: When the conditions are right...

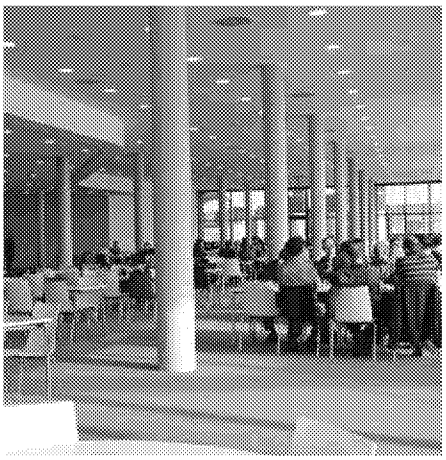
Lärmer: Absolutely. All associates, particularly those in research, need space – both intellectual and physical. You can't force innovations, but you can create the optimum conditions for doing good research and enjoying the process.

Two questions for Susanne Klement, expert on work organization at Bosch



How does a working environment encourage creativity and new ideas?
Associates work more productively when their working conditions are inspiring, attractive, and suited to the task at hand. All this improves the company's innovative strength, which in turn allows us to offer our customers solutions that enrich their lives. At the same time, we increase our competitiveness, as well as our attractiveness as an employer.

What are the key factors for this?
There are three: working time regulations, physical workplace, and equipment. Telecommuting and flexible arrangements enable us to complete our tasks in the office, on the road, or at home. Mobile devices and a good, reliable IT setup for digital communication make this flexibility easier. A modern working environment also helps, and facilitates teamwork. At the same time, such an environment offers secluded spaces for uninterrupted concentration.



Wissensfabrik initiative

More knowledge, more education, more prospects

Pulley project: children try out a pulley system they constructed together with Bosch Rexroth apprentices.

Bosch is not only concerned with the associates currently working in research. The company also has a keen interest in tomorrow's inventors and engineers. As part of the *Wissensfabrik* (knowledge factory) initiative, Bosch has joined forces with other companies and foundations to actively support education for young people as well as to foster entrepreneurship in Germany. The *Wissensfabrik* members have the common objective of ensuring Germany's future as a business location. Bosch is one of the initiative's founding members. "Bosch associates take on social responsibility and help make the next generation fit for the future," says Franz Fehrenbach, chairman of the supervisory board of Robert Bosch GmbH. "That includes kindling young girls' and boys' enthusiasm for technology and business as early as possible." The supplier of technology and services supports the educational activities of schools and preschools, while also providing assistance for startups.

In the area of early learning, the *Wissensfabrik's* members enter into partnerships with schools and preschools in their respective regions. The focus is on familiarizing children with scientific, technical, and economic topics. Experts supervise projects, which often involve parents as well. Bosch locations with their own apprenticeship schemes also team up with local pre-, elementary, and secondary schools. They employ educational aids such as construction kits and involve children in individual projects designed to foster interest in technology and introduce basic economic concepts. Many Bosch apprentices themselves get involved, and in contributing their knowledge and supervising projects also have the opportunity to improve their own social skills. Bosch is currently actively involved in more than 260 educational partnerships around Germany.

The initiative also addresses the subject of entrepreneurship. Managers and experts from the member organizations offer mentoring support for people setting up their own businesses. Along with sharing their know-how and experience, they simultaneously take on social responsibility – and gain useful insights for their own work.

A continent of *opportunities*

"The increasingly well-educated workforce, the growing middle class, and the continent's wealth of raw materials – all these point toward positive economic development for many African countries."

John Ndungu, the first Bosch Thermotechnology associate in Kenya

John Ndungu and João Ribeiro at Jomo Kenyatta International Airport.

More than a billion people live in Africa. That gives Bosch more than a billion reasons to focus on the continent, which is also an enormous growth market. The company not only delivers products tailored to customers there, but also believes in the importance of having local Bosch associates to look after customers and provide after-sales service. The Thermotechnology division is proof positive that this strategy is succeeding where industrial boiler technology is concerned – and that it is also having a positive influence on lives in Africa.

João Ribeiro's daughter has a map of Africa on the wall of her room. Her father hung it there. Whenever the 37-year-old Portuguese goes on a business trip, he marks his next destination with a small pin: "So that Caterina always knows where I am." Ribeiro is based in Lisbon, and is responsible for servicing the industrial boiler market in Africa for Bosch Thermotechnology. By now, his eight-year-old daughter knows the countries marked by heart: Kenya, Morocco, Algeria, Egypt, South Africa, and five or six others. There are deep pin holes marking all these countries. That's because the strategic development of the market by Bosch Thermotechnology is gathering steam. Pin by pin, country by country. And according to plan.

Ribeiro has another map of Africa he keeps folded in his wallet. Each country is highlighted in a different color, and the paper is well worn. That scrap of paper is his constant companion. It helps him get his bearings and plan his trips. He is usually on the road for one to two weeks each month. Recently, Ribeiro has been spending a lot of time in Kenya. Every time he leaves the security-restricted area of Jomo Kenyatta International Airport, John Ndungu is waiting for him. "Karibu," says John, which means "welcome" in Swahili. The greeting is heartfelt. Ndungu is the first Bosch Thermotechnology associate in Kenya. Together, they set off to Thika, a city in the country's northeast with a population of 100,000. The journey takes just under an hour. In early 2015, Bosch Thermotechnology installed two large industrial boilers in a pineapple factory in Thika owned by the U.S.-based food company Del Monte. Each of the boilers weighs 30 metric tons, is eight meters long, and measures three meters in diameter. They provide steam for pasteurizing and cooking the 240,000 metric tons of pineapples which are processed annually at the factory. Up to 9,000 metric tons of CO_2 are saved by the new, modern boilers. They've also made production stoppages almost a thing of the past. Since production is now reliable and energy efficient, the company is considerably more profitable. For its 6,000-strong workforce, that means greater job security. The investment in Bosch boilers by the pineapple factory in Kenya will pay for itself in just one year.

annual-report.bosch.com/africa

But how can a company plan to grow on a continent whose countries are like pieces of a puzzle that don't seem to fit together? Africa has 54 states, which means 54 political and economic landscapes that could hardly be more different. Analyzing markets often seems more like gazing into a crystal ball. Business conditions change in the blink of an eye, and forecasts are sometimes based on no more than estimates.

For forecasts to be more reliable, some basic legwork needs to be done. Ribeiro joined Bosch in 2011 to do precisely this. He calculates potential sales, sets priorities, defines key criteria, sets up contacts with clients, and interviews job candidates. Along with César Mauricio, who is responsible for Thermotechnology sales in Africa, he has developed a concept that envisions increasing the industrial boiler market share in Africa to 20 percent by 2020. For a long time now, Bosch has been working to make Africa a success story. In 2014, sales of industrial boilers grew by 183 percent year on year. Thermotechnology's industrial-scale boilers are in great demand. Multinationals such as Coca-Cola, ExxonMobil, Heineken, Nestlé, and SABMiller rely on Bosch quality. But pharmaceuticals companies and hospitals also appreciate the extra value these boilers deliver and use the steam they produce to sterilize laboratory and surgical instruments.

In order to be successful, Bosch not only needs to deliver the right products at the right price, but also at the right place at the right time. "Customers want improved efficiency, higher quality, and better service," Ribeiro says. "So, if we want to sell more, we also need more qualified Bosch associates on the ground. Otherwise that growth will not be sustainable." In contrast to the two million-plus gas-fired instantaneous water heaters already installed in private homes in Africa, large-scale industrial boilers have to be installed and serviced by people with a lot of expertise. The number of Thermotechnology associates responsible for Africa is growing markedly. Mauricio expects to have at least 60 Bosch Thermotechnology colleagues in Africa by 2020. Just three years ago, three associates were responsible for the entire continent.

The Bosch Africa strategy

Positive outlook

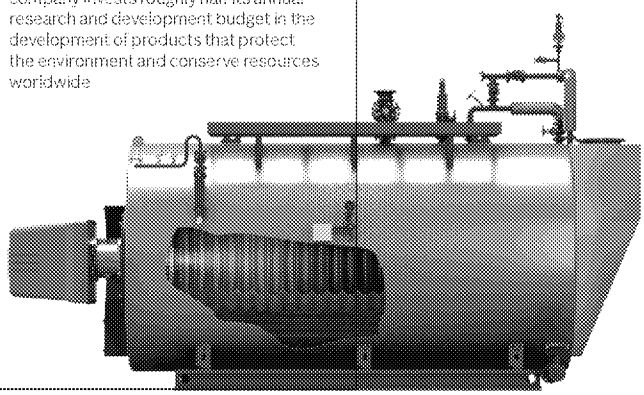
Bosch has been doing business in Africa throughout nearly its entire history. The first sales representative arrived in South Africa as early as 1906. Today, the African economy is one of the world's most dynamic. At the end of 2014, Bosch had a regional subsidiary or branch office in nine African countries. Five of these – Nigeria, Angola, Mozambique, Ghana, and Algeria – were established in 2014. Prior to that, there were already offices in Morocco, Egypt, Kenya, and South Africa. In 2015, a location in Tunisia will join them. In 2014, roughly 670 Bosch associates generated sales of some 350 million euros in Africa. The focus of the company's activities is currently South Africa, where there are two manufacturing sites: original automotive equipment and spare parts are made in Brits, while packaging machinery is assembled in Midrand. According to the Bosch board of management member Uwe Raschke, "Africa's economy is growing at an above-average pace. The capital expenditure required to improve its infrastructure offers significant potential for future expansion, as does its growing middle class." For years now, Bosch has undertaken a wide range of activities that underscore the importance of Africa. For instance, Bosch executives regularly meet with external experts on Africa from various organizations and government agencies during an Africa Day in Europe or Africa. The participants discuss their experiences as well as strategic considerations. In addition, since 2008 Bosch has been involved in "Afrika kommt!" an initiative of German industry for future leaders from subsaharan Africa. "Our goal is to foster mutual exchange and learning between budding African executives and German companies," says Tilman Todenhöfer, managing partner of Robert Bosch Industrietreuhand KG. "This offers an important basis for the expansion of business relations between Europe and Africa."

One of them is Ndungu. He often talks about how proud he is to work for Bosch: "We can contribute to improving quality of life for local people with our products and services. In this respect, we are concentrating on the needs of our local customers." There is also another motivation: "On a personal level, now that I have a secure job, it's easier for me to plan ahead," says Ndungu, who has also been to Germany for training. Beaming, he displays a photo of his daughter. "My job is making it possible for Mary Anne Nginya to study at Egerton University in Nakuru." Like Mary Anne, ever more young people in Africa are going to college. The increasingly well-educated workforce, the growing middle class, and the continent's wealth of raw materials – all these point toward positive economic development for many African countries.

Going forward, Ribeiro will fly back and forth frequently to ensure the continued success of this Bosch strategy. But the next pin he will place on his daughter's map will not be business-related. It will be in the Seychelles, the island state in the Indian Ocean which is also part of Africa. He will be taking a personal trip there, together with his wife Eunice, to celebrate their tenth wedding anniversary. Even so, Ribeiro has done some research and found out that there are three Bosch boilers there. "While I'm there, I may as well ask them if they need any support."

Boilers: eco-friendly and efficient

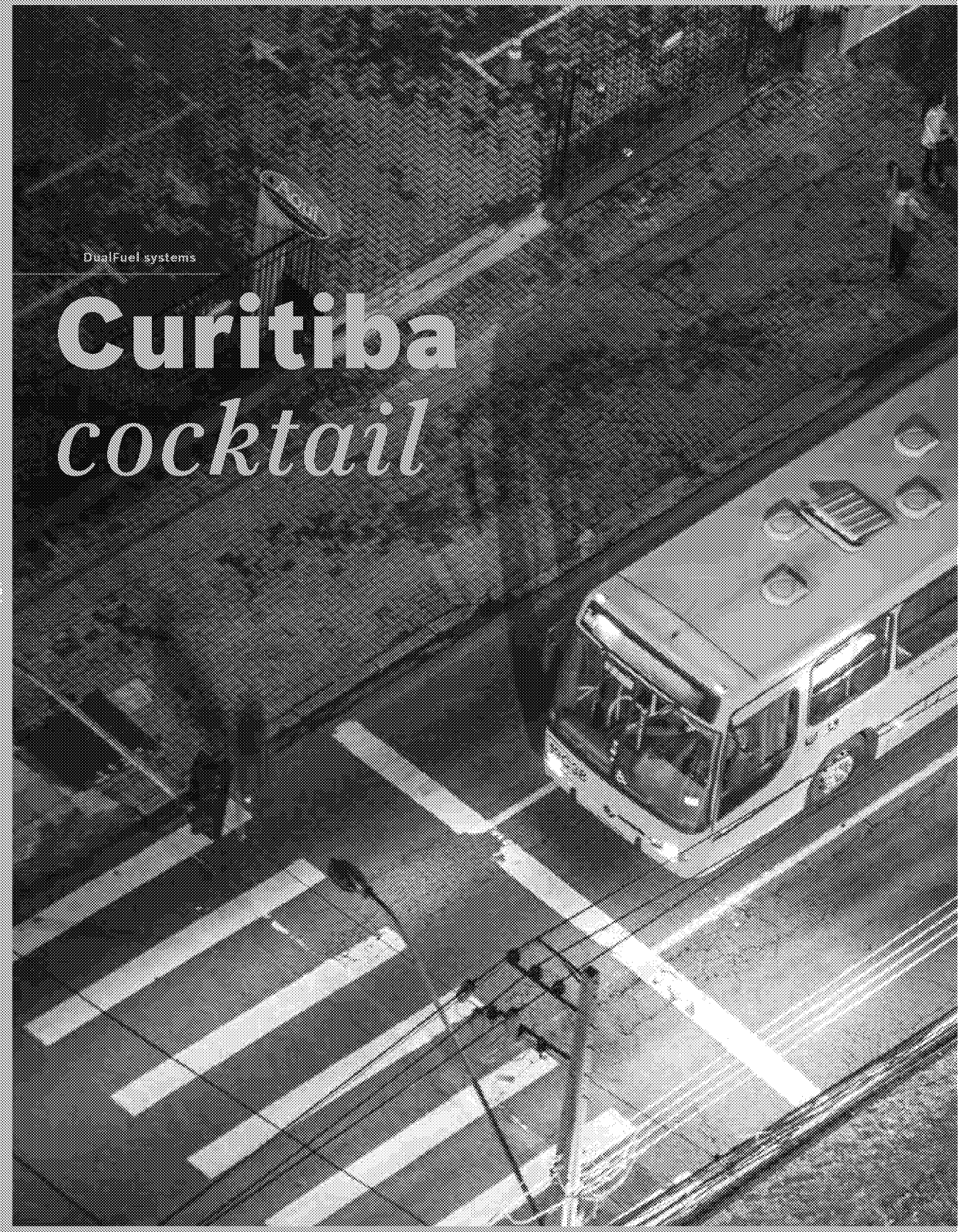
Bosch is committed to environmental protection and resource conservation. The company's sustainable, efficient industrial boilers keep CO_2 emissions to a minimum and help mitigate climate change. Additional savings can be achieved thanks to the modular design of the boiler house equipment. The company invests roughly half its annual research and development budget in the development of products that protect the environment and conserve resources worldwide.



Roughly

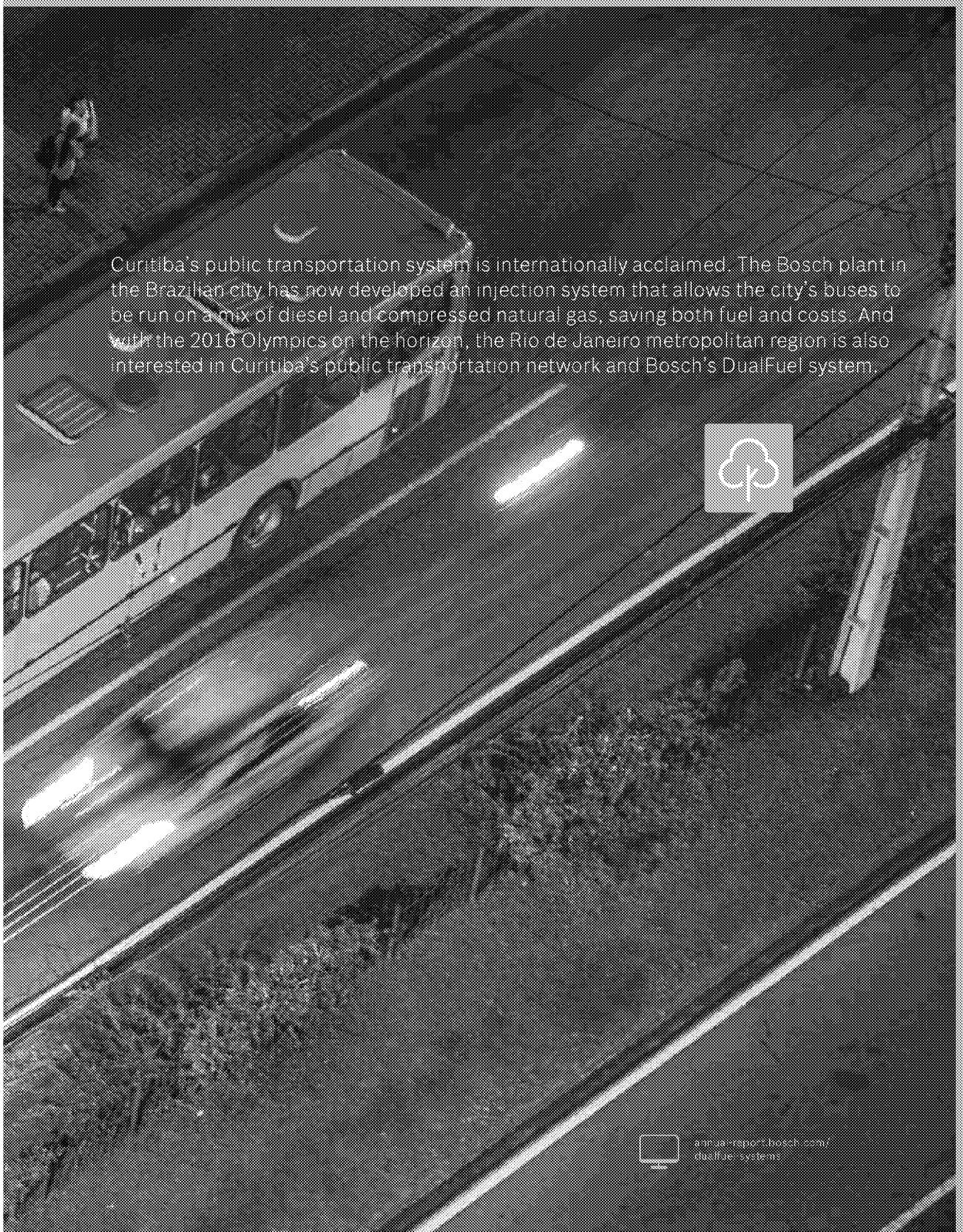
50 **percent**

of the Bosch Group's annual research and development budget is invested in developing products that protect the environment and conserve resources worldwide.



DualFuel systems

Curitiba *cocktail*



Curitiba's public transportation system is internationally acclaimed. The Bosch plant in the Brazilian city has now developed an injection system that allows the city's buses to be run on a mix of diesel and compressed natural gas, saving both fuel and costs. And with the 2016 Olympics on the horizon, the Rio de Janeiro metropolitan region is also interested in Curitiba's public transportation network and Bosch's DualFuel system.

annual-report.bosch.com/
dualfuel-systems

The engineer Frederico Tischer with the group leader Martha Mello Canelada.

2,500

bar is the maximum pressure achieved by the common-rail system. With this technology, Bosch is making diesel powertrains in commercial vehicles even more energy efficient, and reducing costs and emissions per kilometer driven.

50,000

is the number of **commercial-vehicle engines** that Bosch will equip in 2015 with complete CNG systems including control units, sensors, and injection valves.

6

percent is the amount of fuel that heavy trucks can save on long-haul trips through electrification. By the end of the decade, the plan is to develop an electric hybrid for trucks that will pay for itself within two to three years.

Around the world, Bosch's diesel systems business is growing. In Asia, customers are preparing for the China 4 emissions standard. In North America, automakers are planning to introduce some 60 new diesel passenger-car models by 2017. In passenger cars and vans, diesel's market share could realistically reach 10 percent by the end of the decade.

15 percent is the total amount by which Bosch technology can reduce fuel consumption in commercial vehicles by 2020.

annual-report.bosch.com/dualfuel-systems

It's 6:32 a.m. In the middle of the Boa Vista district, at the intersection of Rua Holanda and Rua Jovino de Rosário, Valtair Mafioletti Ribeiro starts his diesel engine. For the tour ahead, the driver takes his bus deep into the urban jungle. Driving for a private bus company, he avoids the main roads, so as not to make the rush-hour traffic in Curitiba even worse. With 1.8 million inhabitants, Curitiba is the largest city in Brazil's Região Sul, or southern region. Ribeiro wants it to stay clean and not choke on exhaust fumes. When it comes to quality of life, Curitiba has a reputation to defend. And Ribeiro sees himself as an integral part of a system designed to make the locals' lives as pleasant as possible. "My job benefits the city and its people," the bus driver says, as he navigates a zigzag course across the city. His Linha 11 (No. 11 bus) plies through Ahú and Juvevê, takes Rua Comendador Macedo to cross the city center, then drives on via Batel, Vila Izabel, and Portão until it reaches the terminus on Avenue Juscelino Kubitschek de Oliveira. After 53 minutes and 17 stops, 25 Bosch associates get off at the Curitiba plant gate.

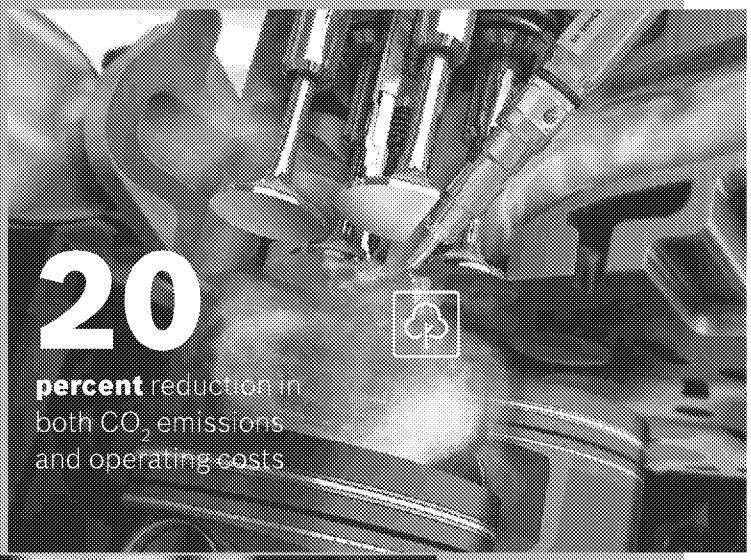
Bosch is just one of many companies offering such a private bus service, which gives its associates a stress-free journey to work, is affordable (costing roughly a euro a month), and helps the city keep a lot of cars off the roads. Seventy-five bus trips end at the Bosch plant gates every day, bringing 2,200 people to work and taking them home again. Ribeiro has been plying his route for five years now. The fuel tank of his bus takes 370 liters of diesel, enough for 1,000 kilometers.

If the Bosch engineers in Curitiba have anything to do with it, Ribeiro should soon be able to drive these 1,000 kilometers on somewhat less fuel, and thus with even less impact on the environment. Their solution is a newly developed engine, the DualFuel – Diesel + CNG. CNG stands for compressed natural gas. Using a specially developed injection nozzle, the gas is mixed with air. This mixture is then forced into the cylinder, where it burns efficiently together with the diesel that has been injected. This mixture, the "Curitiba cocktail," reduces emissions by as much as 20 percent while delivering the same power and torque. For bus operators, it means a 20 percent reduction in fuel costs, since natural gas is roughly one-third cheaper than diesel.

The idea of running an engine on a mixture of diesel and natural gas is not new. But Bosch is the first to offer a solution that is efficient, powerful, economical, and eco-friendly. Mário Massagardi never tires of underlining this fact. When it comes to the DualFuel system, the specialist from Diesel Systems Latin America is a "Bosch ambassador." He gives talks, warns of climate change, and extols the virtues of this engine when it is used in public transportation. "The facts speak for themselves. The decisive thing now is to create an infrastructure that will make it practical to use this engine," Massagardi says. After all, it has to be possible to fill the CNG tank somewhere. In other words, this is not just a question of rethinking, but also of retrofitting and reorganizing. After all, Curitiba provides daily proof that intelligent measures can truly keep traffic and pollution under control.

The capital of the Brazilian state of Paraná sits on a plateau roughly 1,000 meters above sea level. With its many German, Italian, Polish, and Ukrainian immigrants, the city has a quite distinctive history. In the early 1960s, following a decade in which the city had expanded rapidly, the architect Jaime Lerner enlisted the help of a group of experts from the local university. He wanted to deliberately use urban planning to give Curitiba sustainable growth on a human scale. The experts explored the use of such things as parkland, forested areas, public cultural amenities such as free libraries, as well as the need for far-sighted traffic planning. Today, Curitiba is ranked third among

For commercial vehicles, Beach offers a combined natural gas and diesel system that allows up to 90 percent of diesel to be replaced by natural gas. Here, the diesel injection system acts as a kind of liquid spark plug. As it ignites the gas, there is no need for any additional ignition system.



20

percent reduction in both CO_2 emissions and operating costs

"My job benefits the city and its people."

Valtair Mafinletti Ribeiro, bus driver

the world's greenest cities. In the city with the highest per capita truck density in Brazil, the "trinary" road system plays an important role in the city's eco-friendly credentials. Under this system, also Lerner's brainchild, two one-way streets moving in opposite directions surround a two-lane street for buses. Special wheelchair-accessible bus stops – which were designed as elevated tubes and which cannot be accessed without a valid ticket – ensure that passengers can get quickly on and off the buses. As a result, the average speed of Curitiba's buses is high. Lerner later became mayor and governor, while the city itself was named the "world's most innovative city" at the Habitat II summit of urban planners in 1996.

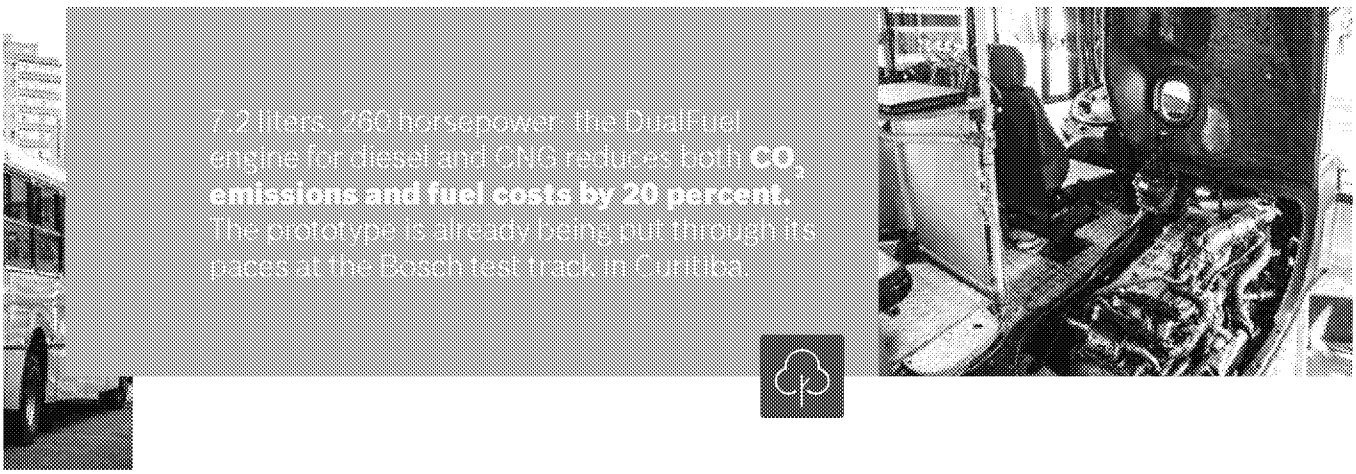
Like many Brazilian metropolises that are grappling with suffocating traffic, Rio de Janeiro is also very interested in a well-functioning bus system. It wants to modernize its public transportation in time for the 2016 Olympics, and regards Curitiba as a model. And in order to make local transportation not only smoother but also more cost-effective and eco-friendly, the municipal authorities are considering renewing the bus fleet at the same time – with Bosch's DualFuel system. For this to happen, the 64 depots where local buses are serviced and filled with fuel would have to be connected to Rio's gas supply.

It would be a worthwhile investment. Rio has some 10,000 public buses. New buses fitted with the DualFuel system would cut CO_2 emissions by 250,000 metric tons a year, while annual operating costs would fall by 100 million dollars. And there is another economic argument. Every four years, Rio renews its bus fleet, selling the old ones on to smaller cities. Often, these cities do not have any natural gas supply, so they are only interested in diesel buses. The advantage of the Bosch DualFuel system is that it can also run on diesel alone. The only difference is that the bus consumes slightly more fuel.

What sounds good in theory is also impressive in practice. Out on the short test track on the Bosch site in Curitiba, the engineer Frederico Tischer gets behind the wheel of a prototype. It is loaded with large, heavy water canisters, which are intended to simulate a fully-laden bus. The 7.2-liter engine delivers 260 horsepower for a payload of 17 metric tons. "Just look how easily it takes this hill," Tischer says, and steps on the

Keeping traffic moving: tube-shaped bus stops are an important element of Curitiba's concept for public transportation. They allow passengers to get on and off quickly and minimize the time each bus needs to spend at the stop.

gas pedal. The typical sound of the diesel engine is unmistakable, but as more gas is added to the mix, the sound becomes more mellow. The Curitiba cocktail not only has its own special recipe, but also its own distinctive melody. And its sound will be unmistakable on Brazil's roads when the engine finds its first customers. Until then, the bus driver Valtair Mafioletti Ribeiro will have to make do with pure diesel. Starting from Rua Holanda at 6:32 every morning, with 53 minutes and 17 stops to go: this is his route to Bosch – and his contribution to the city's well-being. He wants Curitiba to stay clean.



7.2 liters, 260 horsepower: the DualFuel engine for diesel and CNG reduces both **CO_2 emissions and fuel costs by 20 percent.** The prototype is already being put through its paces at the Bosch test track in Curitiba.

Quality *with a capital Q*

For two years now, Lan Guo and her family have lived in Reutlingen, Germany. As quality manager for ceramic production at the Bosch location there, the Chinese native sets the bar high for products and processes. And outside of work, she appreciates the quality of life in her new home.

Talking through a face mask: Lan Guo in discussion with one of her quality management colleagues in clean room W500 at the Reutlingen site. In the lab, the native of China scrutinizes a ceramic component.

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quality-assurance

Quality *with a capital Q*

For two years now, Lan Guo and her family have lived in Reutlingen, Germany. As quality manager for ceramic production at the Bosch location there, the Chinese native sets the bar high for products and processes. And outside of work, she appreciates the quality of life in her new home.

In the clean rooms of its water fab in Reutlingen, Bosch reduces the number of particles measuring a maximum of 5 µm to just

20

per cubic meter of air.

17

times thinner than a human hair: this is how tiny some of the components developed by Bosch for its MEMS (microelectromechanical systems) sensors are.

Today, around **100**

sensors (including MEMS sensors) are installed in modern, premium-class vehicles and play a part in controlling their drive, chassis, and safety systems.

"Dust and particles can interfere with the sensitive production processes and greatly impair the sensors' functions."

Lan Guo, quality manager

It is expected that the market for MEMS will grow on average by

12

percent each year, to reach sales of 18 billion U.S. dollars by 2017.

annual-report.bosch.com/quality-assurance

Changing for work requires adherence to a strict ritual. Lan Guo puts on special white shoes, slips on an overall, then dons a cap, rubber gloves, and a face mask. All that remains to identify the young Chinese woman are her glasses. Inside an airlock, any impurities on her clothes are removed. Only then is she ready to enter clean room W500.

Here, making a clean job of ceramics is taken literally. The standards for the clean room W500 are especially high: one cubic meter of air in the clean room can contain a maximum of just 3,250 particles larger than 0.5µm. Compare that with the same volume of air in an urban area with a 30-kph speed limit and you're up against 500,000 such particles. "Dust and particles can interfere with the sensitive production processes and greatly impair the sensors' functions," Guo explains, pointing to her protective clothing and her muffled-up colleagues. In the sterile environment, a constant humming and hissing accompanies the printing of silver conducting tracks onto the flexible basic components that are fired to form ceramics. Once a series of further complex processes has been completed, these products are sent to other Bosch locations, where experts populate the ceramic base with electronic components such as sensors that measure air pressure in engine compartments or nitrogen-oxide levels in exhaust fumes. Alternatively, they might be fitted with sensors for smartphones or tablets that detect how the device is being held so the display can adjust to landscape or portrait format.

Manufacturing such highly sensitive products demands adherence to meticulous standards – and not just as regards cleanliness, but also the tiniest deviations from the production process. That's why Guo, the group leader for quality management, meets regularly with her quality management colleagues at the "Q base." There, she discusses the events of the previous day with a shift supervisor from production, as well as with team leaders and process engineers. Were rejects produced? Did any faults occur? Did the Bosch sites supplied have any production-related complaints?

Before Guo came to Reutlingen, she worked for Bosch in the eastern Chinese city of Suzhou as a senior manager responsible for quality control. Now, as global quality manager, she oversees the Suzhou location. "My background means that I understand both sides, and that makes for good working relationships and communications," she says. Her main concern is to enhance the way Bosch locations collabo-

"We soon built up a circle of good friends."

Lan Guo, quality manager

Family day to celebrate the 50th anniversary of the Bosch location in Reutlingen: Lan Guo with her husband Chencong Li and son Rui.

rate, with a view to improving product quality even further. It's why she always strives to be "reasonable and conciliatory" in her communications.

Lan Guo speaks English, German, and Chinese at work. Since arriving in Reutlingen with her husband and son two years ago, she has attended German language classes on the Reutlingen premises once or twice a week. After six months at the kindergarten in Reutlingen, her five-year-old son Rui was so used to speaking German that he was initially reluctant to switch back to Chinese on a trip to the family's native country.

Lan Guo's husband works as a project manager in R&D at Bosch in Reutlingen. Through their son, the two of them quickly got to know other parents. "We soon built up a circle of good friends," the quality manager says, seeing this as further testimony to her high quality of life in Germany. The impressive technological standards in her new home have also made an impression on her: "At first, I was totally amazed at all the great cars and motorcycles."

Something else she really appreciates in Germany is how much easier it is to find a better balance between work and family life. Even so, she misses the way she used to meet up with Chinese colleagues. That's why she arranges get-togethers with her German colleagues after hours – which is the norm back home. "It's my way of introducing a bit of the Chinese work culture," says Lan Guo, whom most of her colleagues know as Landy. In 2016, she and her family will return to China at the end of their three-year stint in Germany. By then, she says, she hopes to have a much better grasp of the language, adding in faultless German, "Der Himmel ist blau mit vielen Wolken." (The sky is blue with lots of clouds).

MEMS sensors

High-tech helpers for vehicles and smartphones

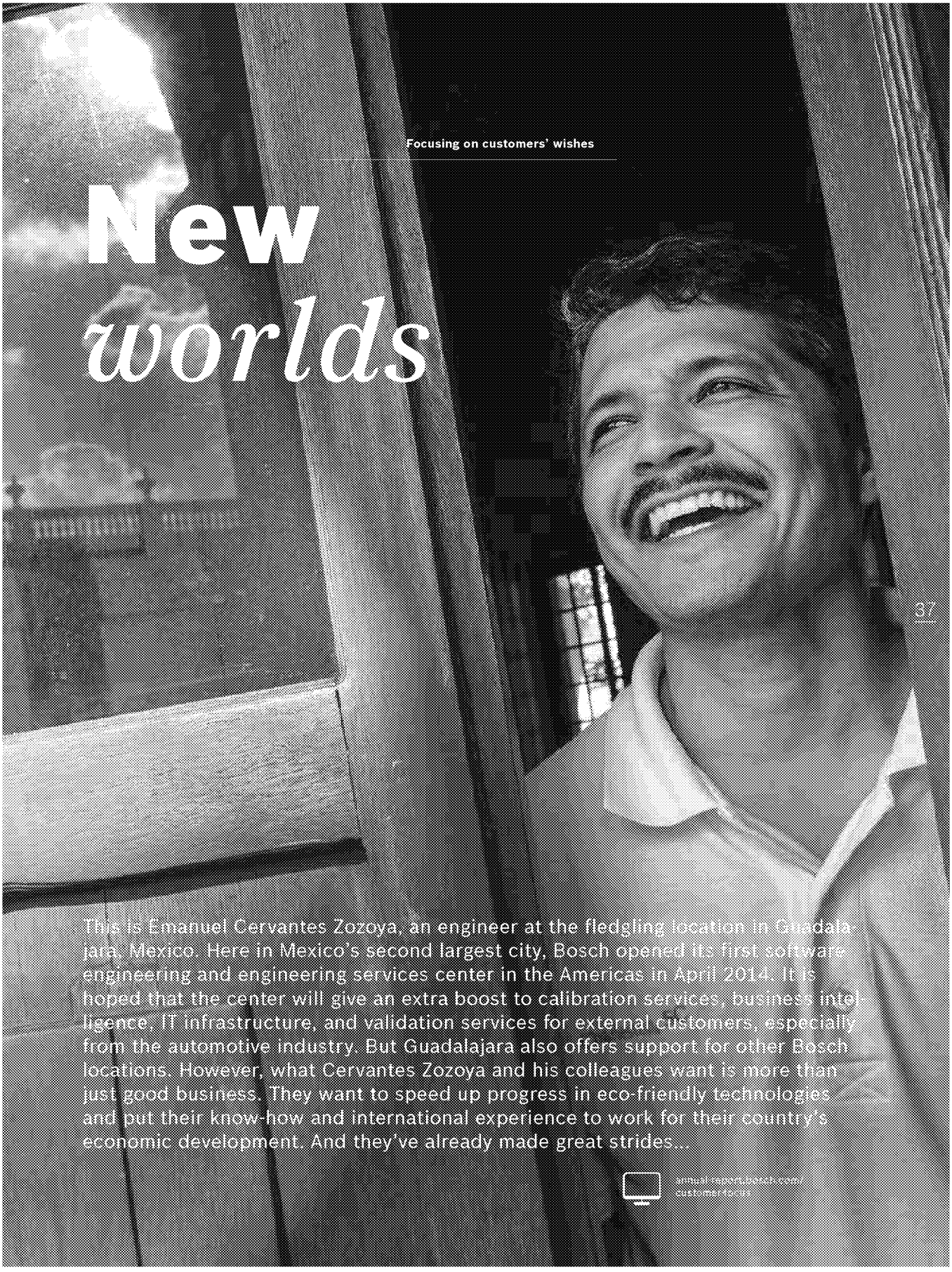
For many years now, sensors in systems such as the ESP® electronic stability program have been instrumental in making cars safer. The sensory feedback for these systems is provided by tiny MEMS (microelectromechanical systems) sensors. Bosch in Reutlingen has mass-produced some five billion such sensors since 1995. Today's passenger cars contain up to 50 MEMS sensors, measuring acceleration, temperature, humidity, friction, noise, vibration, and tilt. These components have subsequently become indispensable in consumer electronics as well, and are now found in smartphones, games consoles, and fitness trackers. Encased in a casing only a few square millimeters in size, the latest generation of MEMS is now capable of performing multiple functions.

The networking of things and services over the Internet – or areas such as connected industry and smart homes – is fuelling demand for MEMS. Things that were previously "dumb" can now communicate data through information gathered by sensors. As a result, the Internet of things will soon make inroads into all spheres of life. Intelligently programmed with software algorithms and equipped with microcontroller, miniature battery, and tiny RFID chip, the sensors can process environmental measurement data and send them over the Internet to a smartphone. Over the years, the size of such MEMS sensors has been reduced to a fifteenth of what it once was. Electrical consumption has been slashed so dramatically that the sensors can run all day in a smartphone without having to be recharged. Currently, engineers at Bosch are working on harvesting the energy needed to power the sensors from external sources. In the near future, therefore, it is conceivable that smartphone batteries will get extra support in the form of tiny kinetic energy producers for instance, while carrying the phone in a handbag or pocket.

3.0 x 4.5 millimeters

In size, these tiny sensors perform a number of operations, such as measuring acceleration and altitude.

5 billion. This is how many MEMS sensors Bosch has mass-produced since 1995, for a wide variety of applications.



Focusing on customers' wishes

New *worlds*

This is Emanuel Cervantes Zozoya, an engineer at the fledgling location in Guadalajara, Mexico. Here in Mexico's second largest city, Bosch opened its first software engineering and engineering services center in the Americas in April 2014. It is hoped that the center will give an extra boost to calibration services, business intelligence, IT infrastructure, and validation services for external customers, especially from the automotive industry. But Guadalajara also offers support for other Bosch locations. However, what Cervantes Zozoya and his colleagues want is more than just good business. They want to speed up progress in eco-friendly technologies and put their know-how and international experience to work for their country's economic development. And they've already made great strides...

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In his leisure time, Cervantes Zozoya shows his Indian boss the sights of Guadalajara – including the famous murals on the walls of Hospicio Cabañas, the former orphanage.

He found his passion early on: "I could barely walk but I was already under the hood with my grandpa, handing him wrenches." That was in the mid-1980s, deep in southern Mexico, close to the Guatemalan border. Today, Emanuel Cervantes Zozoya lives some 1,400 kilometers away in Guadalajara – one of the most beautiful cities in Mexico, as well as one of the country's key technology hubs. He has maintained his childhood passion for all kinds of vehicles. But some other things have changed since then.

Cervantes Zozoya is now working on making car engines cleaner and more efficient than ever before. He is one of hundreds of researchers and engineers across the globe developing and improving gasoline direct injection systems at Bosch. This technology enables fuel consumption and emissions to be cut drastically. "Combined with other measures, savings of up to 15 percent are possible," he says.

After studying mechanical engineering in Mexico and Germany, Cervantes Zozoya worked in the United States. He has long since traded in his greasy wrench for a computer mouse. Above all, his interests are no longer just about coaxing stubborn junkers to run again: "My grandfather had huge, ancient pickup trucks." Fuel economy was not an issue. "We were happy if they ran at all. It wasn't unusual to use up to 20 liters of gasoline to go 100 kilometers. Back then, if anyone had told him I would be fighting to conserve every drop of gas, my grandfather would have dropped his oil can in amazement."

The facility in Guadalajara is one of the newest in the Bosch Group. And it's also one that shows how international the company is. The center for engineering services and software is part of the Robert Bosch Engineering and Business Solutions (RBEI) subsidiary, which is headquartered in Bangalore, India. "Our investment in Mexico is a logical step," says Prakash Shenoy. "After all, we want to make it as easy as possible for our customers in the Americas to work with us." The proximity to customers is critical. As Shenoy says, "The time difference between India and Mexico is eleven and a half hours, and it's a 30-hour-plus trip. That's just too much to ensure the level of service we want to offer our customers."

Shenoy, who is from India himself, heads up the engineering center, and feels very much at home in

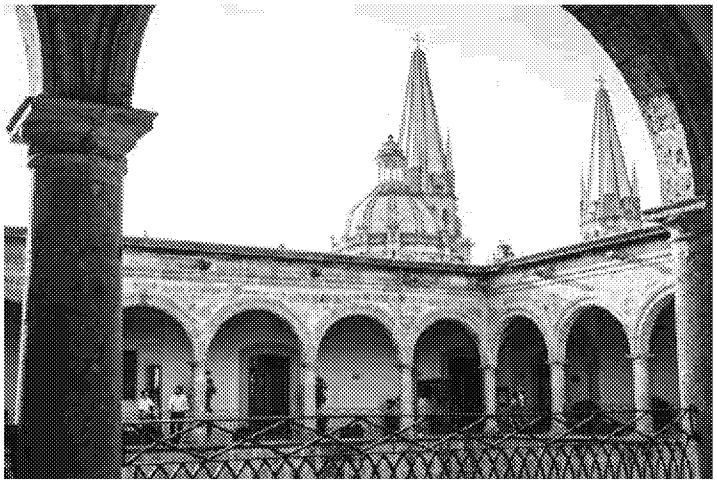
"Our investment in Mexico is a logical step. After all, we want to make it as easy as possible for our customers in the Americas to work with us."

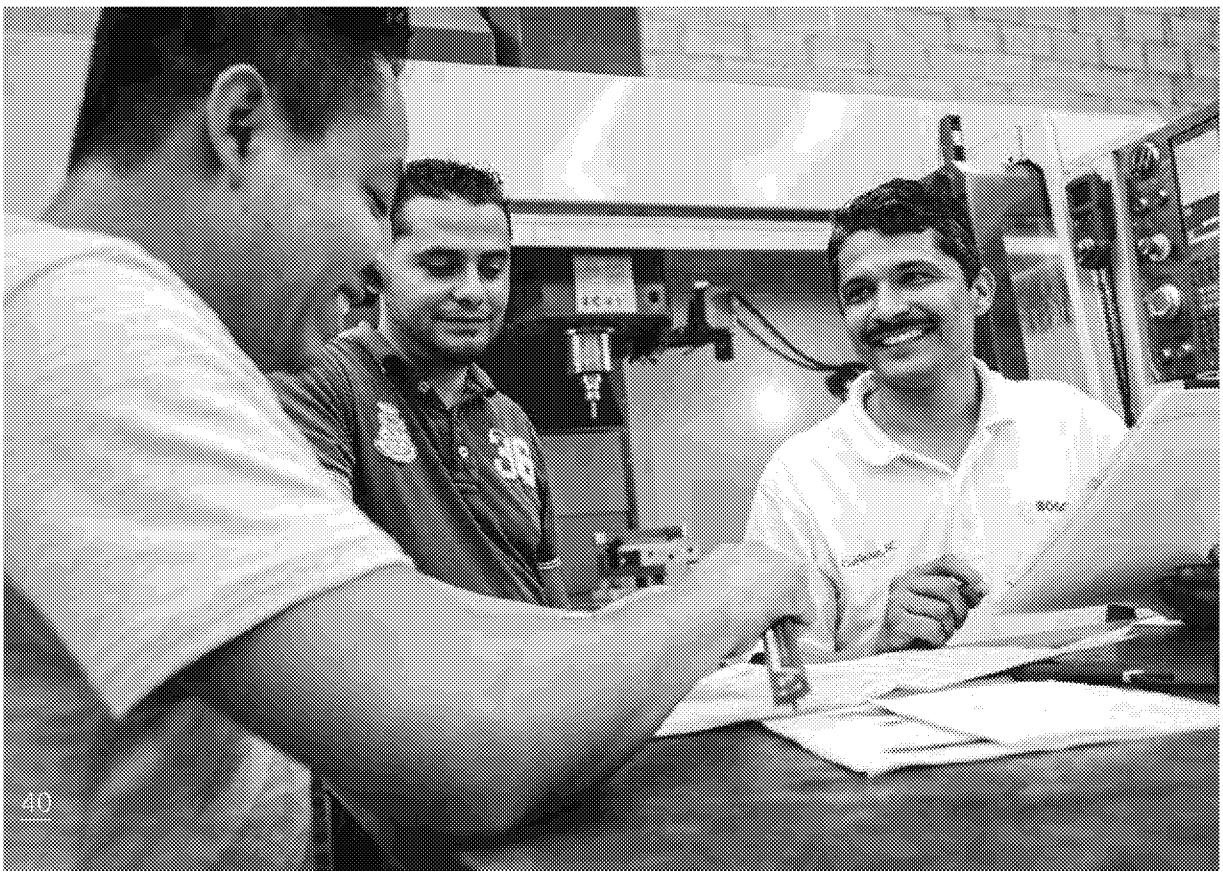
Prakash Shenoy, head of the Guadalajara engineering center

Mexico: "The people are friendly, our colleagues are highly driven, and traffic is less stressful than in India," he says. The only challenge? He is a vegetarian, which is not always easy in the land of tacos and enchiladas.

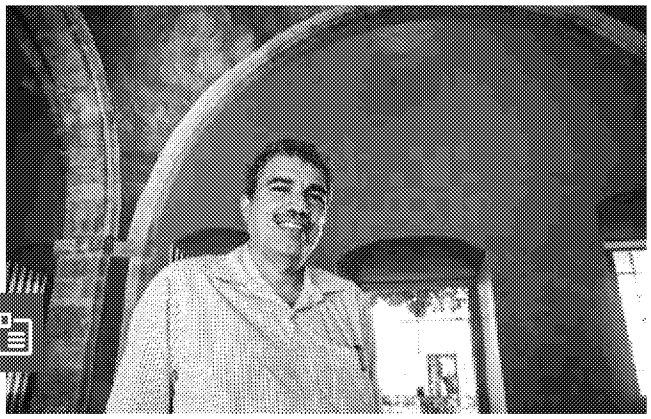
Yet he definitely has a taste for his mission: "Setting up this facility is sheer pioneer work that calls for speed and agility. We're hiring new engineers every week, and seeing our business grow daily." The associates in Guadalajara offer comprehensive engineering services as well as IT and business-process solutions from a single source. While the center's main customers are in North America, it serves other Bosch locations as well.

Shenoy and his colleagues are driven by something else, too: "We want to help improve traffic safety in Mexico." Three million cars are built annually in Puebla, San Luis Potosí, and other Mexican cities. One in three remain in the country, but for reasons of cost, they are not always equipped with all the technology available. "That's why we also aim to develop automotive technology that is tailor-made for the region," Shenoy explains. "Local experts support the Bosch divisions, helping them come up with





Engineering partners: Alberto Sabas Hernandez and Ramon Baez Mora from the Bosch supplier Soluciones Tecnológicas, together with Emanuel Cervantes Zoroya.



"We're hiring new engineers every week, and seeing our business grow daily."

Prakash Shenoy, head of the Guadalajara engineering center

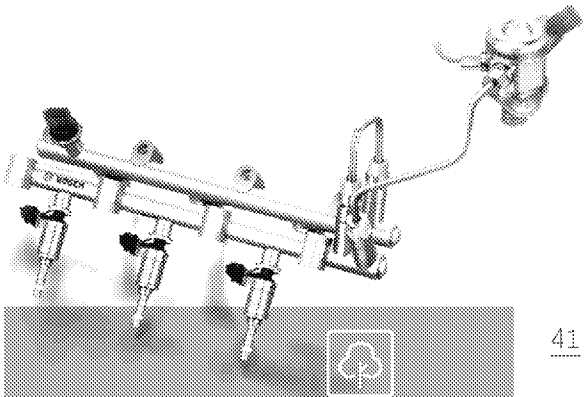
local solutions for the region. The experience we have gained in India in making products appropriate for the region is extremely useful in localizing our products here," he says.

> Guadalajara is a good example of Bosch's growth and investment plans in the Americas. In Mexico alone, some 3,000 jobs are to be created by the end of 2017.

A number of them will be in Guadalajara. "Who knows?" Shenoy says with a smile. "Twenty years ago, Robert Bosch Engineering and Business Solutions started out with a handful of associates in India. Today, there are thousands of them."

Emanuel Cervantes Zozoya is equally optimistic. "We anticipate that more and more automakers will start using **gasoline direct injection.** The share of cars with gasoline engines featuring this technology will likely increase to nearly 30 percent worldwide in 2015." Thanks to strong demand, there is also pressure to develop increasingly efficient components.

This is what prompted Cervantes Zozoya to join forces with other Bosch locations and a local supplier to develop a new test procedure for detecting leaks when the fuel in the distributor rails is under high pressure: "It allows a key leak test to be conducted much earlier than before." Maybe this test will bring us the next, more fuel-efficient generation of engines a little sooner. Then Cervantes Zozoya will have saved more than a few drops of gas. His grandfather would undoubtedly be pleased – and pick up his oil can again...



Gasoline direct injection: a success story

Automotive technology is having to meet ever stricter efficiency standards. By 2021, for example, the limit for vehicles in Europe will be just 95 grams of CO2 per kilometer. One Bosch solution for efficient and economical power comes in gasoline direct injection to combustion with downsizing and turbocharging. It offers a fuel saving of up to 15 percent. In this system, fuel is injected into the combustion chamber through an injection valve. Under high pressure (approx. 200 bar), the fuel is injected not just in flow. This results in a significantly better effect and better mixing of the combustion chamber. The overall effect is greater compression and higher efficiency. As a result, less consumption for fuel per kilometer does dramatically. In 2008 alone, Bosch sold more than five million such systems. And the forecast for global growth is not less than double figures. In 2010, every second new gasoline-powered vehicle in Europe will be equipped with this fuel injection system, and the share will rise to more than 80 percent by 2020. Demand is also expected to rise strongly in the important automotive markets, the U.S. and China. In both markets, the share of gasoline-powered vehicles is greater than 90 percent, generally with cylinder shut-off, turbocharging, direct injection. To be able to keep up with the growth of all these markets, Bosch has manufacturing sites for gasoline direct injection systems in Europe (Germany, Turkey), the Americas (USA, Mexico), and Asia (China, Korea).

Southern Europe apprenticeship initiative

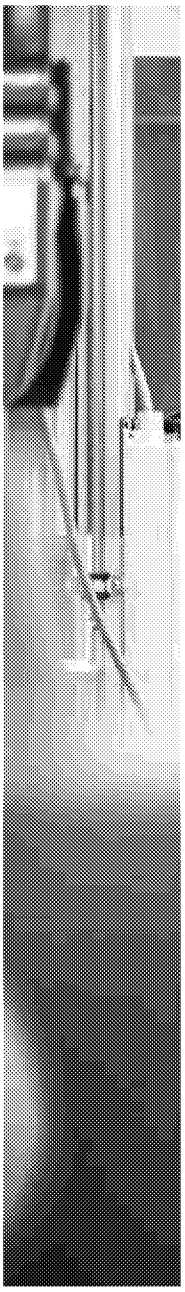
Stepping into *new shoes*

Youth unemployment is alarmingly high in southern Europe, especially in Spain. With this in mind, Bosch decided to offer 50 young Spaniards the opportunity to start a vocational training course in Germany in September 2014. The group includes Laura Revuelta Lopez. The apprentice industrial mechanic seized her chance at the Bosch plant in Nuremberg.

annual-report.bosch.com/apprenticeship-initiative

Laura says she has to reshape the metal part. She misjudged it by two millimeters. It will still take a little while before all the dexterity she acquired during eight years of playing the violin carries over to her work. In addition to a certain proficiency with components, her job also requires drilling, rasping, and countersinking skills. At least Laura's German is already fluent enough for her to explain what she does every day, with a little help from her agile hands. And that's a great feeling for a 21-year-old who came from Madrid to conquer a completely new world in Nuremberg. "I'm feliz – happy," Laura says.

At home in San Fernando de Henares, Laura Revuelta Lopez graduated with a diploma from a technical high school. But like so many other young people in Spain, she found this was no guarantee of a career. Undaunted, Laura got a part-time job in the hospitality industry, played the violin in the town orchestra, took Japanese lessons, and volunteered at a senior care center every Friday. Then she read in the newspaper that Bosch was offering 50 young Spaniards the opportunity to do vocational training in Germany. "Is that only for boys?" she asked her mother. The two of them agreed that this was an opportunity not to be missed. Laura applied, was invited for an interview, and the day before Christmas in 2013, she received her acceptance letter. If she hadn't quite grasped the reality of the situation before, having to fill in her shoe size on a form sent to her by the personnel department brought it home. After all, if you want to train as an industrial mechanic at Bosch, you have to wear safety shoes. A preparation phase planned in minute detail by the company followed, including an intensive German course and a six-week on-site internship. Her apprenticeship proper began in September, a long way from home. "My family is concerned, proud, and happy all at the same time," Laura says. In fact, they have no need to worry.



Laura Revuelta Lopez, apprentice industrial mechanic.

Combating youth unemployment

Bosch has created additional technical vocational training opportunities for 100 young people from Italy, Spain, and Portugal. Most apprentices started at the beginning of the 2014 training year, the rest joining them in 2015. With this program, the company aims to help lower the soaring jobless rates in southern Europe, especially in countries with Bosch manufacturing sites. Fifty of the places in the southern Europe apprenticeship initiative will be at Bosch locations in Italy (20), Spain (16), and Portugal (14). Due to Spain's especially high youth unemployment, another fifty occupational training slots have been created for young people from that country at Bosch locations in Bavaria and Baden-Württemberg. Depending on their location, the Spanish apprentices are trained alongside their German colleagues as industrial mechanics, cutting machine operators, plant mechanics, foundry mechanics, or mechatronics engineers. After three and a half years, the Spaniards receive qualifications from the German Chamber of Commerce.

Laura, Adrian, and David in Nuremberg, their new home.

Nuremberg's Gostenhof district, ground-floor apartment: three bedrooms, living room, kitchen, and bathroom, furnished. It came equipped with everything a household needs. Laura shares an apartment with Adrian (23) and David (22), both Catalonians from Barcelona, who also seized the chance Bosch offered them. For Adrian it was because the jobs he found working at a department store and on the late shift at a bar were not long term, and David switched because his law studies held little promise of steady work later on. In light of that, an apprenticeship in a new country and a new language sounded very tempting. The three have known each other since their internship and have stuck together. Household chores are done according to a plan for cleaning and kitchen duty. "The guys cook more than I do," Laura says. Adrian whips up delicious potato-filled Spanish omelettes. And at the kitchen table, they sit together and study German.

The trio also has Mariana Dantas to thank for making everything run smoothly. A German with South American roots, she interprets and works for Bosch's occupational training partner BBQ, offering intercultural assistance in addition to the support provided by the mentors and trainers. She helps the Spanish apprentices with all kinds of daily activities in their personal lives: finding an apartment, dealing with bureaucracy, opening bank accounts, separating trash for recycling, shopping, as well as planning free time activities – and coping with the repercussions. When David stumbled while playing table tennis and dislocated his shoulder, Mariana was soon on hand to help.

"We want them to find their feet quickly, which is why we give them so much support. Just bringing the young people to Germany isn't enough," Rainer Pickelmann says. He is in charge of the 20-strong group of first-year apprentices, including the three Spaniards, in the technical vocational training department in Nuremberg. In his dual role as a boss and a father figure, he keeps an eye on the three and lends a hand wherever it's needed. When it comes to course content, however, the Spaniards are treated just like everyone else. For the introduction seminar in the Bavarian Forest, he divided his trainees into three groups, with one Spaniard in each. After all, the goal was teambuilding. After a week that included a nighttime hike, orienteering, a rope bridge, and building a raft, Pickelmann could attest to their "outstanding social skills." And he still laughs when he recalls the subway strike in Nuremberg. Not unexpectedly, none of the apprentices made it to work on time at seven a.m. – except the Spaniards, who had taken a taxi. Pickelmann says, "No apprentice had ever done that before." The trainer Kathrin Hiltner testifies to the group's "very special spark." She says Adrian, as the oldest in the group, takes a leadership role with his younger German colleagues. "And I suspect Adrian might be teaching them Spanish on the side," Hiltner says with a chuckle.

The cultural exchange is going full steam. Laura often gets together with the other girls in the training group. Adrian and David talk of an outing with their colleagues to Rothenburg ob der Tauber, a booze-up at the Oktoberfest in Munich, and a visit to an ice hockey game. And Laura says they have so many guests in their apartment that they will finally have to buy some folding chairs. For all these reasons, Pickelmann rates the integration process as "very positive."

Laura can certainly imagine staying here to work after her three-and-a-half year program finishes. Or even going to university. When her homesickness gets the better of her, Laura takes a walk or has a long Skype session with her mother and her two brothers. That way, she can hear and see her family at least once in a while. And, of course, she could hardly wait for her first trip back home over the Christmas holidays. Afterwards, she brought back something she had originally had to leave behind. "My violin," Laura says. "I really missed it."

Laura Kiewiet, student:
"We now use the sunny town square a lot more for events. Today, for instance, we're barbecuing. It's a whole lot more fun in the sun than in the shade."

A place *in the sun*

Winter in the Norwegian town of Rjukan had long been one thing above all else – dark. For six months of the year, the sun doesn't peek over the mountains. The jagged cliffs are just too tall and steep, and the town is too tightly sandwiched between them. But now life in the shadows is over for the residents. Three enormous mirrors on the northern mountain reflect the sun's rays into the valley, illuminating the market square like gigantic floodlights. Drive and control technology made by Bosch Rexroth ensures that the heliostats, as the mirrors are called, accurately track the sun's path and always reflect the light at precisely the right angle. The happy result is that on cloudless winter days, the center of town is now also bathed in light. This has certainly brightened the lives of the inhabitants of the once sun-scarce town.

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drive-and-control-technology

Knut Jacobsen, manager of Rjukan Hytteby tourist cabins:
"With the solar mirrors, we've created something very special – and it has brought the whole town closer together."

Torbjörn Vägsland, baker:
"Whenever midday comes around, my bakery is packed. People come in during their lunch break to grab a snack, then go and enjoy it in the sun in the town square."

Laura Kiewiet, student:
"We now use the sunny town square a lot more for events. Today, for instance, we're barbecuing. It's a whole lot more fun in the sun than in the shade."

Martin Andersen, the artist who had the idea of the solar mirrors:
"Journalists from all corners of the globe – from the 'New York Times' to 'Al Jazeera' – came to see the unveiling of the mirrors. The attention we received and the sparkle in people's eyes gave me a great deal of confidence in my work as an artist."

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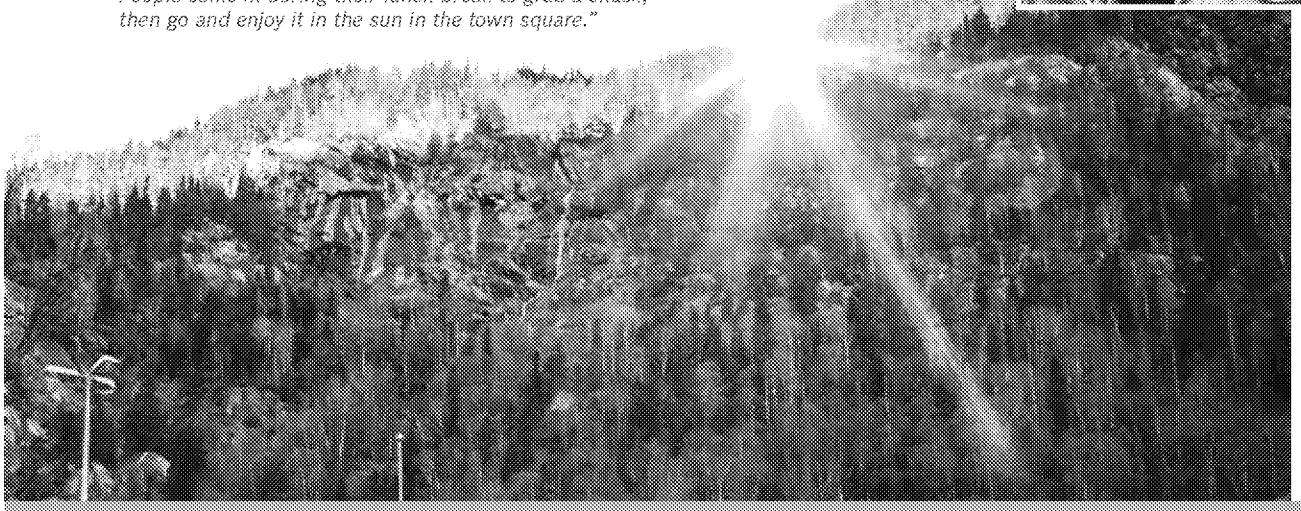


Facts about heliostats*

51 **square meters** is the total area of the three giant heliostats added together.

1.5 **metric tons of wind pressure** acts on each of the three heliostats in force 12 storms. That's more than the weight of an average car.

Three heliostats, each with an area of 17 square meters and weighing 500 kilograms, illuminate roughly 600 square meters of the town square. Throughout the day, the Bosch control system computes the current position of the sun and uses linear drives to align the mirrors so that the reflected rays of the sun illuminate the town square. The mirrors are mounted some 450 meters above the town, where the harsh climate poses the biggest challenge to operating the precision electric linear drives. The mirrors are frequently battered by winds up to force 12, with gusts of 140 kilometers per hour. The Rexroth control unit is not only capable of weathering these conditions, but is also designed for convenient remote maintenance.

*A heliostat is a device containing a mirror that reflects sunlight toward a predetermined target irrespective of changes in the sun's position.

Steinar Berglund, mayor
"Before, we had to take the cable car up to the top of the mountain if we wanted to feel the sun on our faces in winter. Although we can't illuminate the whole town with the mirrors, we have at least brought light into the town square. It makes me happy to look out of my window and see the people sitting on benches soaking up the sun."

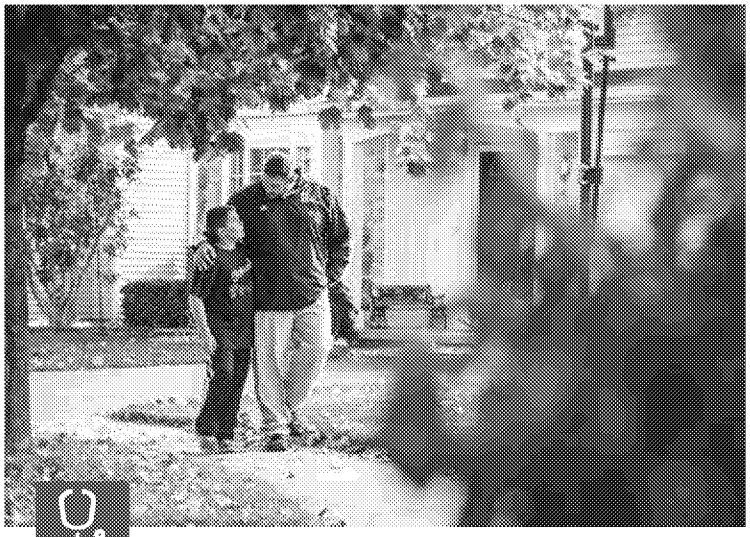
Packaging technology

Ice cream *for everyone*

Zander and Jason

annual-report.bosch.com/packaging-technology

About a year ago, Zander Brown was diagnosed with diabetes. After the initial period of shock, the family from Oxford, in the U.S. state of Michigan, is again living an almost normal life. They have a very special nine-year-old to thank for this – as well as a bit of help from the Packaging Technology division at Bosch, which ensures that the insulin he depends on is packaged securely, without any impurities.



It's not the playoffs, but both players are giving it their all. Zander, the one in the blue shirt, dribbles across the asphalt in front of the single-family home on Pine Valley Court in Oxford, then jumps and lobs the ball at the basket. "Dunk it!" his best friend Jason shouts in encouragement. Never mind that a few seconds ago he was trying to block Zander– given the lack of teammates, he's switched sides to cheer on his opponent before the jump shot. The ball swishes through the net, high-fives are exchanged, and Jason puts his arm around his point-scoring friend. Then the two sweaty heroes head across the driveway toward the door, thoughts now turned to convincing Grandma Penny to take them out for ice cream. "I'm living a normal life," Zander says later, "...with just a little extra stuff..."

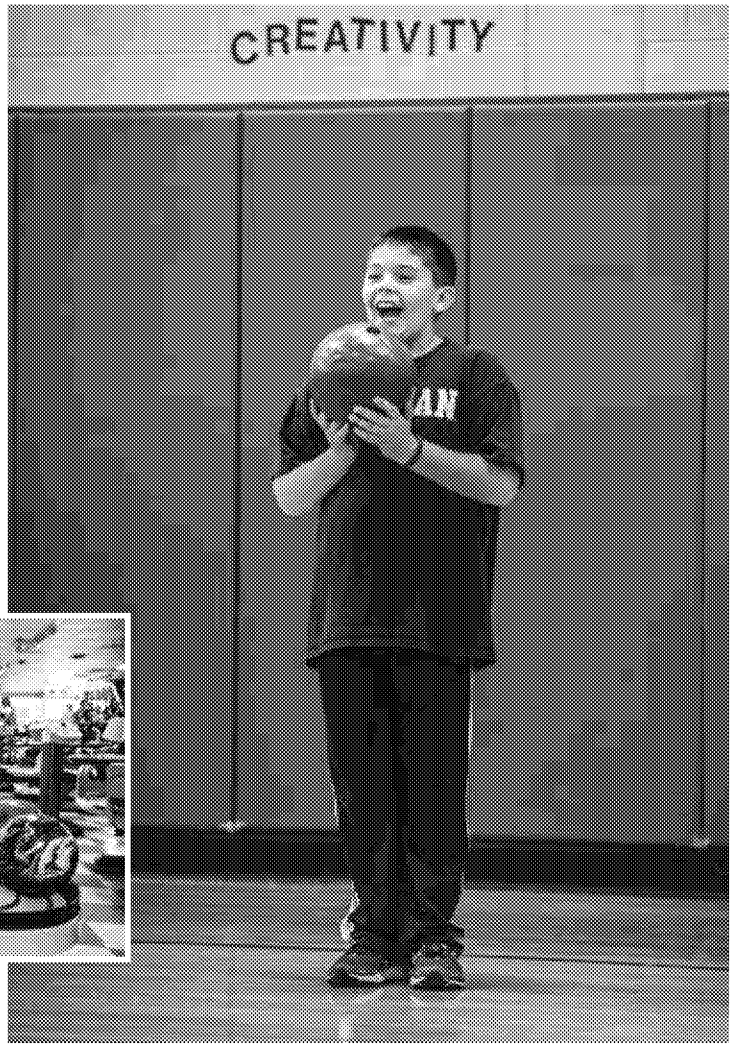
Type I diabetes has nothing to do with poor nutrition or other lifestyle habits, science tells us today. It is usually caused by an autoimmune disorder – and there is still no cure for it.

Zander has type I diabetes – a potentially life-threatening disease. In the United States, some three million people are affected, half of them children. In people with this metabolic disorder, the pancreas no longer produces enough insulin, which can sometimes have serious consequences. This hormone is necessary for the body's cells to absorb energy in the form of sugar, and thus keep glucose levels stable. In the absence of insulin, too much sugar collects in the blood, and this eventually causes major damage to the blood vessels, nerves, and kidneys. Too low a blood-sugar level is dangerous as well, however: patients may lose consciousness and fall into a coma in a matter of only a few hours. Type I diabetes has nothing to do with poor nutrition or other lifestyle habits, science tells us today. It is usually caused by an autoimmune disorder – and there is still no cure for it.

The shocking news came on one of the first days of summer vacation last year, when the Browns were looking forward to the lazy months ahead. "I'd suspected for quite a while that something was wrong," Zander's mother Debby remembers. Her middle child was suddenly drinking large quantities of water, needed to use the bathroom frequently, and dropped five kilos. When he seemed indifferent during an exciting baseball game and could hardly hold himself upright, they immediately drove to the doctor who confirmed their suspicions. type I diabetes, just like his grandmother. What followed were several days in the hospital, considerable worry,

"I'm living a normal life with just a little extra stuff..."

Zander Brown



and a lot of frightening questions: what did this mean for Zander? What did it mean for the family? How would their lives be different in the future?

But back to Pine Valley Court, after the basketball game. Zander's grandma lives only a few blocks away, and helps Zander's parents look after their three children every day. She gives in to the boys' pleadings: there's ice cream for everyone. Zander knows what he has to do before they drive over to the ice cream parlor. He stands at the kitchen table with his mother and unzips a small, black case. Without blinking, he sticks a tiny needle into his finger and smears a drop of blood on a test strip.

"How much?" Debby Brown asks. "2.55," Zander reads from the tester's digital display. That's currently how many milligrams of glucose his blood contains per deciliter. According to his doctor, 1.5 would be ideal. "And what does that mean?" Zander thinks for a second: "Four units." One to lower his level and three for the soft-serve ice cream he is about to eat. He has to give his body insulin now so that he can stay balanced throughout the afternoon.

From her own experience, Zander's grandmother, Penny, knows the various methods for taking insulin. "For decades, I gave myself insulin shots," she explains. "Filling the syringe is tedious and sticking the needle into yourself is not exactly pleasant. Not to mention the looks you get for fiddling around with a syringe in public." Zander doesn't have a syringe. He carries a small, red object that looks like a writing instrument – an insulin pen, filled on a Bosch packaging machine. The boy turns a dial until the number 4 appears. A quick jab in the upper

Packaging machinery

Peace of mind
for millions

Bosch Packaging Technology is a globally leading supplier of process and packaging machinery. The Bosch pharmaceuticals expert Dr. Johannes Rauschnabel explains why such machinery has become indispensable for the pharmaceuticals industry.

Mr. Rauschnabel, what does Bosch Packaging Technology have to do with diabetes?

In Crailsheim, Germany, we manufacture machinery for the sterile filling and sealing of insulin pens and vials. And we have several plants worldwide making machinery for filling vials, including a U.S. plant in Minneapolis, Minnesota. All around the world, diabetes patients use insulin pens or vials. In North America, as well as China and India, the share of people using pens is on the increase. Pharmaceuticals companies use our machinery to fill these pens.

How exactly does the insulin get into the pen?

Strictly speaking, our machinery does not fill the pen itself, but the cartridge inside it. It is this glass ampoule that contains the insulin.

Are there any special requirements?

Our packaging machinery has to meet the highest quality standards, as well as being absolutely safe and sterile. To ensure this, most of the sections of our machine lines – which can be up to 20 meters long – are fitted with isolators. These are sterile small chambers arranged along the length of the machine, to which operators have access through installed gloves only. Such machines can process up to 600 vials per minute. They work round the clock, seven days a week, for as many as 21 days at a time.

How does this process work?

In a first step, the vials are cleaned in a washing machine, then sprayed with silicone. This ensures that the plunger can move smoothly along the inner surface when the dose is being administered subsequently. Following this, the vials pass through a heat tunnel where, at 300 degrees Celsius, they are sterilized and any residual impurities are removed.

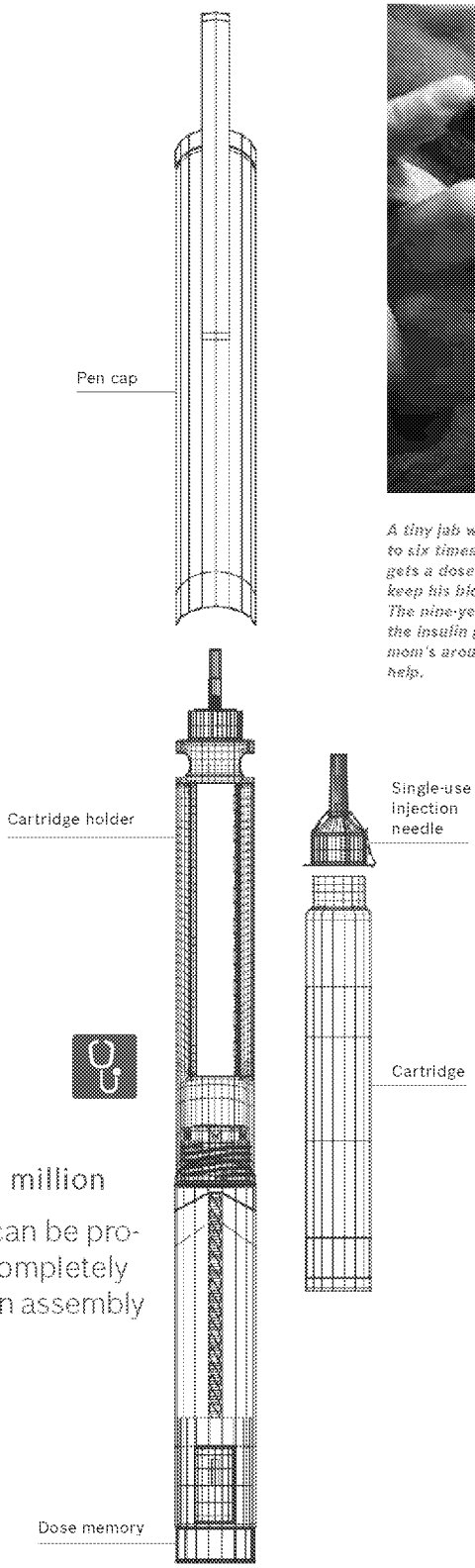
And then they're ready to be filled?

Not quite. First, the bottom end of the vials has to be sealed with a plunger. When that has been done, the vials are filled to 90 percent of their capacity. When it comes to the final 10 percent, special precision is called for. There should be no spills of surplus insulin, nor should there be any air left in the vial. To achieve this, a special technique is used, with a laser sensor scanning the surface of the vial neck. As soon as the surface of the liquid reaches the aperture, the machine stops the filling process.

Why is it so important for the vials to be absolutely full?

One reason is that any air in the vial could cause deviation from the dose set by the patient. The process ends with a further thorough check for quality and safety. As many as ten camera systems test the vials for scratches on the glass, particles in the liquid, and properly fitted caps – and that's not all. The product is labeled and inserted in the pen, which is then packaged. Finally, it leaves the plant of our pharmaceuticals customer, bound for one of the roughly 50 million diabetes patients worldwide.

A tiny jab with a huge effect: Four to six times a day, Zander Brown gets a dose of insulin. It helps him keep his blood sugar in balance. The nine-year-old can already use the insulin pen himself. But if mom's around, he's glad to let her help.

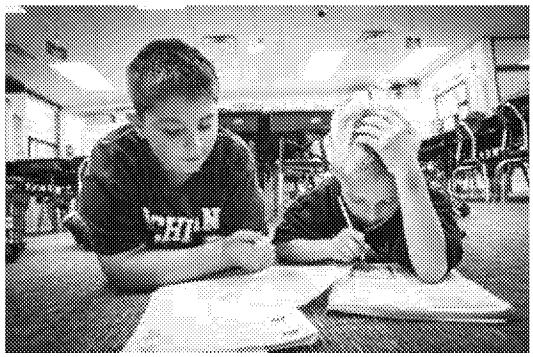


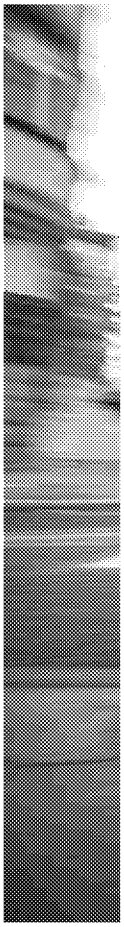
50 million units a year can be produced by a completely automatic pen assembly machine.

arm and he's done. The entire procedure lasts barely three minutes, and the ice cream taxi is on its way.

This routine of testing and injecting repeats itself in Zander's life four to six times a day: in the morning, evening, sometimes at night, and at school before lunch. Each day at 12:15, he leaves the classroom while the other students in 4a are still reading or solving math problems. He grabs his pink backpack where he keeps his fruit chews (which he always carries in case his blood sugar falls too low), and walks down the long corridor to the office of the school nurse. She sometimes helps him out a bit with the pen. "Zander is unbelievably resilient and reliable," says Mrs. Peruski, his teacher at Clear Lake Elementary School. "He never forgets that his body needs this special care." Zander's father explains: "He copes with this disease like a champion. He never complains. And the confidence he exudes makes everything so much easier for us as his parents."

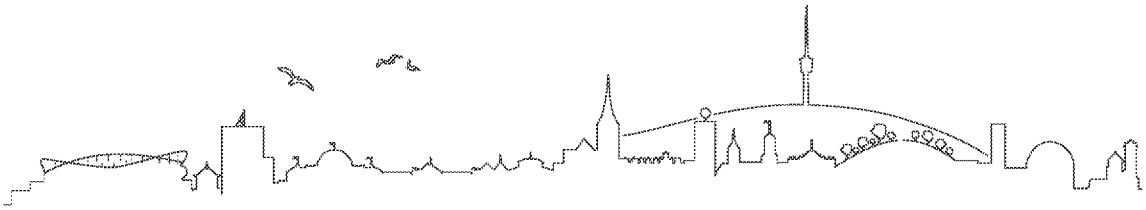
In the evening, Zander sits at the table in the living room and paints. The shelf near the television displays his most recent work: a magnificent pink frog with yellow feet, a full-page profile of a rhinoceros, and a realistic, detailed drawing of Buzz Lightyear. A year ago, he had the idea of exhibiting his pictures and selling them for a good cause. "My best friend Jason has a congenital heart defect. I thought the money could help doctors do more research and maybe help him," Zander says. The last exhibit brought in an impressive 400 dollars. Since he found out that he has diabetes, he splits his donations in half between heart research and a foundation that specializes in research into juvenile diabetes.



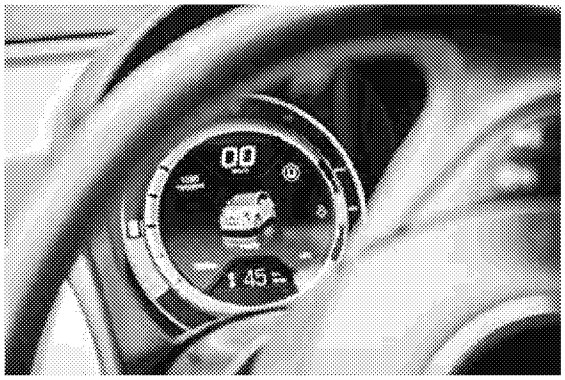


E-mobility in Stuttgart

Quiet *enthusiasm*



Stuttgart is a byword for mobility. This is where the first automobile was built, and where international automakers and suppliers are developing the mobility solutions of the future. In this respect, one important goal is creating livable cities without excessive traffic noise and particulate matter. The Bosch associate Daniel Betsch has seen for himself what this future looks like. Join us as we go with the electromobility enthusiast on a – quiet and emissions-free – tour of Stuttgart.



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e-mobility

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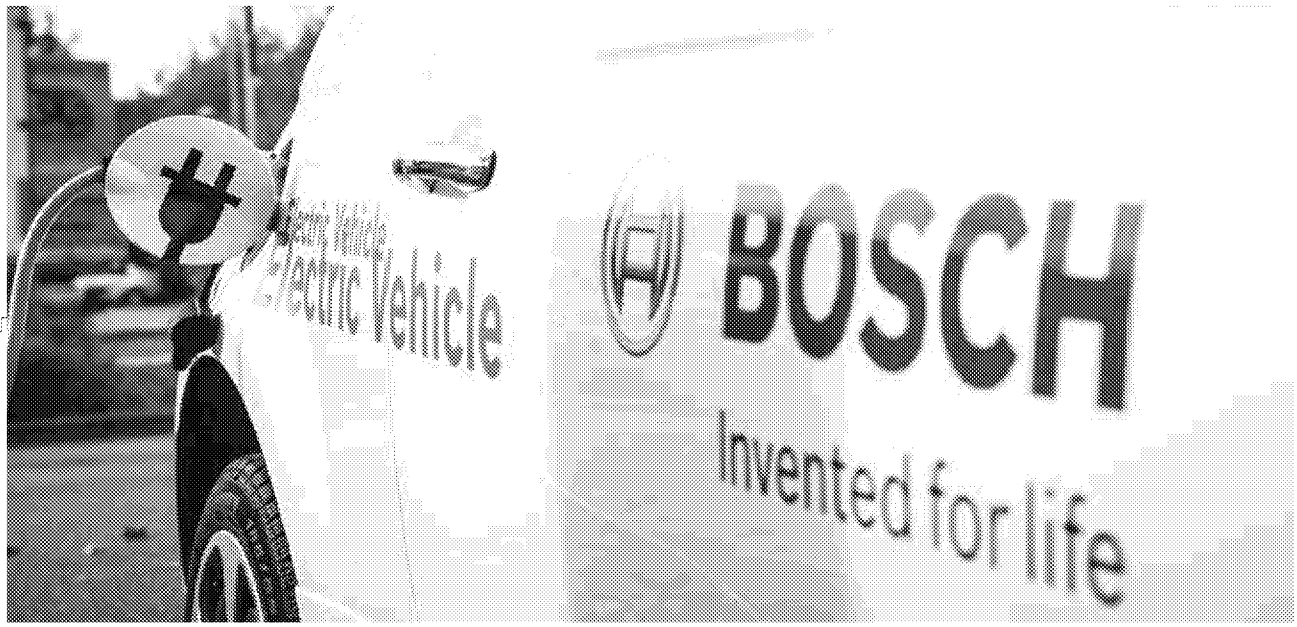
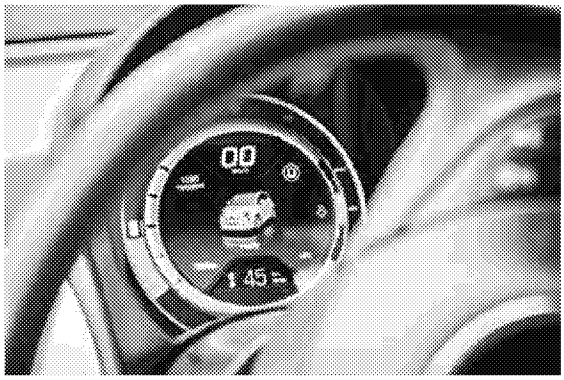
Betsch is what marketing experts call an "early mover." Twelve years ago in his parents' basement, he built his first electric bike, with a front wheel from a wheelbarrow: "I needed it for adjusting speed," the mechatronics engineer says, as though it were the most natural thing in the world. With the same quiet self-assurance, he goes on to narrate other milestones in his electromobility career – his first electric scooter, for example, and the converted electric, tropical-look Trabant. He talks about his e-mail to the former Bosch CEO Franz Fehrenbach, whom he asked to advocate electric charge spots at Bosch locations. All the way to setting up Bosch's own electromobility club, which Betsch has led since its inception.

The Fiat 500e is now winding its way up the serpentine bends of Zeppelinstrasse. As the houses get bigger, the cars on the roadside get more expensive. Betsch points to a Porsche Panamera at the side of the road, immediately recognizing what is special about it. As his work involves testing hybrid vehicles, he knows that this plug-in hybrid features Bosch technology. The same goes for more than two dozen other models, from the eGolf, to the BMW i3 Range Extender, to the Fiat 500e in which Betsch is now sitting. A little later, Betsch passes two women cycling up the hill. Despite the shopping bags on their handlebars, they seem to be effortlessly mastering the steep incline. It takes a second glance to notice the slim battery fixed to their bicycles. Chances are that they are benefiting from Bosch technology, too. Every one in four electric bikes currently sold in Europe uses a Bosch drive system.

Quiet



ciate Daniel Betsch has seen for himself what this future looks like. Join us as we go with the electromobility enthusiast on a – quiet and emissions-free – tour of Stuttgart.



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e-mobility

More than
50
bicycle brands use Bosch e-bike systems, from cargo bikes to mountain bikes.

400
million euros is the amount Bosch invests each year in e-mobility research alone, a project that involves more than 1,600 associates.

More than **120**
million e-scooters now thread their way through the traffic jams on China's roads.

Fully recharging a standard e-scooter in China costs the equivalent of
60 **euro cents,**
and gives the rider a range of roughly 100 kilometers. Driving the same distance in a gasoline-powered car would cost 4 euros in China.

2.5 **million** electric vehicles and 9.5 million hybrid cars will be manufactured worldwide in 2020 – out of a total of 113 million vehicles, according to Bosch forecasts.

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The triumphs of automotive technology have had a lasting effect on Stuttgart. Top international automakers and suppliers have their headquarters there. Alongside Bosch, Daimler, and Porsche, these include numerous small to medium-size companies pushing technology to global market level in their own particular niche.

All of them are exploring ways of making mobility less noisy and less polluting. In an initiative spearheaded by the state of Baden-Württemberg – the Electric Mobility South-West cluster – experts from the business, scientific, and political spheres are working together on new ideas. "In the cluster's BIPoL-plus project, for example, Bosch is contributing to research on inductive charging systems for battery-powered cars," Kerstin Mayr explains. The Bosch associate from corporate research and advance engineering is innovation field manager at the cutting-edge cluster. The move toward more electromobility is evident in the cityscape as well. As part of the car2go car-sharing service, 500 electrically powered Smarts have already taken to the streets in Stuttgart – that's more than in any other European city. These and other electric vehicles can be recharged at over 400 charge spots.

The Fiat 500e – for which Bosch supplies the electric motor, the power electronics, and the battery – continues along a very special section of Kräherwaldstrasse. It is part of a 66-kilometer-long stretch that is the measure of all things for various automakers. On this circular course in and around Stuttgart, engineers find everything from extreme gradients and sections of freeway to winding overland routes – all the conditions needed for conducting real-life tests of their alternative powertrain systems. The loop was developed by Bosch in collaboration with the University of Stuttgart.

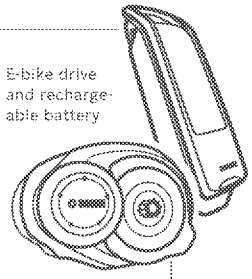
Classic car rebooted: Daniel Betsch's revamped Golf 2 Citystromer has a range of 300 kilometers.

On the B295 highway down into the valley toward Feuerbach, traffic is sparse for a change and the Fiat makes good headway. Daniel Betsch points to the numbers that light up in quick succession on the display under the speedometer. "60 km, 80 km, 110 km..." The range increases again because the Fiat is recovering energy during the downhill run and storing it in the battery. Betsch gives it its technical name: "It's called recuperation." So once he's hooked up to the charge spot at the Bosch site in Feuerbach, he needs only a quick charge to fill up the battery again. Just long enough for a short chat with Thomas Igler, a friend from Bosch's electromobility club, who is charging his Nissan Leaf in the parking space next to him. Igler tells him about his trip to the Black Forest the previous weekend. Even over long distances, he and his girlfriend drive in all-electric mode. But they always carry a collection of about three dozen charging cards offered by various suppliers. The two electric car enthusiasts agree: "If we want more people to use alternative powertrain systems, we have to have standardized charging and billing systems across Germany." This is something Bosch is also working on.

The Bosch associate never tires of this **silence when starting the motor and driving off.**

The Bosch subsidiary Bosch Software Innovations already offers a software solution that makes it possible for a recharging card to work anywhere. Like a debit card, it can be used to recharge the car at charge spots operated by any number of providers. In addition, the Bosch subsidiary offers a smartphone app that makes recharging and paying convenient and easy, regardless of provider and without the need for countless cards or contractual obligations.

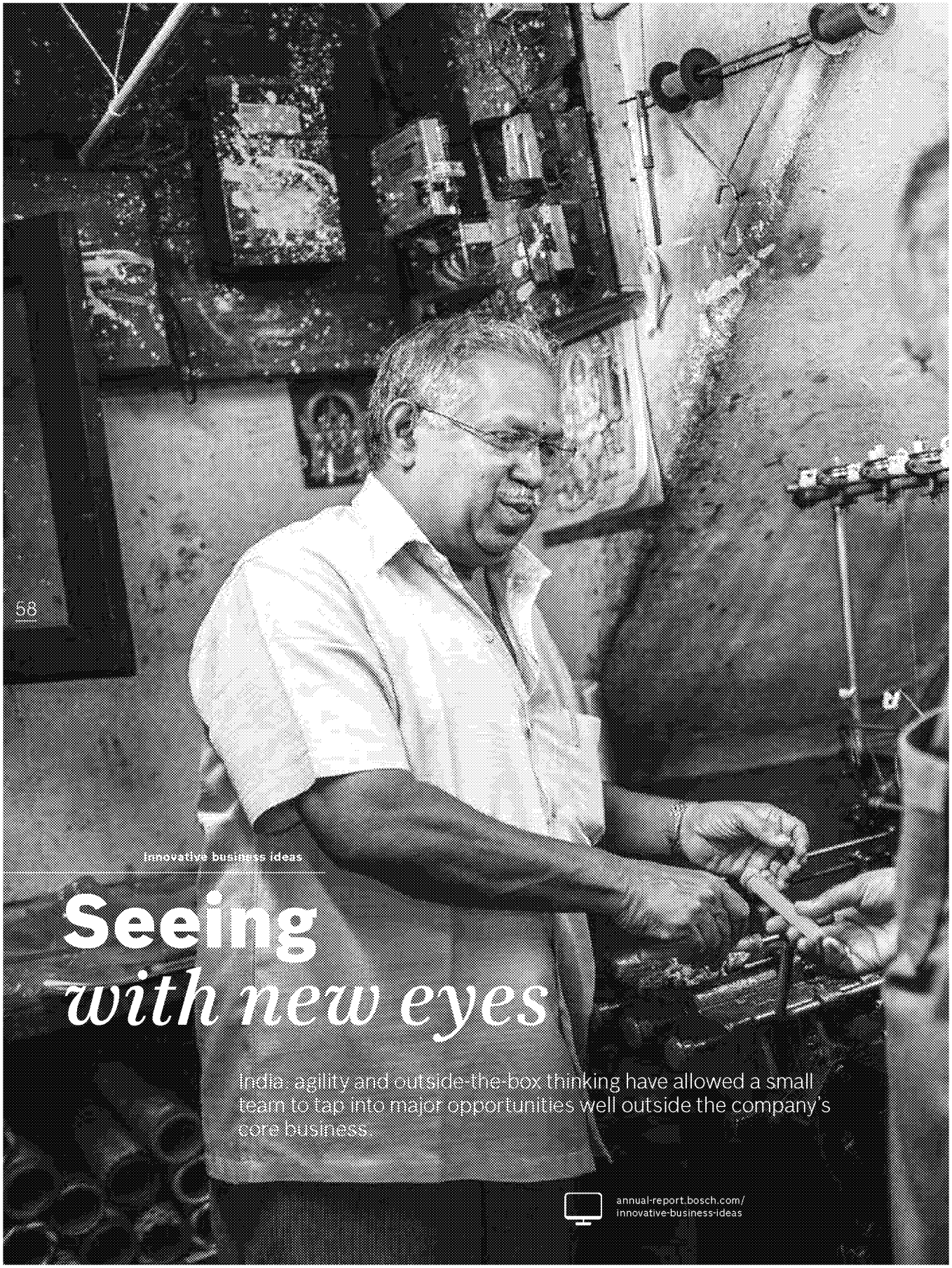
The tour in the Fiat 500e is almost at an end. Betsch drives the demo car, which is not even officially for sale in Germany yet, back to the western end of Stuttgart where his trip began. For the ride home, he gets into his own car, which is almost as old as he is. Naturally, his converted 1985 Golf 2 Citystromer is also electric. Its driving range is an impressive 300 kilometers. The trunk contains 576 batteries from discarded impact drills and lawnmowers – officially validated for safety – that store the electrical energy. Betsch puts the key in the ignition and starts the motor. With a smile on his face, he glides silently off into the distance.



E-bike drive and rechargeable battery

How Bosch is helping make electric driving reality

When it comes to e-mobility, Bosch has a broad portfolio. The company offers its customers powertrain systems for hybrid and electric vehicles. This includes electric motors, power electronics units, charging devices, and batteries, as well as regenerative braking systems. In the two-wheeler segment as well, Bosch is moving e-mobility forward. On the one hand, the company is Europe's leading supplier of e-bike drives and components for more than 50 manufacturers. On the other hand, it supplies e-scooter drive systems for the Chinese market, where there are already 120 million electric scooters on the roads. Finally, the new software solutions offered by Bosch allow the charge spots of one or several operators to be networked with each other. Drivers can then use their smartphone to find and book the nearest available charge spot, regardless of provider or place. In addition, Bosch software solutions make it possible to network diverse mobility solutions – car-sharing schemes, bike-sharing schemes, and public transportation – with each other. To find out how e-mobility could work in practice, Bosch is working with more than 100 partners from business, academia, and politics as part of the "LivingLab BWe mobil" initiative. In roughly 40 projects, some 2,000 electric vehicles are to be put on the roads by 2015, and more than 1,000 charge spots installed in the Stuttgart region and the city of Karlsruhe.



Innovative business ideas

Seeing *with new eyes*

India: agility and outside-the-box thinking have allowed a small team to tap into major opportunities well outside the company's core business.

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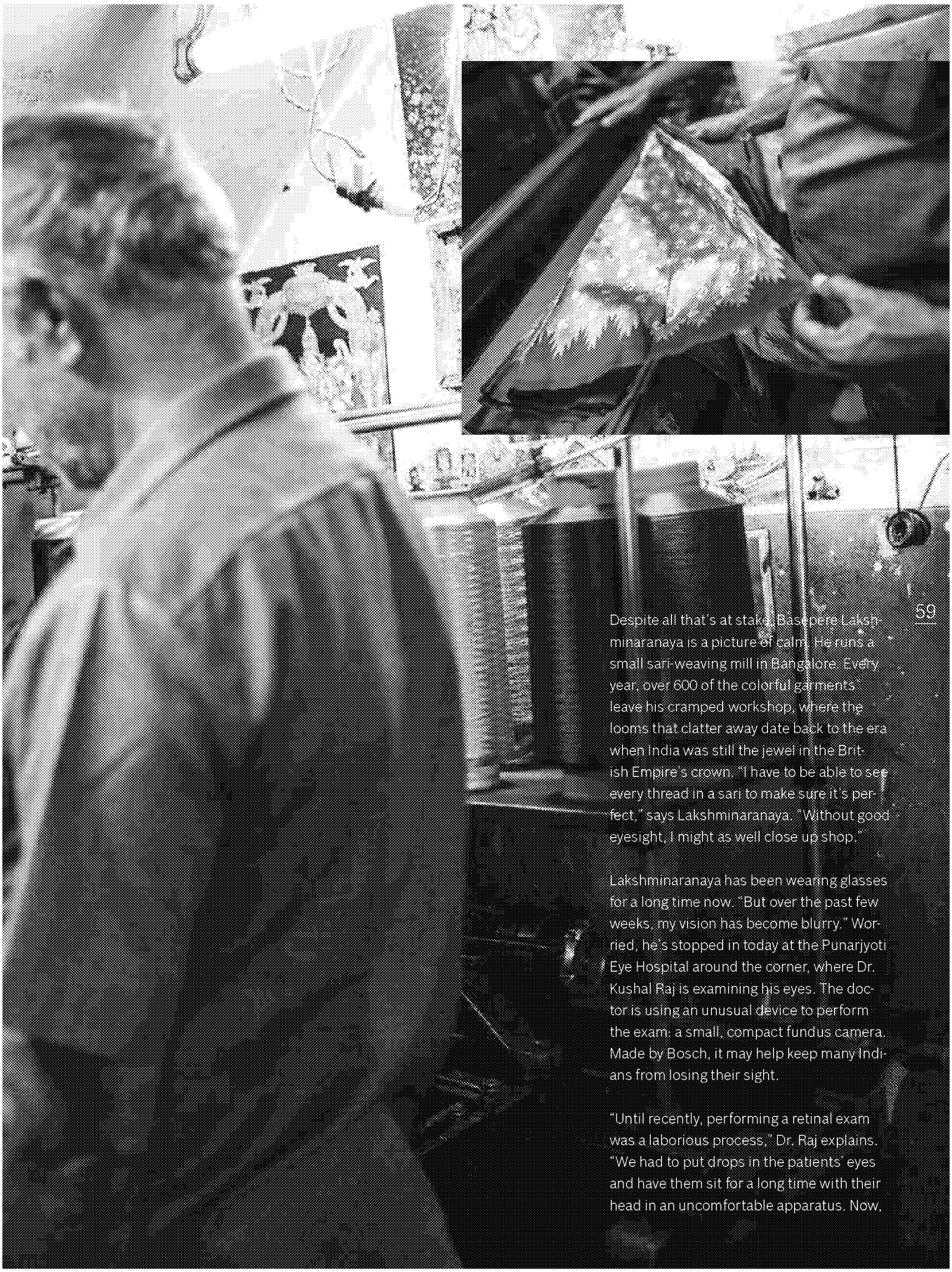
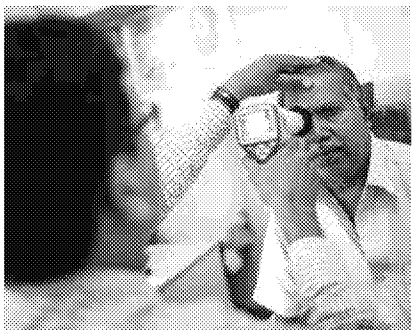
innovative-business-ideas



Despite all that's at stake, Basappa Lakshminaranaya is a picture of calm. He runs a small sari-weaving mill in Bangalore. Every year, over 600 of the colorful garments leave his cramped workshop, where the looms that clatter away date back to the era when India was still the jewel in the British Empire's crown. "I have to be able to see every thread in a sari to make sure it's perfect," says Lakshminaranaya. "Without good eyesight, I might as well close up shop."

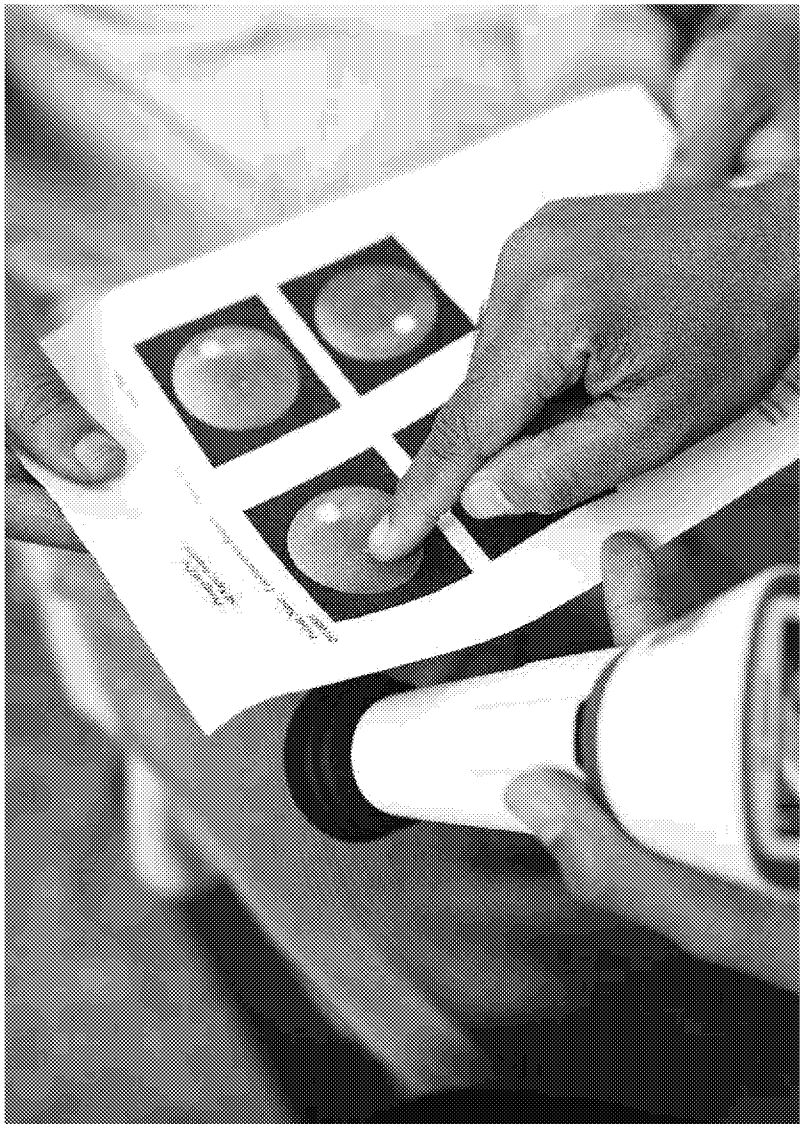
Lakshminaranaya has been wearing glasses for a long time now. "But over the past few weeks, my vision has become blurry." Worried, he's stopped in today at the Punarjyoti Eye Hospital around the corner, where Dr. Kushal Raj is examining his eyes. The doctor is using an unusual device to perform the exam: a small, compact fundus camera. Made by Bosch, it may help keep many Indians from losing their sight.

"Until recently, performing a retinal exam was a laborious process," Dr. Raj explains. "We had to put drops in the patients' eyes and have them sit for a long time with their head in an uncomfortable apparatus. Now,



"We began searching for technology that would put fast, affordable eye examinations within reach."

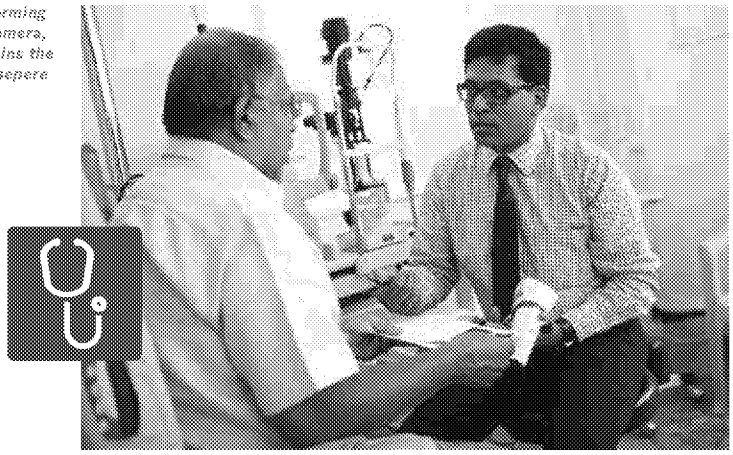
Nakul Goswami, manager responsible for the eye care project



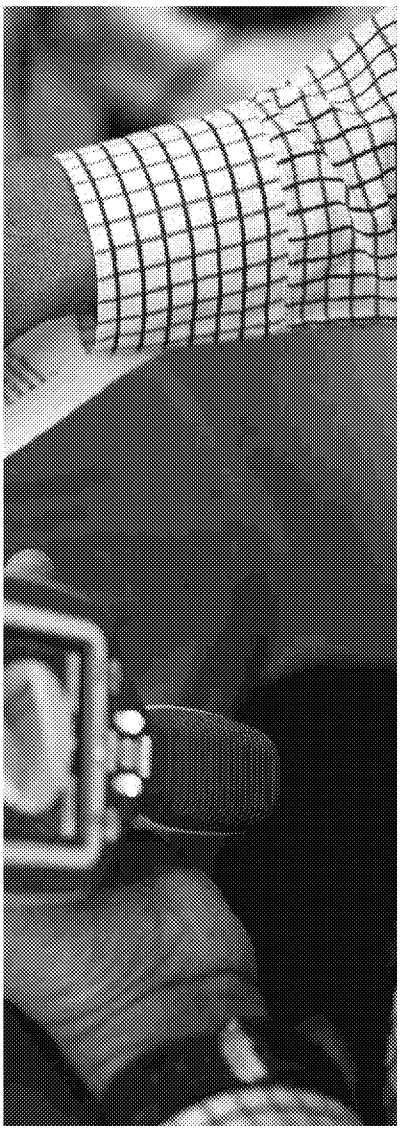
we skip the drops and simply raise the camera up to the eye. Within a few seconds, we have a clear image of the fundus."

The fundus camera was developed by a new business team (NBT) at Bosch in India. "We're deliberately on the lookout for growth areas outside the company's core business areas," says Harsha Angeri, who heads up the NBT in Bangalore. "And we aim to offer world-class technological solutions that initially address local problems." The fundus camera is a response to just such a grassroots challenge: India has more blind people than any other country. In many cases, their vision loss could have been prevented by early diagnosis.

"That's why we began searching for technology that would put fast, affordable eye examinations within reach," says Nakul Goswami, who manages the Bosch eye care project. The solution came from an unexpected source – the Bosch plant in Stuttgart-Feuerbach, Germany. "There, they use a special camera with software algorithms to locate the tiniest hairline scratches on diesel pumps," Goswami explains. "Whether you are looking for such defects on diesel pumps or retinal damage, the



Seeking clarity: After performing an exam with the fundus camera, Dr. Kushal Raj (right) explains the diagnosis to his patient Basepere Lakshminaranaya.



principles behind the image analysis are the same." Similar software was then written on the basis of the core algorithm from Germany.

Of the many NBT projects currently being carried out in India, the fundus camera is the most advanced. "We are also examining related applications in healthcare and other diagnostic areas," the NBT manager Hulikal Nagendra explains. "They're currently in the trial phase or being subjected to practical tests by customers. The same stage of development has been reached in another NBT project: an intelligent, non-invasive energy metering device. It can be used across a business network, such as a chain of coffee shops, to precisely measure the energy consumption of individual machines and highlight potential savings."

And it doesn't end there. It is hoped that an innovative and robust water filtration system will soon make clean drinking water affordable for schools, as well as for rural or impoverished communities. All these projects offer appropriate solutions for the everyday challenges encountered in India – and can be easily put into use in similar regions as well, such as in Africa. "While thinking and acting like a small start-up," Hulikal Nagendra says, "we are able to harness the skills and resources of the entire Bosch Group."

In the end, it is Basepere Lakshminaranaya and his sari workshop that benefit from this global network. It takes only a few seconds and Dr. Kushal Raj has the diagnosis: diabetic retinopathy. Due to the complications of his diabetes, Lakshminaranaya's retina has been damaged. "The camera's images let me show each patient right away what's going on inside their eyes," Raj says. The yellow spots around his optic disc convince Lakshminaranaya of the need to operate: "I was hesitant at first, but now I know I must get it done."

The next morning, the laser operation takes only about an hour. But for years to come, Lakshminaranaya will be able to keep a sharp eye on every single thread, and continue to produce flawless saris.

Connected manufacturing

Net-*works*

When associates log on, the display shows precisely the information they need for their work.

annual-report.bosch.com/connected-manufacturing

Connected industry is the subject of an initiative launched by the German government. Also known as "Industry 4.0," it is ushering in a new era in manufacturing. At its hydraulics plant in Homburg, Germany, Bosch Rexroth is proving that intelligently networked high-tech production really does live up to expectations of flexibility, productivity, and quality. And associates benefit, too.

If different parts are needed for rapidly changing tasks, green signals on the grab containers make it easier to stay on top of the job.

Associate ID 4.0.

The Bosch Rexroth hydraulics plant in Homburg is a testimony to the company's efficient manufacturing facilities at their best: extraneous stock is nowhere to be seen, everything is on hand and in its rightful place – the flow of production is unimpeded. The jewel in the crown is a new production line dedicated to electrohydraulic valves for tractors. The observer is struck not only by the cleanliness and tidiness, but also by the many monitors. They show what the intelligent electronics that set the pace here are doing. Workpieces communicate with machines, machines communicate with one another, and everything – including the workstations – communicates with the manufacturing associates. The latter receive analyses of the data streams and assess the collected information to safeguard quality and ensure smooth running. The networked equipment helps the people on the ground implement ongoing improvements to the production process. At the same time, these advances in automation and connectivity herald a new style of manufacturing that is enhancing Germany's appeal as a manufacturing location. The result is remarkable efficiency. Or, to quote the technical plant manager and engineer Frank Hess: "Information technology gives us a great degree of flexibility and has changed the nature of our work." Hess is the man in charge of this factory of the future, which is currently taking shape under the production principles of Industry 4.0.

The history of manufacturing has often been punctuated by groundbreaking innovations – the invention of the power loom in 1784, the introduction of the conveyor belt in 1870, and the advent of computer technology in 1969. The incentives driving these breakthroughs were always the same – increased productivity, enhanced quality, and assured success. In tandem with these developments, the work people did became much safer and physically less strenuous. Not only did this protect workers' health, reduce accident numbers, and boost motivation, but employee productivity also rose while error rates dropped. Now Industry 4.0 is ushering in the next industrial revolution, which promises to be just as beneficial. The industry association BITKOM estimates that the new technology has the potential to generate some 80 billion euros by 2025 for Germany alone.

A production line based on Industry 4.0 principles comes with a slew of workstation conveniences for associates. At the start of each shift, associates log on at the selected workstation. This is done via a Bluetooth tag with a user profile. Thanks to this information

exchange, the workstation is automatically personalized for each individual. The monitor slides into place and displays the requested assembly stages as 3D animations with detail appropriate to the user's position and qualifications. A workstation also recognizes when a user has not been active at the terminal for extended periods, and provides the latest updates and changes in his or her preferred font size and mother tongue. And that's not all. The LED lights are dimmed depending on daylight intensity so as to support the body's biorhythms and take the strain out of shift work.

Together with production line flexibility, the personalization of workstations is one of the great benefits of Industry 4.0. To ensure that nothing interrupts the production flow, red and green signals on the grab containers help workers at assembly stations to reach for the right component even when there is a rapid changeover on the line.

What sets Industry 4.0 solutions apart, however, is that the value stream adheres to a new logic. This is partly dictated by wireless standards for data transfer using RFID (radio frequency identification) technology. Every part is fitted with an RFID chip in the workpiece carrier, which allows it to manage its progress along the line, requesting execution of the relevant process steps and materials at the various assembly stations. Consequently, the line is no longer centrally controlled as was previously the case. Instead, the machines themselves play an important role in determining the workflow by signaling availability, maintenance requirements, and faults via activeCockpit, the newly developed production information and control system. But it is still a human who makes the final call. As all information is instantly at their fingertips, workers receive the best possible support in their production planning.

The network linking the people, machines, and workpieces involved in manufacturing electrohydraulic valves for tractors ensures a faster workflow. In fact, achieving higher speeds by any other means is a tall order. The farming equipment industry, which for 50 years has been supplied with parts from Homburg, has great faith in high-tech tractors. Premium-quality electrohydraulic valves are crucial to the operation of agricultural machines and accessories. Each customer has individual specifications, and large batch sizes are the exception rather than the rule. For this reason, production has to be flexible. Across the various Bosch Rexroth product families, 250 variants

*"Information technology gives us a great degree of flexibility and has **changed the nature of our work.**"*

Frank Hess, technical manager of the Homburg plant

comprising 2,000 components are on offer. Conventional manufacturing can only cope with a mix of two product families' variants. Operating in conjunction with and just across the way from the traditional systems, the Industry 4.0 line handles six product families and constant switchovers without skipping a beat. That saves on setup times and opens the way for rapid responses to customer requests. As Hess says, "This flexibility guarantees us a competitive edge going forward."

With 50 pilot projects running around the world, Bosch is proving that industrial production in all sectors can receive a boost from the benefits of Industry 4.0. What's more, networking people, machines, and workpieces has by no means exhausted connectivity's possibilities. Looking ahead, there are plans to expand into other dimensions, such as by integrating suppliers and customers into the digital communications. For one thing, this promises the best possible dovetailing of logistics and production. For another, the volumes of data collected are set to ensure even faster, more consistent quality controls than previously. Even after a product comes off the conveyor belt, it remains a part of the network and continues to be monitored. Faults, susceptibility to failures, and lifespan can be called up at any time and conclusions drawn about the production process.

Despite the pervasiveness of technology in Industry 4.0, people remain at its heart. As Hess explains, "That was important to us. Even in the future, we won't be able to do without people." In order to successfully adapt to this new working environment, manufacturing experts and planners have to rethink their roles. Part of the process is learning to work with and understand IT to an extent never required before. And the IT professionals, too, have to face completely new challenges. Dedicated software will be needed in the future to keep any kind of production line running smoothly with the help of Industry 4.0. Programmers are generally not production experts, nor do logistics issues or supplier challenges fall within their purview. But a command of these skills will increasingly be expected of them, which in turn will create whole new job profiles.

Keeping a finger on the pulse of these developments is very important to Bosch. "We see ourselves as more than just a leading exponent – we also want to be a leading provider," Hess says. This means Bosch not only intends to convert its own value streams to Industry 4.0, but also aims to selectively develop the components, systems, and services for connected manufacturing and supply them to its customers. Providing the knowledge, experience, and trial runs – as well as data security – for all this falls to Bosch's own associates. As a leading provider, Bosch is committed to ensuring that data remains on servers that belong to the company.

The future has already arrived in Homburg – and it's connected. Hess is proud of the new line. "We are basically in a position to also produce one-off items," he says. Batch sizes of one – that used to be every production manager's nightmare scenario. For Industry 4.0, it's business as usual.

Message from *Hot Heinz*

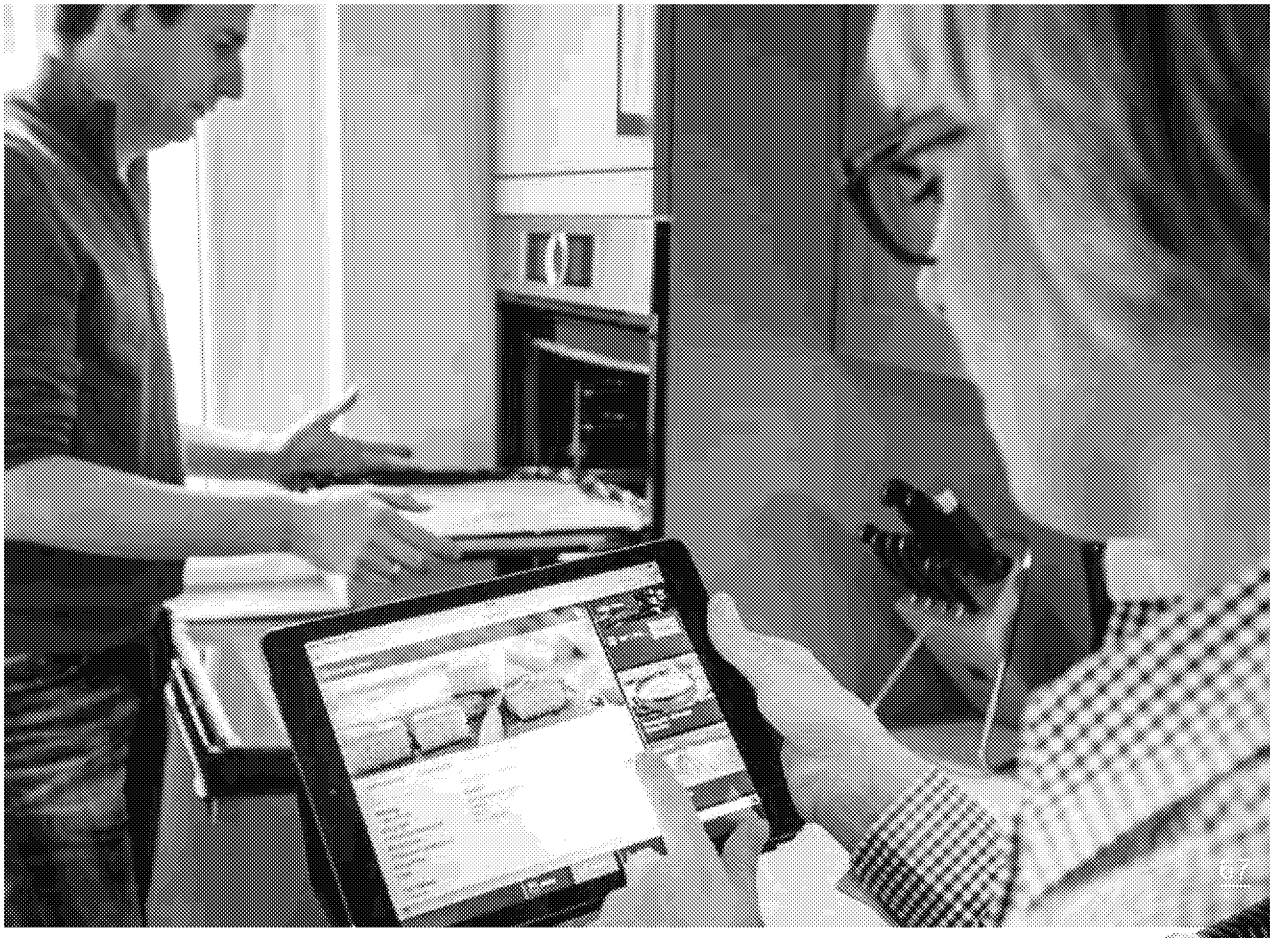
Dishwashers, ovens, fridges – growing numbers of household appliances are going online. They can be controlled by app and send messages directly to the owner's smartphone. With its Home Connect software, Bosch is keeping people and machines in touch – in places such as a kitchen in the west of Munich.

Claudia Häpp with her husband Christoph.

Hot Heinz never lets its owners down. As soon as the oven has finished its work, it reports immediately to Claudia Häpp. A message on her smartphone tells her that the potato gratin is done. She had prepared it in the morning and sent the command to start baking from the office, so that it would be ready just in time for her return. As Claudia opens her front door in the west of Munich, Heinz is cooling down. Claudia and her husband Christoph share their home with Hot Heinz – as they've christened their oven. "Cute name, don't you think?" says the 36-year-old, who heads up the Home Connect project at BSH Hausgeräte. The project focuses on connecting household appliances to the internet and facilitating their remote control via a smartphone or tablet app. They will be followed in fall 2015 by fridges, washing machines, dryers, and fully automatic coffee machines. Networked ovens and dishwashers came onto the market in December 2014. The internet of things is making inroads into kitchens and utility rooms. It means part of the housework can be done without anyone being at home, and this greater flexibility promises to translate into more free time for users.

The project manager Claudia Häpp and some of her colleagues also double as appliance testers. So she has already put her oven through its paces with marble cake, pizza margherita, and puff pastry turnovers. A lemon cake à la Heinz currently sits on her dining table. "One of the app's features is that it suggests recipes tailored to the individual appliance and transfers settings such as baking time, cooking mode, and temperature directly to the oven at a tap of the finger," Claudia explains. These customized, "triple-tested" recipes are a huge hit with users. "Using the recipes, I can also automatically create shopping lists and send them to myself or to friends via email or text," Claudia continues. The result is that people and machines are more closely connected – and there's less chance of anything going wrong, since Hot Heinz also has his eye on things.

Just what today's ovens and other appliances are capable of can be discovered in the app through easy-to-understand text, graphics, and explanatory videos. The dishwasher, for instance, lets users know how much water and power each mode consumes. "I much prefer looking through that kind of thing on a large tablet screen than trying out each setting individually on the appliance itself," Claudia says. One of the main advantages of the Home Connect app is the remote control function that can be used on the go. "I also feel more secure knowing exactly which appliance is currently on or off," the project manager says. And, there's no doubt it's a big help if the dishwasher sends a



annual-report.bosch.com/
networked-household-appliances

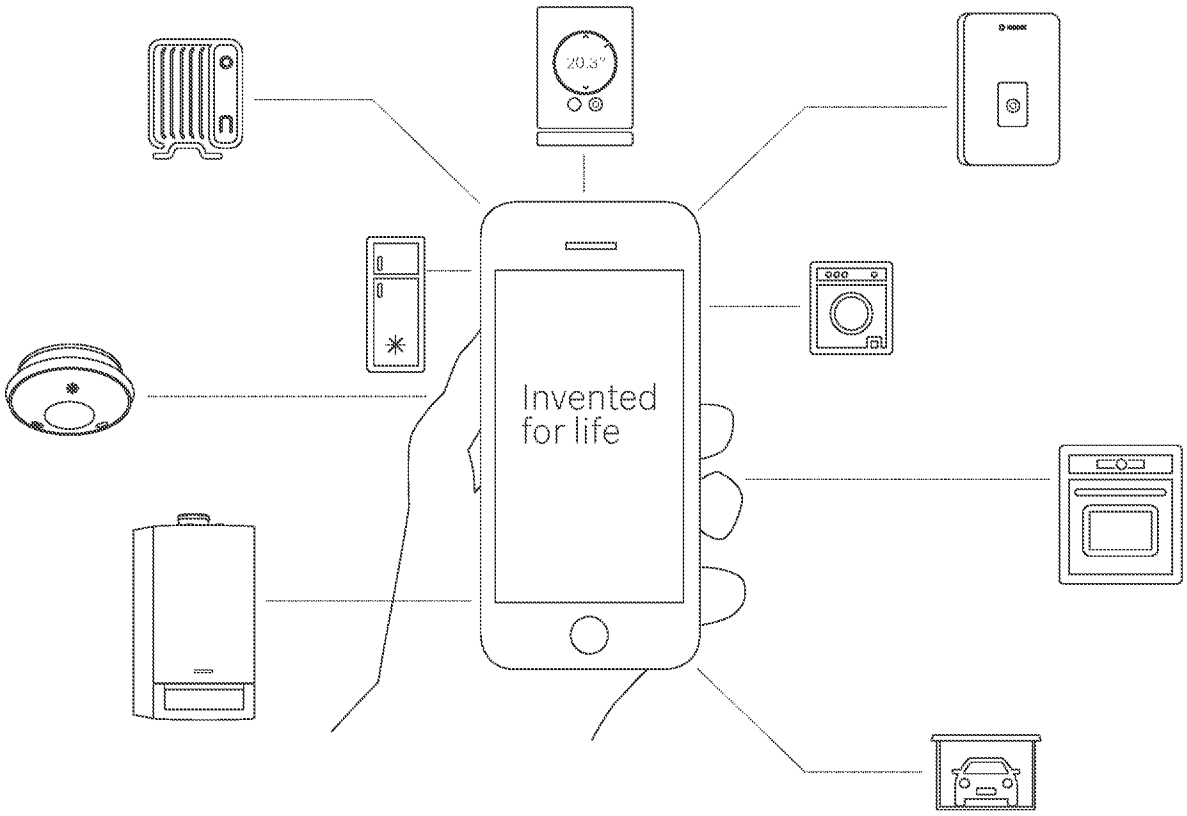
message to say that the rinse aid is almost empty, particularly if you just happen to be standing in the supermarket.

Home Connect is designed as an open system, so that in the future other manufacturers will also be able to use it for the control of their appliances. "As an open platform for connected household appliances, the system will help standardize smart-home solutions," Häpp says. More than anything else, users expect apps to work fast and glitch-free. This is why the developers have conducted numerous household trials to test whether the system is easy to operate and the data transfer runs smoothly. The appliances that are set to reach the market in the fall, such as the connected fridge with built-in camera, also meet these requirements. Since the system can take photos of the fridge contents and send them to a smartphone, shopping no longer has to be guesswork, even if the list has been left at home. "My husband – who is also a big Home Connect fan – is really excited about that," the project manager says. He has apparently already asked her a few times about when the next update for Hot Heinz is coming out. And there will be plenty of those in the future. Customer service, for instance, will soon be able to perform maintenance on appliances remotely.

Lambda sensor.

Out of the car and into the oven

The new Bosch ovens are not just networked but also boast new technology. Based on indirect measurements of baked goods' moisture levels, the PerfectBake sensor automatically adjusts the baking process and switches the oven off when the cake, bread, or quiche is done to perfection. The concept behind this sensor technology comes from the automotive field, where sensors have to provide accurate readings despite high temperatures. The household appliance experts took their cue from Bosch lambda sensors, which have featured in vehicles with closed-loop catalytic converters for almost 40 years now. There, they measure residual oxygen levels in exhaust fumes.



Bosch wants to use technology that is "Invented for life" to improve quality of life. Smart home solutions are just one of many examples of how Bosch wants to achieve this in the future.

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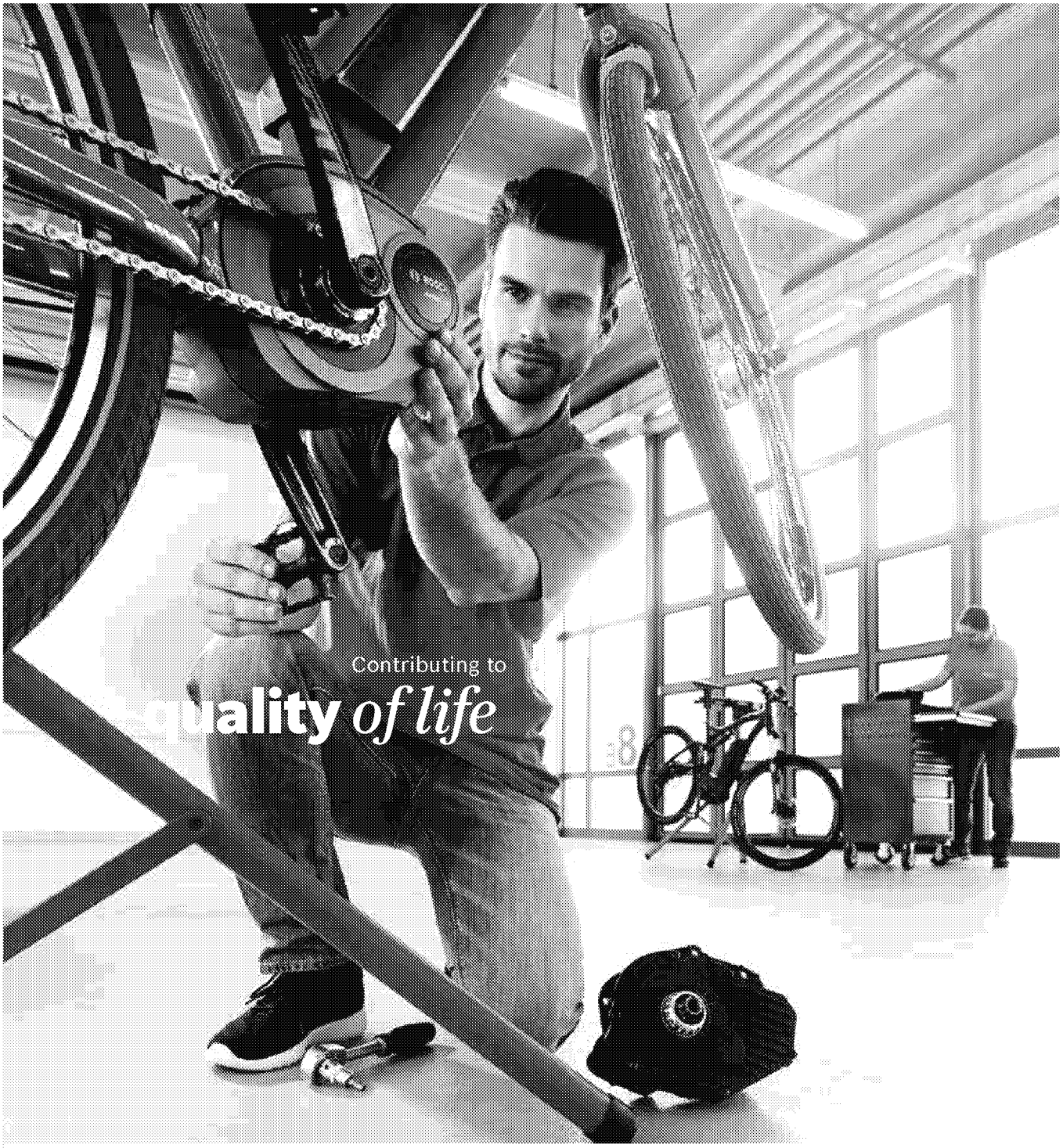
BOSCH
Invented for life



Annual report **2014**

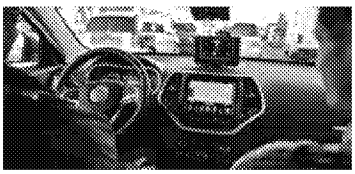
BOSCH
Invented for life

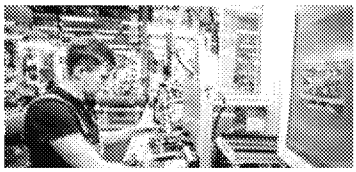
The Bosch Group is a leading global supplier of technology and services. In 2014, its roughly 290,000 associates generated sales of 49 billion euros. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its roughly 340 subsidiaries and regional companies in some 50 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. In 2014, Bosch applied for some 4,600 patents worldwide. The Bosch Group's strategic objective is to create solutions for a connected world. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "invented for life."

The company was set up in Stuttgart in 1886 by Robert Bosch (1861–1942) as "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

Bosch Group business sectors

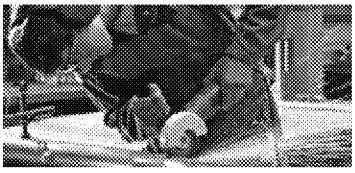
Mobility Solutions
(formerly Automotive Technology)
Gasoline Systems
Diesel Systems
Chassis Systems Control
Electrical Drives
Starter Motors and Generators
Car Multimedia
Automotive Electronics
Automotive Aftermarket
Automotive Steering[1]

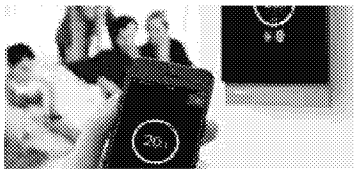




Industrial Technology
Drive and Control Technology[2]
Packaging Technology

Consumer Goods
Household Appliances[3]
Power Tools





Energy and Building Technology
Thermotechnology
Security Systems

[1] Robert Bosch Automotive Steering GmbH (formerly ZF Lenksysteme GmbH, or Steering Systems division; company is included in the 2014 financial statements at equity; takeover completed on January 30, 2015)
[2] Bosch Rexroth AG (100% Bosch-owned)
[3] BSH Hausgeräte GmbH (formerly BSH Bosch und Siemens Hausgeräte GmbH; included in the 2014 financial statements at equity; takeover completed on January 5, 2015)

We are Bosch

Our **objective** – what we want to achieve

In the spirit of Robert Bosch, we aim to secure our company's future by ensuring its strong and meaningful development and preserving its financial independence.

Our **motivation** – what drives us

Invented for life: we want our products to spark enthusiasm, improve quality of life, and help conserve natural resources.

Our **strategic** focal points – what will help us succeed

Focusing on customers
We understand our customers' requirements. We tailor our products to them, and we create innovative business models.

Shaping change
We shape change and seize the opportunities it brings, especially in connectivity, electrification, energy efficiency, automation, and the emerging markets.

Striving for excellence
We measure ourselves agains
is fast, agile, and accurate. E
high productivity secure and

Our **strengths** – what we do well

Bosch culture
Worldwide, our distinctive corporate culture is a common bond. We live by our values and strive for continuous improvement. We are proud to work for Bosch.

Innovation
Our creativity is the basis for new technological solutions that translate into best-selling products. We are innovation leaders.

Outstanding quality
We deliver products
reliability. In this wa
and expectations.

Our **values** – what we build on

Future and result focus
Our actions are result-focused. This allows us to secure our future. It also creates a sound basis for the social initiatives of the company and the foundation.

Responsibility and sustainability
We act responsibly in the interest of our company, also taking the social and ecological impact of our actions into consideration.

Initiative and determination
We act on our own initiative, take entrepreneurial responsibility, and pursue our goals with determination.

Openness and
We communic
matters in a ti
This is the bes
relationship b

www.wearebosch.com

t our strongest competitors. Our work
ficient processes, lean structures, and
increase the value of the company.

that offer the best quality and
, we meet our customers' wishes

Global presence
We are an international company. While constantly extending our global presence, we strengthen local responsibility.

trust
ate important company
nely and open fashion.
t foundation for a
uilt on trust.

Fairness
We deal fairly with our colleagues and business partners, and view this fairness as a cornerstone of our corporate success.

Reliability, credibility, legality
We promise only what we can deliver, accept agreements as binding, and respect and observe the law in all our business transactions.

Diversity
We appreciate and encourage diversity for the enrichment it brings, and see it as essential for our success.

Annual report 2014

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To access the annual report online (PC or tablet), go to:
annual-report.bosch.com/financial-report

Foreword

Dear readers,

We can look back on a successful and eventful 2014. Despite the weak global economy, we were able to surpass our expectations for growth and profitability. In addition, we made important strategic decisions – such as the acquisition of all shares in the previously fifty-fifty joint ventures BSH Bosch und Siemens Hausgeräte GmbH and ZF Lenksysteme GmbH. We gained more than 68,000 associates and an increase in sales volume of some 15 billion euros as a result of these acquisitions. Thanks to our sound financial position, we were able to finance these investments without difficulty, while at the same time maintaining the necessary room to maneuver that will enable the future viability of the Bosch Group. Strategically and technologically, both companies are a good fit for ours, and both epitomize our "Invented for life" ethos. This ethos is also an integral part of our new "We are Bosch" mission statement.

The new mission statement replaces the "House of Orientation," which is now nearly ten years old. This reconceptualization was timely, since the world we live in has become more complex and dynamic, and thus increasingly unpredictable. Straightforward and compact, "We are Bosch" expresses how we see ourselves as a company. It serves as a frame of reference for executives and associates worldwide, forms the basis for our operating units' strategy, and provides strong impetus for the company's further development. You'll find a more detailed presentation of the new mission statement on the inside jacket of this annual report. The title of our annual report this year is "Quality of life." We have chosen this title because we want to vividly illustrate the many different ways we create technology that is "Invented for life," and to show how these innovations contribute to improving quality of life for many people. After all, this is something that has always been our aim at Bosch.

In addition, the management report shows for the first time how we derive our strategic approach from "We are Bosch." The mission statement lays out the three strategic focal points that form the basis of our approach: customer focus, shaping change, and striving for excellence. We see these focal points as both an opportunity and a challenge. With regard to shaping change, we place a particular focus on energy efficiency, automation, electrification, the growth opportunities in emerging markets, and the overriding theme of increasing connectivity. We are increasingly using the possibilities offered by the internet of things to develop innovative products and business models in the mobility sector, in manufacturing operations, in household appliances, and in energy and building technology. We believe that our expertise in hardware, software, and sensor technology can be the source of considerable growth opportunities – even as competition becomes increasingly intense. After all, in today's connected markets, IT companies and device manufacturers face each other in direct competition for the first time.

In order to be innovative, we have to be profitable. We have made good progress toward this goal. The current annual report's statements and figures offer compelling evidence that our efforts to improve both profitability and agility – and with them our competitiveness – are bearing fruit. This year, our task is to diligently continue our efforts. Despite the economic risks, we are also forecasting good growth and further improvements to earnings in 2015.

On behalf of the board of management, I would like to thank all our associates worldwide for their hard work and dedication. Without them, our success in 2014 would not have been possible. Their commitment is crucial for taking our company forward. We would also like to thank the employee representatives for their constructive contributions to finding solutions, as well as our business partners, our shareholders, and the supervisory board for their support.

With best regards,

Dr. Volkmar Denner,
Chairman of the board of management

Board of management

"The way we act is characterized by mutual respect and fairness. This is just as true of our associates in their dealings with each other as it is of our work with partners and suppliers."

Christoph Kübel

"Road safety is right at the top of our agenda. We develop and manufacture systems that are tailored to regional requirements."

Dr. Dirk Hoheisel

"Protecting the environment is one of our prime tasks: the sustainability we achieve through energy-saving and eco-friendly products, as well as through a state-of-the-art, efficient manufacturing network, conserves resources, protects the environment, and safeguards quality of life for everyone."

Dr. Werner Struth

"It's our responsibility to achieve growth that is sustained and profitable. Only in this way can we maintain our capacity to act in the company's best interest and secure our financial independence. If we do this, then our partners and customers will be able to rely on us in the future as well."

Dr. Stefan Asenkerschbaumer

"We want to spark enthusiasm – in our associates for the company, and in people for our products. Improving quality of life and conserving natural resources are our prime concerns. That's what we mean by 'invented for life'."

Dr. Volkmar Denner

"The ability to think globally and act locally is one of our strengths. The mix of different cultures and the constant transfer of knowledge help us to do what is best for people in global markets."

Peter Tyroller

"Our innovative strength is driven by curiosity. This strength allows us to rise to global challenges and satisfy our customers' wishes."

Dr. Rolf Bulander

"The people who use our products are the focus of our innovative ideas. Increasingly, we are involving our customers in the development of new products right from the start."

Uwe Raschke

"We offer our customers products that spark their enthusiasm, as well as innovative service solutions that have been carefully designed with potential users in mind. These solutions can draw on the experience gained in many years of successful work with all kinds of customers."

Dr. Stefan Hartung

"Automotive technology is a Bosch core competence. Thanks to our innovative solutions, cars are being electrified, automated, and connected. In this way, Bosch is shaping the mobility of the future."

Wolf-Henning Scheider

Board of management

Dr. Volkmar Denner
Chairman

Corporate responsibilities
- Technology coordination
- Corporate strategy
- Corporate communications
- Research and advance engineering
- Real estate and facilities

Subsidiaries
- Bosch Software Innovations GmbH
- Healthcare Telemedicine
- Robert Bosch Venture Capital GmbH
- Bosch Energy Storage Solutions LLC

Dr. Stefan Asenkerschbaumer
Deputy chairman

Corporate responsibilities
- Finance and financial statements
- Controlling, planning, and mergers and acquisitions
- Internal accounting and organization
- Purchasing and logistics
- Information technology
- In-house consultancy

Christoph Kübel

Corporate responsibilities
- Human resources and social welfare, including senior executives
- External affairs, governmental and political relations
- Legal services and compliance
- Taxes
- Internal auditing
- Intellectual property
- Insurance

Dr. Rolf Bulander

Corporate responsibility
- Quality

Divisions
- Gasoline Systems
- Diesel Systems
- Starter Motors and Generators

Subsidiary
- Bosch Engineering GmbH

Dr. Dirk Hoheisel

Corporate responsibility
- Automotive systems integration

Divisions
- Chassis Systems Control
- Car Multimedia
- Automotive Electronics

Subsidiary
- ETAS GmbH

Uwe Raschke

Corporate responsibilities
- Consumer Goods business sector
- User experience

Division
- Power Tools

Subsidiary
- BSH Bosch und Siemens Hausgeräte GmbH [3]

Regional responsibilities
Western Europe, Middle Eastern Europe, Russia, Middle East, Africa

Presidents of the divisions

Manfred Baden
Car Multimedia

Dr. Steffen Haack
Solar Energy [4]

Henning von Boxberg
Power Tools

Uwe Glock
Thermotechnology

Dr. Markus Heyn [1, 5]
Diesel Systems

Gert van Iperen
Security Systems

Dr. Ulrich Kirschner
Starter Motors and Generators

Friedbert Kiefenz
Packaging Technology

Klaus Meder
Automotive Electronics

Peter Tyroller

Regional responsibilities
Asia Pacific, India

Dr. Werner Struth

Corporate responsibilities
- Industrial Technology business sector
- Manufacturing coordination, production system development, and investment planning
- Environmental protection

Divisions
- Drive and Control Technology
- Packaging Technology

Regional responsibilities
North America, South America

Wolf-Henning Scheider[1]

Corporate responsibilities
- Mobility Solutions business sector
- Original equipment sales
- Marketing and sales

Divisions
- Electrical Drives
- Automotive Aftermarket

Subsidiary
- ZF Lenksysteme GmbH[2]

Dr. Stefan Hartung

Corporate responsibility
- Energy and Building Technology business sector

Divisions
- Security Systems
- Solar Energy[4]
- Thermotechnology

Subsidiary
- Bosch Energy and Building Solutions GmbH

Stefan Seiberth
Gasoline Systems

Gerhard Johannes Steiger
Chassis Systems Control

Dr. Bernhard Straub
Electrical Drives

Dr. Uwe Thomas
Automotive Aftermarket

Dr. Karl Tragl
Drive and Control Technology

[1] Until March 31, 2015
[2] Effective January 30, 2015, wholly-owned subsidiary, renamed Robert Bosch Automotive Steering GmbH
[3] Effective January 5, 2015, wholly-owned subsidiary, renamed BSH Hausgeräte GmbH
[4] Until August 31, 2014
[5] Effective April 1, 2015, member of the board of management

Supervisory board report

Ladies and gentlemen,

For the Bosch Group, 2014 was a successful year, one in which a number of important strategic decisions were made. With our complete acquisitions of BSH Bosch und Siemens Hausgeräte GmbH and ZF Lenksysteme GmbH, we succeeded in making the Bosch Group considerably stronger.

In our capacity as supervisory board, we regularly monitored the work of the board of management, and supported its efforts relating to management, to developing Bosch Group strategy, and to individual matters affecting the company. We are obliged by law and the statutes to fulfill a number of tasks – an obligation which we fulfilled once more with the utmost care in fiscal 2014. Outside of board meetings, moreover, the chairman of the supervisory board had the chairman of the board of management regularly inform him about current developments and events in the company. Our cooperation with the board of management is characterized by open, honest, and constructive exchange. Both supervisory board and board of management share the objective of securing the Bosch Group's sustainable development, so that it is successful over the long term. In this way, we fulfill the mission handed down to us in the will of the company founder, Robert Bosch.

The supervisory board was also closely involved in the acquisition of all shares in the former fifty-fifty joint ventures BSH Bosch und Siemens Hausgeräte GmbH – one of the largest acquisitions in the company's history – and ZF Lenksysteme GmbH. In addition, it kept itself fully abreast of the board of management's other major plans for acquisitions and divestments. Other topics dealt with included an evaluation and improvement of the Bosch Group's compliance management system as well as assessments of the pending antitrust proceedings, the challenges of greater electrification in the automotive sector, and the growing requirements concerning data security. Furthermore, the board concerned itself with issues of leadership and collaboration within the company. In particular, we addressed the idea of agile teams that can react quickly and flexibly in dynamic markets, and of the user experience approach as a way of achieving a stronger customer focus.

The supervisory board looked in detail at business developments as well as the financial and capital expenditure plans. As part of the risk management process, the board of management reported on major individual risks. There was no evidence of existential risks. The auditor's examination of the structure and function of the risk management system did not result in any objections. In view of Wolf-Henning Scheider's departure from the board of management, the supervisory board appointed Dr. Markus Heyn, president of the Diesel Systems division, as a new management board member effective April 1, 2015.

PricewaterhouseCoopers Aktiengesellschaft Wirtschaftsprüfungsgesellschaft (PwC) audited and issued an unqualified audit opinion on the Robert Bosch GmbH annual financial statements, the Bosch Group consolidated financial statements, and the accompanying management reports as of and for the year ended December 31, 2014. The supervisory board discussed these documents at length and subjected them to its own examination. All members of the supervisory board had access to the auditor's reports. Moreover, at the supervisory board meeting, the auditor reported on the main findings of the audit, which were then discussed in detail in the auditor's presence. The supervisory board raised no objections, concurred with the results of the audit, and approved the Robert Bosch GmbH annual financial statements and the Bosch Group consolidated financial statements. The supervisory board recommended that the shareholders adopt the annual financial statements, approve the consolidated financial statements, and endorse the board of management's proposal for the appropriation of net profit.

The supervisory board would like to thank the board of management and all Bosch Group associates for their exemplary dedication and hard work over the past year, as well as for the many activities that have sustained the company's continuing success.

Stuttgart, March 2015
For the supervisory board

Franz Fehrenbach,
Chairman

Supervisory board

Franz Fehrenbach
Stuttgart
Chairman
Former chairman of the board of management of Robert Bosch GmbH

Alfred Löckle
Ludwigsburg
Deputy chairman
Member of the works council of the Schwieberdingen plant, and chairman of the central works council as well as of the combined works council of Robert Bosch GmbH

Christiane Benner
Frankfurt am Main
Managing member of the executive board of Industriegewerkschaft Metall

Dr. Christof Bosch
Königsdorf
Spokesperson for the Bosch family

Christian Brunkhorst
Mühltal
Representative of the chairman of Industriegewerkschaft Metall

Klaus Friedrich
Lohr
Chairman of the works council of Bosch Rexroth AG, Lohr am Main, and chairman of the central works council of Bosch Rexroth AG and member of the combined works council of Robert Bosch GmbH

Hartwig Geisel
Leinfelden-Echterdingen
Chairman of the works council of the Feuerbach plant and deputy chairman of the central works council as well as of the combined works council of Robert Bosch GmbH

Jörg Hofmann
Esslingen
Vice-president of Industriegewerkschaft Metall, Frankfurt am Main

Prof. Lars G. Josefsson
Stockholm
Former president and chief executive officer of Vattenfall AB

Dieter Klein
Weilersheim
Chairman of the works council of the Homburg plant and member of the central works council of Robert Bosch GmbH

Prof. Dr. Renate Köcher
Konstanz
Managing director, Allensbach Institute for Public Opinion Research

Prof. Dr. Olaf Kübler
Zurich
Former director, Eidgenössische Technische Hochschule (ETH) Zurich

Matthias Georg Madelung
Munich
Member of the board of trustees of Robert Bosch Stiftung GmbH

Kerstin Mai
Hildesheim
Chairwoman of the works council of Robert Bosch Car Multimedia GmbH, Hildesheim, and member of the combined works council of Robert Bosch GmbH

Dr. Wolfgang Malchow
Pliezhausen
Former member of the board of management of Robert Bosch GmbH

Urs B. Rinderknecht
Zurich
Former chief executive of UBS AG

Tilman Todenhöfer
Madrid
Managing partner of Robert Bosch Industrietreuhand KG

Dr. Richard Vogt
Bühl
Department head, development of business excellence, Electrical Drives division, and chairman of the executives committee of Robert Bosch GmbH as well as of the combined executives committee of the Bosch Group in Germany

Prof. Dr. Beatrice Weder di Mauro
Frankfurt am Main
Chair of international macroeconomics at the Johannes Gutenberg University of Mainz

Hans Wolff
Bamberg
Chairman of the works council of the Bamberg plant and member of the central works council of Robert Bosch GmbH

Industrial trust and international advisory committee

Robert Bosch Industrietreuhand KG

General partners

Franz Fehrenbach
Stuttgart
Chairman of the shareholders' meeting

Tilman Todenhöfer
Madrid

Limited partners

Dr. Christof Bosch
Königsdorf

Dr. Siegfried Dais
Stuttgart

Dr. Volkmar Denner
Pfullingen

Dr. Jürgen Hambrecht
Ludwigshafen

Prof. Lars G. Josefsson
Stockholm

Prof. Dr. Olaf Kübler
Zurich

Dr. Wolfgang Malchow
Pliezhausen
(from July 1, 2014)

Dr. Michael Otto
Hamburg

Urs B. Rinderknecht
Zurich

Robert Bosch international advisory committee

Franz Fehrenbach
Stuttgart
Chairman

Dott. Alessandro Benetton
Treviso

Dr. Hugo Bütler
Zurich

Stephen J. Hadley
Washington
(from January 1, 2015)

HRH Prince El Hassan bin Talal
Amman

Prof. Ryozo Hayashi
Tokyo

Baba N. Kalyani
Pune

Dr. Henry A. Kissinger KCMG
Washington
(until December 31, 2014)

Pascal Lamy
Paris
(from January 1, 2015)

Friedrich Merz
Berlin

Ingo Plöger
São Paulo

Erwin Schurtenberger
Ascona, Beijing

Louis Schweitzer
Paris
(until December 31, 2014)

Prof. Dr. Igor Yurgens
Moscow

Highlights of the year

January to July

Jan. 8 | Las Vegas, USA

Bosch at CES

Bosch presents technologies for the future of connected driving, as well as the world's first integrated environment sensor, which combines a pressure, humidity, and temperature sensor in one single housing.

Feb. 5 | Berlin, Germany

Bosch Connected World

At this conference, more than 400 experts meet to discuss smart batteries, smart homes, and smart sensors.

Feb. 7 | Bangalore, India

German Federal President Joachim Gauck visits Bosch vocational center

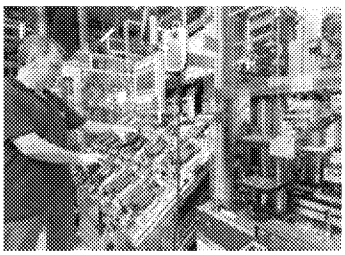
Since it was founded in 1961, the center in Bangalore has trained some 2,400 apprentices in seven trades.

Mar. 1 | Stuttgart, Germany

100 years of Bosch starters

Mar. 1 | Stuttgart, Germany

100 million Bosch ESP® systems



Apr. 1 | Hannover, Germany

Hannover Trade Fair: wide range of solutions for connecting industry and buildings

Bosch presents hardware and software innovations relating to Industry 4.0 and the internet of things.

At the trade fair, Federal Chancellor Dr. Angela Merkel visits the Bosch Rexroth booth. Dr. Werner Struth, member of the board of management of Robert Bosch GmbH, demonstrates how the APAS production assistant works. The assistant is fitted with a "sensor skin" that prevents collisions.

Apr. 2 | Stuttgart-Feuerbach, Germany

European works council members in open and constructive dialogue with the board of management

Together with Alfred Löckle, the chairman of the central and combined works councils, Dr. Volkmar Denner, the Bosch CEO, and Christoph Kübel, the director of industrial relations (from right), 30 works council members from 20 countries discuss ways of strengthening the European locations.

May 1 | Abstatt, Germany

DTM relies on Bosch technology

In the 2014 DTM race season, all race cars once again drive with Bosch engine management systems, displays, and other components.

May 9 | Cluj, Romania

Bosch opens new manufacturing facility

In Cluj, some 750 associates manufacture electronic components and control units for the European automotive industry. They are used for functions such as driver assistance and safety systems, as well as for energy management. In addition, the electronic heart of the e-bike drive comes from this new location.

Jun. 24 | Stuttgart, Germany

International "Bosch Diversity Day"

For 24 hours, there are participative campaigns, discussions, and networked events around the world, designed to demonstrate the diversity within the Bosch Group. Bosch believes that a diversity of cultures, experience, and perspectives is a major stimulus for productivity and innovation. For its commitment to diversity, the company has already received many awards, the most recent of which is the German Diversity Prize.

Jul. 11 | Braderup, Germany

Storage battery goes into operation

A flexible solution for wind power: If there is too much power for the grid to handle, the huge Bosch battery stores the wind power, then feeds it in later on demand. With a total peak capacity of 2,325 kilowatts, the Braderup hybrid battery stores the same amount of electricity as 40 single-family homes would use in one week.

Highlights of the year

August to December

Aug. 26 | Stuttgart, Germany

#ExperienceBosch

For 16 days, six Bosch explorers traveled around the world, stopping at six places on three continents to look behind the scenes of exciting Bosch projects. On the social web, they reported live on their experiences in London, San Francisco, Shanghai, Singapore, Berlin, and the Panama Canal.

Sep. 15 | Stuttgart and Schwäbisch Gmünd, Germany

Complete acquisition of ZF Lenksysteme planned

With its complete takeover of ZF Lenksysteme, Bosch is strengthening its ability to actively shape the future of mobility. ZF Lenksysteme is a technological leader in the growth area of electric steering, and exactly this is the core technology for automated driving, for more efficient vehicles, and also for electric cars.

Sep. 22 | Stuttgart and Munich, Germany

100 percent takeover of BSH announced

BSH fits in well with the company's strategic imperative "Invented for life." With smart technology, a high level of convenience, and user friendliness, the household appliance manufacturer wants to make people's lives around the world easier and more pleasant with its products and services, conserving natural resources with appliances that are especially efficient.

Sep. 26 | Hannover, Germany

65th IAA Commercial Vehicles

Bosch showcases technology for trucks, vans, and buses. The focus is on solutions that help customers meet the ever stricter emissions standards for trucks, buses, and off-highway vehicles such as tractors and construction machinery.

Oct. 14 | Stuttgart, Germany

Federal government asks Volkmar Denner to join steering committee

On the "Innovation dialogue" steering committee, participants from the federal government, business, and academia discuss subjects with technological and future relevance. "In the race for a connected world, Germany must use its strengths," Denner says.

Oct. 17 | Berlin, Germany

Bosch organizes its first hackathon

Bosch uses this new approach to software development and customer focus to come up with apps for the mySPIN smartphone integration solution. The idea is that these driver-assistance apps should be shown on the vehicle display in a non-distracting way. Roughly 30 independent software developers and designers take part.

Oct. 21 | Brussels, Belgium

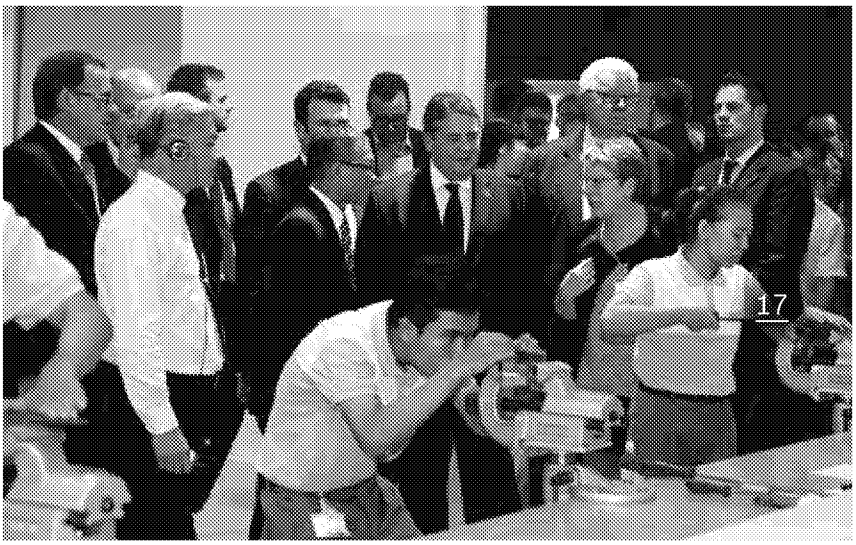
Bosch Group receives 2014 EFQM Excellence Award

The winner of the EFQM Excellence Award 2014, and thus overall winner of the competition, is the Bosch plant in Bari. The plant in southern Italy receives three further prizes in the "Creating a sustainable future," "Managing with agility," and "Succeeding through the talent of people" categories.

On behalf of all 2,000 associates in Bari, the plant management accepts the award (from left: Jens Last, commercial plant manager, Georg Keil, director of United Nations Global Compact, Enno Scharphuis, technical plant manager).

Nov. 20 | Ho Chi Minh City, Vietnam

Economics Minister Gabriel visits new Bosch training center in Vietnam



Nov. 24 | Stuttgart, Germany

Associates' ideas have saved 395 million euros over the past ten years

For 90 years, associates' ideas have been making Bosch more innovative. In 2014, 21,900 associates submit suggestions for improvement. Two foundry associates receive the maximum cash reward of 150,000 euros.

Dec. 1 | Stuttgart, Germany

ABB, Bosch, and Cisco agree joint venture

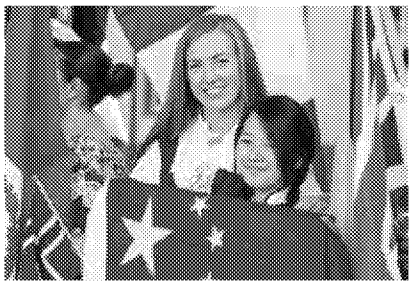
An open software platform for smart homes will allow the simple exchange of data between different appliances, and pave the way for many new services. The alliance is to be open to all device manufacturers and service providers.

Robert Bosch Stiftung

In 2014, Robert Bosch Stiftung GmbH celebrated its 50th anniversary. Since 1964, it has translated the charitable and social commitment of Robert Bosch into modern projects. It pursues its specific objectives with programs and institutions of its own. The Stiftung also supports third-party projects and initiatives that complement its own objectives. Each year, the Robert Bosch Stiftung approves funding for some 800 initiatives. It is one of the largest foundations in Europe.

Left: Dr. Constanze Stelzenmüller (center) in a discussion with the former ambassador Robert M. Kimmit (left) and Dr. Peter Wittig (right), the German ambassador to the United States.

Right: Students from 70 countries learn together at the new UWC Robert Bosch College in Freiburg, Germany.



The Robert Bosch Stiftung focuses its funding activities on healthcare and science, education, culture and society, as well as international relations. Its aim is to find possible solutions for relevant issues, and to test them in the field as models. The Stiftung develops projects aimed at improving social coexistence and encouraging greater equality of opportunity. Moreover, it ensures that results of these projects can be applied as widely as possible. The main point of reference for its work is provided by the values of Robert Bosch and the mission he handed down. Just like the company, the Stiftung is committed to high standards of quality and sustainability. The Stiftung finances its work from the dividend it receives as a shareholder in Robert Bosch GmbH.

50 years shaping the future

This was the motto under which the Stiftung launched events and initiatives in its anniversary year. The objective was not only to look back at the achievements of the past 50 years, but also to look ahead and ask what issues will be important for society and the foundation's own work in the years to come.

The Stiftung opened its doors to the public for the first time at the beginning of July. Six thousand visitors had the opportunity to learn about the Stiftung's work at a celebration on the grounds of the Bosch Haus Heidehof in Stuttgart, Germany.

The biggest anniversary project was the inauguration of the UWC Robert Bosch College in Freiburg, Germany, in September 2014. This secondary school for up to 200 students from around the globe combines the ideals of a good education with intercultural skills, and has received substantial support from Robert Bosch GmbH and other partners.

In Berlin in October, German federal president Joachim Gauck opened the Stiftung's international conference titled "The era of the citizen – how civil society and foundations are shaping the future." Among the guests were the Nobel Peace Prize laureates Kailash Satyarthi (2014) and Muhammad Yunus (2006). At the conference, the Stiftung presented the results of a study called "the future of foundations," which was conducted on its behalf by Roland Berger Strategy Consultants.

Robert Bosch Academy

In 2014, the Stiftung's liaison office in Berlin established a new venue for social and political discourse. The Robert Bosch Academy offers up to 20 renowned experts from around the world the opportunity to work on strategies for tackling the global challenges of the 21st century. As Richard von Weizsäcker fellows, they participate in the capital's political dialogue and enrich the academy's comprehensive program of events. In addition, research fellowships are given to young scholars working on specific subjects that are relevant for the Stiftung's work.

Transatlantic partnership

In 2014, the Robert Bosch Stiftung established a senior fellowship at the Brookings Institution, a renowned think tank located in Washington, D.C. The inaugural fellowship was awarded to the

A happy birthday to the Stiftung: Baden-Württemberg Governor Winfried Kretschmann (center) with Dr. Christof Bosch (far left), Prof. Dr. Joachim Rogall (second from left), Dr. Kurt Liedtke (second from right), and Dr. Ingrid Hamm (right)

journalist and legal expert Dr. Constanze Stelzenmüller. Her task is to share the German perspective on key issues with U.S. officials and policymakers. As the 30th anniversary of the scholarship program for U.S. junior managers also indicates, the Stiftung is committed to strengthening ties with the United States.

Youth in Europe

The high level of youth unemployment in southern Europe is endangering the future prospects of an entire generation. Robert Bosch GmbH and the Robert Bosch Stiftung have launched a joint initiative to address this. One of the Stiftung's first steps was to commission a study by the Center for European Economic Research (ZEW) to explore the issue and make recommendations for reforms. The researchers call for reforms of the education systems and job markets in affected countries as well as increased mobility for European apprentices.

The following institutions also belong to the Stiftung:
- Robert Bosch Hospital,
- Dr. Margarete Fischer-Bosch Institute for Clinical Pharmacology,
- Institute for the History of Medicine of Robert Bosch Stiftung, and
- UWC Robert Bosch College.

Dependent foundations within the Stiftung:
- Otto und Edith Mühlschlegel Stiftung (aging),
- Hans-Walz-Stiftung (research into complementary medicine),
- DVA-Stiftung (Franco-German dialogue), and
- Rochus und Beatrice Mummert Stiftung (international promotion of young talent).

Total project grants by Robert Bosch Stiftung, 2014
Figures in millions of euros

11.9	Healthcare and science
15.5	Education, society, and culture
7.6	International relations: Americas and Asia
13.7	International relations: Europe and its neighbors
2.6	Projects by the Berlin liaison office to promote international relations
9.6	Research at institutes[1] and the Robert Bosch Hospital
5.4	Investments in the Robert Bosch Hospital
1.3	Dependent foundations
68.0	**Total**

[1] Dr. Margarete Fischer-Bosch Institute for Clinical Pharmacology, Institute for the History of Medicine of Robert Bosch Stiftung

More information is available online at
www.bosch-stiftung.de

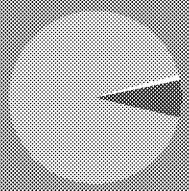
Group management report

The Bosch Group performed well in 2014, despite a weak global economy. Sales grew by 6.3 percent to 49 billion euros, exceeding the sales target. Result also exceeded the previous year's level. Particularly strong sales growth was recorded in the Mobility Solutions business sector and in Asia Pacific. But we were also successful with many innovations in all our business sectors. Furthermore, our intensive efforts to improve competitiveness were reflected in result. The purchase of all shares in the former joint ventures BSH Bosch und Siemens Hausgeräte GmbH and ZF Lenksysteme GmbH is an important step for the Bosch Group. Strategically and technologically, both acquisitions are an excellent fit with the Bosch Group. Due to the great significance of the takeovers, and even though they will not be fully consolidated until 2015, the management report includes initial statements and, in a separate section, key data relating to the acquisitions.

F.01

Shareholders of Robert Bosch GmbH

Shareholding

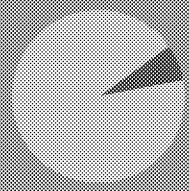


Robert Bosch GmbH
1

Bosch family
7

Robert Bosch Stiftung GmbH
92

Voting rights



Bosch family
7

Robert Bosch Industriebeteiligungen KG
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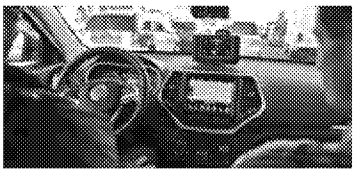
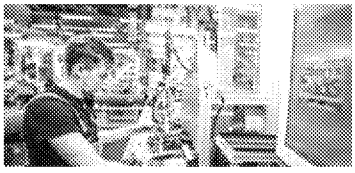
F.02

Bosch Group business sectors

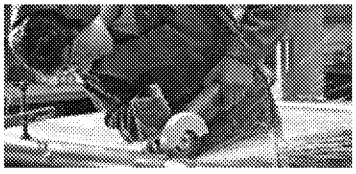
Mobility Solutions
(formerly Automotive Technology)
Gasoline Systems
Diesel Systems
Chassis Systems Control
Electrical Drives
Starter Motors and Generators
Car Multimedia
Automotive Electronics
Automotive Aftermarket
Automotive Steering[1]

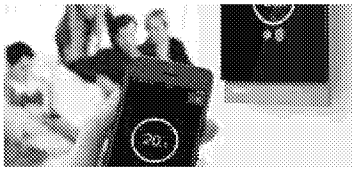




Industrial Technology
Drive and Control Technology[2]
Packaging Technology

Consumer Goods
Household Appliances[3]
Power Tools





Energy and Building Technology
Thermotechnology
Security Systems

[1] Robert Bosch Automotive Steering GmbH (formerly ZF Lenksysteme GmbH, or Steering Systems division; included in the 2014 financial statements at equity; completely acquired Jan. 30, 2015)
[2] Bosch Rexroth AG (100% Bosch-owned)
[3] BSH Hausgeräte GmbH (formerly BSH Bosch und Siemens Hausgeräte GmbH, included in the 2014 financial statements at equity; completely acquired Jan. 5, 2015)

Fundamental information about the group

The group

The Bosch Group encompasses some 340 subsidiaries and regional companies in roughly 50 countries. Including its trading and service partners, the group is represented in some 150 countries. The parent company is Robert Bosch GmbH, which is headquartered in Stuttgart. It started out as "Workshop for Precision Mechanics and Electrical Engineering," founded in Stuttgart in 1886 by Robert Bosch (1861–1942). In 1917, the company temporarily changed its legal form into that of a stock corporation *(Aktiengesellschaft)*; in 1937, it reorganized as a close corporation, Robert Bosch GmbH. Since 1964, Robert Bosch Stiftung GmbH has been the majority shareholder. It currently holds 92 percent of the capital stock.

As a charitable foundation, Robert Bosch Stiftung GmbH has no influence on the strategic or business development of the Bosch Group. The voting rights accruing to its share are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. Most of the remaining shares and voting rights are held by the founder's descendants. This ownership structure guarantees the Bosch Group's entrepreneurial independence, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future.

Businesses

The Bosch Group is divided into four business sectors. Since the beginning of 2015, these have had English names only: Mobility Solutions (formerly Automotive Technology), Industrial Technology, Consumer Goods, and Energy and Building Technology. These correspond to the former reporting segments. Previous operations in crystalline photovoltaics have been largely disposed of or wound up. The subsidiary aleo solar AG in Oldenburg and Prenzlau, Germany, in which Bosch now has a stake of more than 95 percent, is in liquidation. For the most part, the 2013 management report assumed that the group's continuing operations would not include crystalline photovoltaics.

Mobility Solutions business sector

Bosch is one of the world's largest automotive suppliers. The business sector comprises the following divisions:

Gasoline Systems
The Gasoline Systems division develops and manufactures innovative technologies for internal combustion engines powered by gasoline, natural gas, and ethanol, as well as systems and components for hybrid and electric vehicles and motorcycles. These include engine management systems, fuel supply systems, fuel injection systems, ignition systems, sensors, connectors, electric drive units, power electronics, battery systems, and transmission technology. The trend here is from components supplier to systems provider – both in the management of internal combustion engines and electric drive units and in the combination of these two powertrains in hybrids and plug-in hybrids, through to the interplay with the braking system in order to recover energy.

Diesel Systems
The Diesel Systems division is a systems supplier of key powertrain components. The division offers an extensive range of energy-efficient, eco-friendly diesel injection systems for passenger cars and commercial vehicles, regardless of engine size, as well as for other applications. It focuses primarily on the common-rail system, which comprises high-pressure pumps injecting at pressures of up to 2,500 bar, the rail, and various injectors (solenoid and piezo). The division also provides air management systems such as mass air-flow sensors, EDC

electronic diesel control, and exhaust-gas management systems such as Denoxtronic, as well as solutions for diesel hybrid vehicles. Gasoline Systems and Diesel Systems are working ever closer together in the areas of engine management, sensor systems, and powertrain electrification.

Since 2014, the fifty-fifty joint venture Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart, has been assigned to the Diesel Systems division. It previously formed part of Gasoline Systems. It is still consolidated according to the equity method. That is to say, its pro-rata share of equity is reported in the balance sheet and its after-tax income is reported in operating result. The joint venture develops and manufactures exhaust-gas turbochargers for gasoline and diesel engines for use in passenger cars, commercial vehicles, and large-scale industrial power units. Bosch Emission Systems GmbH & Co. KG, Stuttgart, develops, manufactures, and integrates exhaust-gas treatment systems, mainly for construction machinery and commercial vehicles, but also for SUVs. We also manufacture products for the U.S. market through our companies located in the United States. Bosch Emission Systems also supports engine and vehicle manufacturers all over the world with turnkey projects.

Chassis Systems Control

The Chassis Systems Control division develops and manufactures innovative components, functions, and systems aimed at further improving driving safety and comfort. These comprise brake-actuation products such as master cylinders and brake boosters, including braking assistance systems. ABS, TCS, and ESP® electronic braking control systems are an important area of activity. This also incorporates ABS and MSC stability control systems for motorcycles. The division also supplies sensors such as speed, steering-angle, and yaw-rate sensors, as well as electronic devices to protect passengers and pedestrians, including airbag control units and crash sensors. A fast-growing area is that of driver-assistance systems based on ultrasound, radar, and video sensors, also as the basis for automated driving. The division's portfolio also includes products such as radar-based speed control (ACC adaptive cruise control), predictive emergency braking systems, and lane-keeping systems.

Electrical Drives

The broad array of products offered by the Electrical Drives division stretches from a wide variety of electromechanical components to entire systems for bodywork applications, including innovative and energy-efficient actuators, as well as systems and components for engine thermal management, air-conditioning, and windshield cleaning. The product range also comprises actuators for electric windows, seat adjustment systems, and sunroofs, fan modules and engine-cooling drive systems, pumps and valves for cooling systems, air-conditioning components, front and rear wiper systems, as well as wiper arms and blades. Electrical Drives also makes motors for electric steering systems, for ABS and ESP® pumps, as well as for e-bikes and e-scooters.

Starter Motors and Generators

The Starter Motors and Generators division develops and manufactures starter motors and alternators for passenger cars and commercial vehicles. The extensive product catalog includes long-life starters for gasoline and diesel engines, especially also for use in fuel-saving – and therefore CO_2-reducing – start-stop systems. Its alternators provide the vehicle with a reliable energy supply and their high efficiency helps to significantly reduce fuel consumption. The gap between start-stop systems and hybrid powertrains is bridged by the BRS boost recuperation system, based on highly efficient generators which allow braking energy to be recovered.

Car Multimedia

The Car Multimedia division offers intelligent solutions that help make the integration of in-car entertainment, navigation, telematics, and driver-assistance systems better and more flexible, and as easy as possible to operate. Vehicle infotainment architectures are increasingly developing into connected systems, also utilizing the internet. These include driver information and infotainment systems that can be used worldwide and that feature natural-language voice control, freely programmable displays, and head-up displays. The division also offers terminals and communications systems for use in commercial vehicles, passenger cars, and even on motorcycles.

Automotive Electronics

Automotive Electronics develops and manufactures microelectronics. Additional core competencies are systems integration and vehicle calibration. The product portfolio ranges from components such as semiconductors, sensors, and MEMS (microelectromechanical systems), through control units for body electronics, braking control systems, and engine man-

agement systems (also contract manufacturing of the above), to non-automotive applications such as sensors for consumer electronics. As of 2014, Bosch Connected Devices and Solutions GmbH, Reutlingen, also offers sensors, software, and complete solutions for the internet of things, including devices for smart homes. Automotive Electronics also includes the eBike Systems unit, which is Europe's leading supplier of drive and control units for bicycles with electric motors.

Automotive Aftermarket

The Automotive Aftermarket division offers diagnostic and repair-shop technology for the aftermarket and for workshops worldwide, as well as a comprehensive range of spare parts for cars and commercial vehicles – from new parts, to reconditioned spares, to repair solutions. The product portfolio consists of Bosch original-equipment products, as well as products and services developed and manufactured in-house for the spare parts market. Under the "Automotive Service Solutions" label, it also provides testing and repair-shop technology, diagnostics software, service training, and technical information and services. The division is also responsible for the Bosch Car Service and AutoCrew repair-shop franchises, two independent repair-shop chains with more than 16,500 and 800 locations respectively. The division also provides fleet management services.

Automotive Steering (formerly Steering Systems)

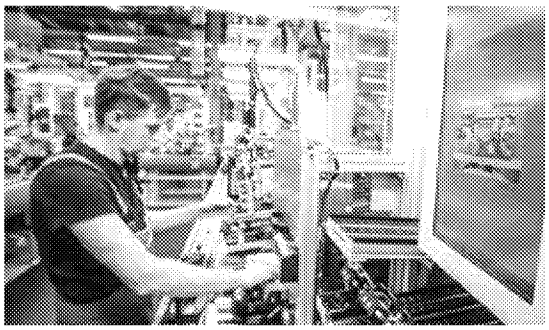
At the end of January 2015, we acquired all shares in the fifty-fifty joint venture ZF Lenksysteme GmbH, Schwäbisch Gmünd, Germany, which in the future will operate under the name Robert Bosch Automotive Steering GmbH. In the 2014 consolidated financial statements, the company is still consolidated in accordance with the equity method. The division manufactures and sells steering technology for passenger cars and commercial vehicles. In addition to complete steering systems, steering columns, and steering pumps for vehicles ranging from small cars to commercial vehicles, the product line also covers components such as valves, universal joints, and steering shafts. Electric steering systems are becoming increasingly important: they are already of great significance for driver assistance systems, and will in the future be essential for electric and automated vehicles.

Other businesses

Bosch's ETAS Group companies provide innovative solutions for embedded software systems that are used in the automotive and other industries. ETAS's subsidiary escrypt GmbH Embedded Security, Bochum, Germany, is primarily concerned with data security. For over ten years, this company has offered data security-related software, advice, and training for a wide range of industries. The Bosch Engineering GmbH subsidiary, headquartered in Abstatt, Germany, offers a wide range of customers tailored solutions based on tried and tested technology used in large-scale series production. For example, it provides solutions for sports cars and off-road vehicles, but also for railcars, marine applications, and industrial engines. Bosch's motor racing activities are also based there.

Industrial Technology business sector

This business sector comprises two divisions:



Drive and Control Technology

The Bosch Rexroth AG subsidiary, based in Lohr, Germany, specializes in drive and control technology and is one of the world's leading suppliers in this field. It offers customized drive, control, and actuator solutions for the industrial automation, mobile machinery, and commercial vehicle segments. Since the sale of its pneumatics business at the beginning of 2014, the division has focused on electrical, hydraulic, and mechatronic components and systems. The division is active in every branch of industry and more than 80 countries as a systems partner, service provider, and supplier. Moreover, it offers a comprehensive range of services and is involved in large-scale international projects.

Packaging Technology
This division is one of the world's leading providers of process and packaging solutions for the pharmaceuticals, foodstuffs, and confectionery industries, as well as selected segments of the beverages industry. Its portfolio includes individual modules, customer-specific systems, and complete solutions. These are complemented by a comprehensive after-sales service portfolio. This division also includes ATMO, Bosch's in-house supplier of assembly systems and special-purpose machinery. ATMO develops flexible, scalable plans for assembly systems and builds customized solutions in the field of testing and calibration technology. The portfolio ranges from planning to turnkey plants, with ramp-up support, and includes a comprehensive array of services.

Consumer Goods business sector

The business sector comprises the following two divisions:

Power Tools
With brands such as Bosch, Dremel, and Skil, Bosch is one of the world's leading suppliers of power tools and accessories. The Power Tools division has a broad range of products aimed at both the professional and do-it-yourself markets. In addition to power tools such as hammer drills, impact screwdrivers, and jigsaws, the product line also includes gardening equipment such as lawnmowers, hedge trimmers, and high-pressure cleaners. One area of focus is convenient, high-performance cordless equipment. The division also offers innovative, digital laser measurement tools for both professional and DIY users. The accessories include a comprehensive range of abrasive systems, drill bits, and saw blades.

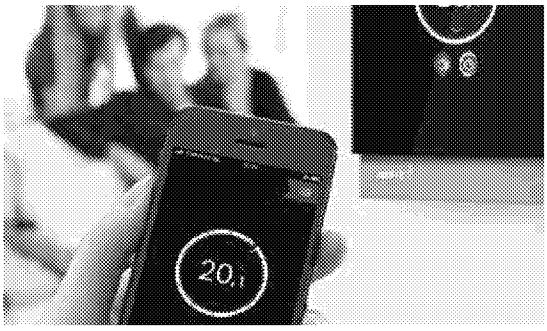
Household Appliances
In January 2015, we finally acquired all shares in the former fifty-fifty joint venture BSH Bosch und Siemens Hausgeräte GmbH, based in Munich, Germany. The company is now officially known as BSH Hausgeräte GmbH. This joint venture, too, is included in the Bosch Group's 2014 consolidated financial statements using the equity method. The household-appliance manufacturer, which is among the leading suppliers in Europe and the world, has a product portfolio that ranges from washing machines and tumble dryers through refrigerators and freezers, stoves and ovens, dishwashers, and vacuum cleaners, to small appliances such as coffee makers, irons, and hot-water appliances. The household appliance specialist sells its products under the main Bosch and Siemens brands, as well as under regional and specialty brands such as Gaggenau, Neff, Constructa, Zelmer, Balay, and Pitsos.

Energy and Building Technology business sector

The business sector covers a broad spectrum of products and services in the fields of heating, air-conditioning, and security.

Security Systems
The Security Systems division provides products and services in the fields of security and business services. The product portfolio encompasses video-surveillance, intrusion-detection, and fire-detection systems, as well as access-control, public-address, and evacuation systems, and professional audio and conference systems. In Germany and selected European countries, Bosch's Building Security business unit provides one-stop tailor-made security solutions, including services such as planning, financing, operation, and maintenance. In other selected countries, Bosch develops customized security solutions for large-scale projects; these are implemented on site by a systems integrator. Via the Bosch Service Solutions business unit, we provide services in the area of business processes in more than 30 languages.

Thermotechnology
In Europe, the Thermotechnology division is a leading manufacturer of energy-efficient heating products and hot-water solutions. The division's products are sold under international



and regional brand names such as Bosch, Buderus, Worcester, and Junkers. The product portfolio ranges from floor-standing and wall-mounted heaters, through heat pumps, solar thermal systems, and solid-fuel boilers, to cogeneration plants and industrial boilers.

The business sector includes the service subsidiary Bosch Energy and Building Solutions GmbH, based in Ditzingen, Germany. It was consolidated for the first time in 2014. The company specializes in services to increase energy efficiency in non-residential buildings. Its customers include manufacturing companies and owners of large real estate properties, but also companies from the healthcare sector.

Companies not allocated to business sectors
Our subsidiary Bosch Software Innovations GmbH, Berlin, develops solutions for the connected world based on its own software suite (i.e. software platform). It provides standardized applications, particularly in the areas of energy, industry, and mobility.

Opportunities, objectives, and strategy

Fundamental direction

New "We are Bosch" mission statement as the basis
In 2014, in the shape of our new "We are Bosch" mission statement, we created a framework for the future strategic orientation of the Bosch Group and its business sectors. The mission statement focuses on fundamental messages of the former "House of Orientation" and develops them with reference to future requirements. The starting point remains the mission of securing the company's future, true to the spirit of its founder Robert Bosch – in other words, ensuring the company's strong and meaningful development and securing its financial independence. Our goal is to develop products that are "Invented for life," that fascinate, that improve quality of life, and that help conserve natural resources. In this respect, "products" means not only physical products, but also software and services.

Our strategy is based on the focal points formulated in the new mission statement: customer focus, change, and excellence. These focal points are derived from factors such as megatrends, changes in the competitive environment, innovations, customer expectations, resource scarcity, and political developments. In terms of products and business models, we want to find the best solutions for our customers. It is increasingly important to offer products tailored to customers and markets and to exploit the innovation potential at our engineering centers worldwide.

Excellence in all areas is essential in order to achieve our targets for growth, earnings, and agility on a lasting basis. In this respect, we measure ourselves against our best competitors. We aim to secure and increase the value of the company on the basis of efficient processes, lean structures, and high productivity. A business environment that is changing at an ever increasing rate calls for increased agility. To this end, we are constantly developing our concepts for leadership and management, as well as our organization.

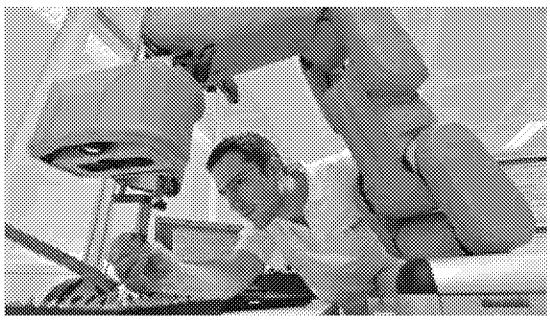
The strategic focal point "change" underlines our ambition to play an active part in shaping the far-reaching changes taking place in markets and technology. These changes present significant opportunities for our company – above all in the areas of energy efficiency, electrification, automation, emerging markets, and connectivity. To achieve this we want to build on our strengths: the Bosch culture, our high level of innovation and quality, and our broad global presence. We continue to base our strategy and our actions on Bosch values: a clear future and result focus, responsibility and sustainability, initiative and determination, openness and trust, fairness, reliability, and credibility, legality, and diversity.

Change opens up major strategic opportunities

With respect to change, we have thoroughly analyzed the strategic opportunities arising from it. The strategic focus on energy efficiency is concerned with energy saving, both in products and in internal value-added. Drivers include the growing demand for energy, ever tighter climate-protection regulations, and the finite nature of fossil fuels. Despite the current development in the price of oil, in the longer term these factors will lead to rising energy prices and hence to growing demand for energy-efficient products. This affects our entire product portfolio. We generate some 40 percent of our sales with products that contribute to energy efficiency, environmental protection, and resource conservation. These products currently account for more than half our research and development expenditure.

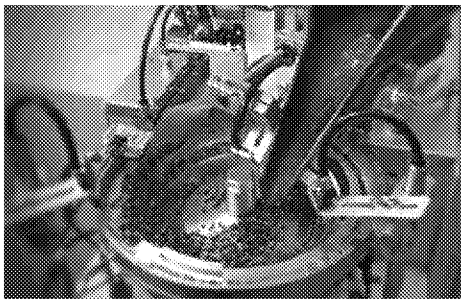
Electrification is of particular importance for the Mobility Solutions business sector. Based on our current estimates, electric vehicles will cease being a niche product in the next five years. By 2020, we expect annual production of 2.5 million electric vehicles, around 3 million plug-in hybrids, and 6.5 million hybrid vehicles in a global market of approximately 113 million vehicles. In 2014, the total number of electric and hybrid vehicles produced still came to less than 2 million units. The key drivers for electrification and electromobility include ever stricter standards for consumption and emissions, falling battery costs, suitability for everyday use (i.e. range), but also driving enjoyment, fascination, and connectivity.

Automation primarily affects the Mobility Solutions and Industrial Technology business sectors. As traffic density continues to grow, automated driving can help reduce the number of accidents and improve road use. Drivers will be able to use their commute more efficiently and have a more comfortable journey. In these areas we expect to see substantial growth, but also changes in the competitive environment due to new players in the market. In Industrial Technology, increasing automation and robotics are leading to improved human-machine interaction. This creates opportunities to increase product quality and productivity, expand functionality, conserve resources, and better protect workers' health and safety.



The emerging markets of Asia, South America, and eastern Europe are home to most of the world's population. Despite the current slowdown in growth, in the long term they will experience higher rates of growth than the industrialized nations. Their prosperity is increasing. There is demand for affordable products that often have to meet special requirements of the local market, such as robustness and ease of repair. When it comes to customer focus, these requirements are becoming increasingly important. Another emerging, and for us promising, market is Africa. The subsaharan region is currently growing at an average annual rate of 5.5 percent, and its enormous pent-up demand gives it great long-term growth potential. We are significantly expanding our sales presence in Africa.

Connectivity is an overriding theme that affects all business sectors. It is being driven by the miniaturization of electronics and the availability of ever more powerful sensors, data networks, and computers. More and more products can be inexpensively



connected to the internet. In view of our expertise in many product areas, our software expertise, and our expertise in sensor technology as one of the world's leading supplier of MEMS sensors, we believe this offers us huge opportunities. Through new business models, services, and competition from other sectors such as the IT industry, connectivity has the potential to profoundly change value chains and the competitive landscape.

It will also lead to more customized and flexible production, combined with shorter innovation cycles.

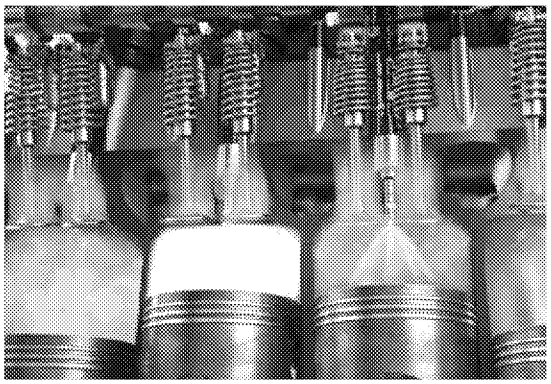
Global business targets defined for the Bosch Group
The Bosch Group's business targets are derived from the "We are Bosch" mission statement, the strategic focal points, and the competitive environment. We aim for annual sales growth of 8 percent on a long-term average, with 3 percent of this coming from acquisitions. We have also set ourselves the goal of an EBIT margin of 8 percent, which we derive from benchmarks. This margin is necessary in order to finance organic growth. By 2020, we aim to double our sales in Asia Pacific and the Americas compared with 2013, to grow faster than the market in Europe, and to increase our sales in Africa to 2 billion euros. In terms of business sectors, we plan to strike a better balance between Mobility Solutions and the other business sectors. The complete acquisition of the former joint venture BSH represents a major step in this direction. Following the complete acquisitions of BSH and ZF Lenksysteme, and in light of the full consolidation of these companies' sales and earnings (previously: pro-rata after-tax income), the above long-term targets will be reviewed.

Strategy and innovation

Mobility Solutions – more than automotive technology
The new name "Mobility Solutions" reflects the extended remit of the former Automotive Technology business sector. Over the next few years, we expect to see a change toward connected, automated, and electric driving. On this basis, we plan to develop the business sector from a supplier of systems and components to one that offers not only products but also complete solutions through the provision of additional services.

The complete acquisition of ZF Lenksysteme, a technology leader in the growth area of electric steering, is an important strategic step in this direction. The acquisition enhances our ability to achieve new USPs in the area of safety through the integration of steering and braking. Electric steering has significant potential to reduce the fuel consumption of vehicles with internal combustion engines, in particular through better coordination of the powertrain, steering, brakes, and driver assistance systems. Start-stop coasting is one example. Electric steering is also a vital component in many safety-critical assistance systems in passenger cars and, in the future, in light commercial vehicles. It is therefore a key element in the future world of automated driving. The new subsidiary is represented worldwide and, as part of its globalization strategy, has recently been investing above all in North America and Asia.

In powertrain technology, highly efficient internal combustion engines remain an important market, partly in view of increasing hybridization. At the same time, electric vehicles are gaining in significance. In the area of gasoline direct injection systems, we expect a similar boost to that seen in the case of diesel direct injection, which is currently growing strongly due to the Euro 6



standards for passenger cars and stricter standards worldwide for commercial vehicles. In Europe, it is expected that roughly half the new vehicles with gasoline engines will be equipped with direct injection by 2016, and around 60 percent by 2020. Another growth market is China, where all new vehicles must have an average fuel consumption of only five liters per 100 kilometers by 2020. This too will lead to a general shift away from manifold injection toward gasoline direct injection systems. A similar development can be expected in the United States, owing to tighter consumption requirements. The substantial up-front investments in gasoline direct injection that we made in the past are therefore paying off. For the South American market, we have adapted gasoline direct injection to allow the system to be used with ethanol as well. However, we are continuing to develop manifold fuel injection, which is still dominant in the hybrid vehicles of Japanese automakers.

The commercial vehicle business, with which we generate around one-quarter of our sales in Mobility Solutions, offers further significant growth opportunities in powertrain technology. Moreover, we are increasingly stepping up our activities in the off-highway sector. Bosch supplies all core components for commercial-vehicle diesel powertrains from a single source. One current driver of global demand is the stricter emissions standard China IV. Electronically controlled high-pressure injection and exhaust-gas treatment have become mandatory for new commercial vehicles in China. In other countries too, exacting standards are helping to boost sales figures. In 2014, for the first time, we delivered almost one million Denoxtronic exhaust-gas treatment systems for heavy trucks and buses. Emissions standards for off-highway vehicles are also becoming more stringent. We benefit from this through Bosch Emission Systems. We also launched a new generation of starters in 2014, which offer substantially higher starting power and so are also of interest for large engines in the off-highway sector. In the field of brake control systems, a new system tailored to the U.S. market went into series production at a North American manufacturer.

Particularly in Europe and the U.S., we are focusing on connectivity in commercial vehicles as well. We expect all new trucks in these regions to be offered with internet access by 2016. Bosch is already one of Europe's leading providers of infotainment for trucks and buses in Europe. We also connect the powertrain and transmission with the navigation system to achieve further fuel savings. Using an electronic horizon generated by navigation data, the Eco.Logic motion system calculates an efficient driving strategy. In the future, internet-based real-time data will be added so as to include road work, for example.

We are also expanding our two-wheeler business. Today, around 60 million two-wheelers with internal combustion engines are produced worldwide each year. According to our estimates, the market will grow to around 110 million units by 2020. About 80 percent of two-wheelers with internal combustion engines are sold in Asia, where small bikes with engines below 250 cubic centimeters are a vital means of transport. Since 2014, we have offered a low-cost electronic fuel-injection system for this market, which provides considerable savings in fuel and emissions compared with the unregulated carburetors prevalent up to now. For these markets, we have also developed a low-cost antilock braking system, featuring just one brake circuit.

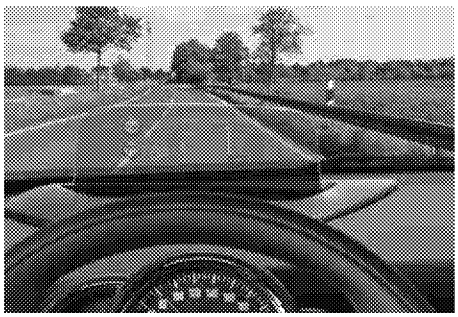
We continue to develop safety products for high-performance motorcycles. Even now, every third motorbike in Europe is equipped with ABS. By 2017, this will be mandatory for all motorcycles. In addition, we are pioneers in the field of MSC motorcycle stability control, which ensures much safer braking and acceleration when leaning into bends. We also presented a connectivity control unit for motorcycles for the first time in 2014. This box acts as a communication hub. It is able to gather operational data and, via an automatic emergency call system, to alert the emergency services and summon help to an accident scene. In addition, the box can provide the basis for additional services and connect with external devices such as a smartphone via an additional Bluetooth interface. Initial applications include an advanced on-board computer, troubleshooting software, and an app-controlled immobilizer.

In the area of automated driving, we expect to see an evolutionary process. Legal and technical hurdles must be overcome before fully automated driving can become a reality. A breakthrough is therefore unlikely until the next decade. Partially automated functions will soon be entering series production. Increasingly extensive driver assistance systems form the basis of this development. We cover the entire product range in this area. The product portfolio includes parking assistants, traffic jam assistants, predictive emergency braking systems, road sign recognition, lane-departure warning systems, drowsiness detection, and intelligent lighting control. From 2015 onward, we will be supplying Google with radar sensors, which are a prerequisite for automated driving.

The ABS, TCS, and ESP® electronic braking control systems are fundamentally important for automated driving. Since 2014, ESP® has been mandatory in the European Union for all new vehicles. In 1995, we were the first manufacturer to put ESP® on the market. Since then, we have manufactured over 100 million systems. Other key technologies include radar, video, and ultrasound sensors. Demand for these sensors will likewise increase significantly. In 2014 alone, we sold more than two million radar and video sensors, twice as many as in the previous year. In addition, the MRR rear radar sensor went into series production in 2014. This helps drivers to change lanes safely and provides information for other assistance functions.

Bosch is a pioneer and a leading global supplier of MEMS sensors, of which more than five billion have been manufactured since large-scale series production began in 1995. Besides automotive electronics, another important area of application is consumer electronics. Bosch sensors can already be found in more than half the world's smartphones. The sensors are able to measure more and more different variables. In early 2015, our subsidiary Bosch Sensortec GmbH, Reutlingen, Germany, achieved a world first with the launch of a sensor which measures the pressure, humidity, temperature, and quality of air in a single housing. At the same time, MEMS sensors are becoming increasingly minute. Since 2014, Bosch Sensortec has offered the world's smallest and most economical sensor unit. In one housing, it measures acceleration and yaw rate extremely precisely. Among other things, it is suitable for "wearable" applications such as fitness wristbands.

Another growth trend is the ever increasing connectivity of vehicles, especially due to the possibilities offered by the Internet. Navigation and infotainment systems, for which we also expect substantial growth, form the basis. New display and control concepts are required for this purpose. In 2014, we launched an instrument cluster that functions without mechanical moving parts and features a large monitor allowing maximum flexibility



for configuration and display. Other innovations include head-up displays, which present information directly in the driver's field of vision so as to increase safety. In multimedia systems, we have offered an infotainment system with a wide range of connectivity options since 2014. The Bosch integration solution mySPIN allows smartphones and their apps to be integrated very easily and openly into the vehicle's infotainment system. We organized a "hackathon" in Berlin in 2014. Around 30 independent software developers, designers, and innovative internet users were invited to develop additional apps for mySPIN.

In electromobility, we have so far been awarded around 30 contracts. One of them is the Fiat 500e, launched in 2014 with a Bosch electric motor, power electronics, battery pack, and regenerative braking system. Bosch components are also to be found in Google's test fleet, where, in addition to the radar sensor, electric motor, and power electronics, we also supply key parts of the electrical powertrain, as well as the steering system. Each year, we invest around 400 million euros in activities relating to the development of electromobility. We employ around 1,600 people in this area. The beginning of 2014 saw the launch of the new joint venture Lithium Energy and Power GmbH & Co. KG, based in Stuttgart, which we established with the Japanese companies GS Yuasa International Ltd., Kyoto, and Mitsubishi Corporation, Tokyo. The company will develop the next generation of lithium-ion battery technology. Our research and advance engineering sector is also working on future battery technologies.

We regard it as a strategic advantage that we cover the whole electrical powertrain and are thus able to operate as a systems supplier: from the battery – including cells, battery management, and power electronics – through different types of electric motors, to all-round expertise in systems integration. This also includes hybridization of passenger cars, vans, and commercial vehicles. In the future, our boost recuperation system, a 48-volt entry-level hybrid, will allow fuel-saving coasting with the engine stopped. The goal is to develop an electric hybrid for heavy trucks by the end of the decade. Furthermore, our subsidiary Bosch Engineering has premiered a control unit for fuel-cell systems in the off-highway segment. Tougher standards in this sector, particularly in Europe and the United States, are driving the electrification of industrial trucks, municipal vehicles, and airfield vehicles, for example.

For us, however, electromobility goes well beyond the automobile. This is why we are expanding our e-bike and e-scooter activities. We successfully introduced a new generation of drive systems for the e-bike in 2014. China is one of the main markets

for e-scooters. In China alone, 120 million e-scooters are already on the road. An electric motor developed for that country's needs is setting new standards in quality and performance.

In 2014, we collaborated with the Principality of Monaco to carry out a pilot project on smart city services. These services provide a virtual link between the urban infrastructure and public services. Since 2011, the modular software suite of our subsidiary Bosch Software Innovations has provided the basis for a networked and user-friendly charging infrastructure for electric vehicles in Singapore, and since 2013 for a fleet management service in Germany. From 2015 onward, the software suite will be used as a platform for a customized, intermodal transport concept in Stuttgart. A "Charge&Pay" app developed by Bosch for Mercedes-Benz makes it easier for users to recharge electric vehicles at public and internet-enabled charge spots. The app already covers 3,000 such spots and 230 operators. We are also exploring the practical use of electromobility with more than 100 partners from business, academia, and public authorities as part of the "LivingLab BWe mobil" initiative. In 40 projects in southwest Germany, some 2,000 electric vehicles are to be put on the road and over 1,000 charge spots to be installed in the Stuttgart region and the city of Karlsruhe by the end of 2015.

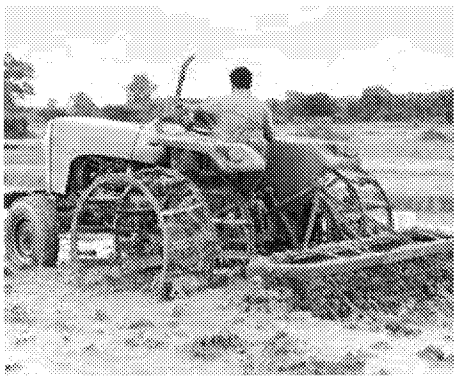
We also operate in the market for telematics services. Via an on-board diagnostics system, information is sent to Bosch for data analysis. Based on the analyzed data, fleet operators can arrange early servicing, for example. We anticipate significant growth opportunities for the eCall emergency call system, since it is expected that all passenger cars and commercial vehicles in Europe will have to be equipped with such an emergency call system from March 2018 onward. We offer not only the on-board unit, but also further support via service centers.

Industrial Technology –
the future world of connected industry

The Industrial Technology business sector's Drive and Control Technology and Packaging Technology divisions operate at different stages of the value chain. In the case of Drive and Control Technology, we operate mainly as a supplier of components and systems for mechanical and process plant engineering businesses in a wide range of industries. Packaging Technology is a specialized mechanical engineering unit that provides solutions relating to packaging.

Drive and Control Technology is currently in the process of reorganization. With its product areas of mobile hydraulics, industrial hydraulics, electrical drives, controls, and linear technology, the division focuses on the mobile and industrial applications market segments. The volatility of mechanical engineering markets in particular calls for leaner and more agile structures. Given the requirements that arise from this, we have taken a first step by announcing a program to improve efficiency at the corporate headquarters of Bosch Rexroth, in the Industrial Applications unit, and in the hydraulics plant at the company's headquarters in Lohr. An important development is the shift in regional demand toward Asia and the Americas, and the resulting challenges with regard to value added. Other needs arise from the rapidly growing importance of mid-price products for emerging markets. These markets can only be partially developed with exports from Germany and Europe. Important global technological trends include energy efficiency, increasing electrification and electronification, and, in particular, the growing connectivity of industrial production.

One example of a cost-effective innovation tailored to local needs in emerging markets is the electrohydraulic hitch control for tractors. In 2014, we began selling this control in India, the world's largest market and manufacturer in this sector. Innovations such as the new generation of frequency converters launched in 2014 contribute to greater efficiency through demand-based delivery of electromechanical energy.



Open core interface technology, launched by Bosch Rexroth in 2014, expands the open core engineering environment and gives mechanical engineers more flexibility. The new interface allows machine manufacturers to independently extend the Bosch Rexroth standard controls to include customized machine functions, so as to generate competitive advantages for their customers and protect their individual process know-how. Bosch Rexroth has also developed a web connector which acts as a bridge to web-based applications and is thus an essential component for exploiting the possibilities of Industry 4.0 in state-of-the-art production facilities.

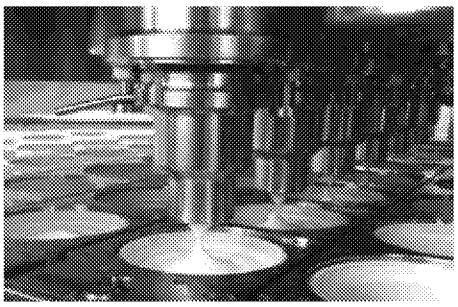
We aim to be a leading provider in the connected industry market of the future, above all with our activities in the Industrial Technology business sector. We also see ourselves as a leading exponent of connected industry in our own plants, of which there are more than 200 worldwide. We expect significant productivity gains in manufacturing processes with a wide variety of product types, thanks to reduced set-up times and improved logistical processes. We will also achieve savings through greater energy efficiency and better harmonization of machinery and installations with each other and their environment.

Besides hardware and software expertise in the field of mechanical engineering, we have extensive sensor expertise and, in the shape of our subsidiary Bosch Software Innovations, an internet specialist with its own software suite. To take connected industry forward quickly, we have created an internal, cross-divisional innovation cluster which coordinates activities across the company. We have already equipped more than 20 of our factories with RFID (radio-frequency identification) solutions to improve logistical processes in manufacturing. We have also tested various aspects of connected industry in more than 70 pilot projects.

These include new methods of quality assurance, as well as business opportunities arising from proactive maintenance and repair. This requires additional sensors for data collection and pinpointed analysis in real time. At our plant in Blaichach, Germany, we use smart adaptive testing to record data for each individual solenoid valve and are able to reduce test times through customized examination of batches. On an assembly line for hydraulic valves which went into operation at our Homburg location in 2014, we already practice connected production to a large extent and are able to produce a large range of variants without long set-up times.

As a member of the German "Industry 4.0 platform" initiative and the U.S. "Industrial Internet Consortium" (IIC), Bosch is committed to developing the necessary standardization and data security. In addition, we participate jointly with partners in research projects such as CoCoS (context-aware connectivity and service infrastructure for cyber-physical production systems), which is supported by the German Federal Ministry for Economic Affairs and Energy. This project is concerned with integrated information and communication infrastructures that allow systems comprising machines, warehousing systems, and other equipment to share information, even between different companies.

In Packaging Technology, we plan to expand our market presence still further. Europe and North America will continue to drive innovation in the future. We also expect above-average growth in Asia and Africa. We are therefore planning a joint venture in India to complement our Verna (Goa) site, and in this respect have signed agreements to acquire 49 percent of Klenzaids Contamination Controls Pvt. Ltd, Mumbai, which manufactures process, packaging, and clean-room technology for the international pharmaceuticals industry. In Japan, we have moved into a new, enlarged facility devoted to inspection technology. We also intend to develop new sales markets in eastern Europe and South America.



At the same time, we will continue to expand our offering particularly in the pharmaceuticals, foodstuffs, and confectionery industries. We plan to expand our technical expertise and the value chain both through innovation and acquisitions. Furthermore, we will increasingly offer turnkey installations to customers as a complete package. Here, too, the opportunities offered by connected industry will play an increasing role. Our internal automation service provider ATMO belongs to the Packaging Technology division. It began selling its own measuring and production technology products in external markets for the first time in 2014. As well as measuring systems, these also include the APAS production assistant. With its highly sensitive sensor skin, this robot has been certified as able to work with humans directly and collision-free, without the need for additional guards. It provides a flexible solution for the retroactive automation of manual workplaces. In small-series production, it can be used for assembling machines.

Consumer Goods – market position greatly strengthened

At the beginning of 2015, we strengthened the Consumer Goods business sector significantly with the takeover of all shares in the former joint venture BSH. In the future, the business sector will account for around one-quarter of the Bosch Group's total sales. The 50 percent interest was acquired for a price of three billion euros. In addition, a dividend of 250 million euros was paid to each of the previous shareholders prior to closing the transaction. In BSH, we have acquired a leading household-appliance manufacturer, a business that has been successful and profitable over many years with strong brands, and which puts its faith in innovative products. The company will be fully consolidated for the first time this year, and the 2015 annual report will then present full details of the company and its strategy.

With its strategic and technological approach, BSH is an excellent fit for Bosch and our "Invented for life" ethos. The company's products are designed with an emphasis on smart technology, convenience, and ease of use, making the lives of people around the world easier and more comfortable. In particular, it focuses on energy-efficient and resource-conserving products. Technological opportunities exist for increased cooperation between the Bosch Group and BSH, particularly in the promising field of the internet of things. Household appliances will be even more energy efficient in the future thanks to smart-home concepts. Ease of use, functionality, and customer benefit will be enhanced.

The Power Tools division is one of the world's leading suppliers of power tools, accessories, measuring equipment, and garden tools. Bosch Power Tools maintains its outstanding market position above all through regular product innovations focusing on user benefits and, as a result, strong brands. In 2014 alone, we launched more than 100 new products in Germany. The technology remains dominated by the trend toward cordless devices. Nearly half the world's power tools are equipped with rechargeable batteries, and lithium-ion technology is continuing to gain ground. In Europe, it is now used in more than 80 percent of all cordless devices.

Besides continually expanding the product portfolio for cordless appliances and increasingly efficient rechargeable batteries, we are also focusing on innovative wireless charging technology. With our wireless charging system, we are pioneers in the field of inductive charging for cordless power tools. The new chargers and batteries are aimed initially at professional users. Cordless devices are also gaining importance in the world of garden tools. We are expanding our product range to include commercial garden maintenance, and will initially launch cordless lawnmowers and strimmers in 2015. Compared with gasoline-powered appliances, they are not only more convenient but also have the advantage of generating less noise pollution. Furthermore, we are using innovative, brushless EC motors in more and more power tools, which set new standards with regard to product and battery life and are completely maintenance-free. EC stands for electronic commutation; in other words, DC motors with permanent magnets and electronic commutation using transistors.

Power Tools is also expanding its product range in the fast-growing market segment of measurement tools, where we are likewise

aiming for greater connectivity. In 2014, we introduced the GLM floor plan tablet-computer app for professional applications. This allows tradespeople and planners to draw floor plans quickly and easily on a scale of 1:50, using digital technology instead of pencil and paper. We are also winning many new users in the DIY segment with our handy, easy-to-use measuring instruments. As a further innovation in the accessories business, we launched a range of saw blades for professional multi-cutters. The blades' special geometry allows wood and metal to be cut 30 percent faster than with conventional saw blades.

Power Tools is also expanding its offering in online sales and online services. "My Bosch" is a communication platform designed for this purpose. DIYers can share ideas and discuss projects via either the "1-2-do.com" community initiated by us or the Pinterest social network. Bosch experts provide specific assistance relating to Bosch garden tools and power tools if needed. In addition, we use the online channel YouTube to provide information to customers via video. We are also represented on other social networks.

In the medium-to-long term, we anticipate above-average growth opportunities in emerging markets. Here, we are cultivating markets such as China, India, Brazil, and Russia. Market-driven products that take local purchasing power into account are the key to success. One example is the compact cordless screwdriver which we successfully launched in ten countries, including China, South Africa, and India, in 2014.

Energy and Building Technology – a worldwide growth market

We see worldwide growth opportunities in the market for energy and building technology, as demand for energy continues to grow at the same time as requirements for resource conservation and energy efficiency are stepped up. Energy demand has doubled over the past 40 years or so, also due to increasing urbanization. Buildings account for about 40 percent of global energy consumption, with heating taking the largest share of the energy market. However, some 75 percent of all installed heating systems are not energy efficient.

The heterogeneous markets in energy and building technology that have existed up to now are undergoing significant changes. This opens up new potential, above all if intelligent, connected control systems are used. We also expect these markets to converge more and more. However, major regional technical differences continue to exist between Europe and Asia. In the field of energy and building technology, the market for private customers as well as the market for products, systems, and solutions for commercial buildings currently have a worldwide volume of around 60 billion euros. They are recording annual growth of around 4 to 5 percent. The global market for commercial building services is growing even more strongly at around 9 percent, with a current total market of around 20 billion euros.

Our goal is to become a leading global supplier of intelligent energy and building technology. To achieve this, we aim to increase Energy and Building Technology sales to 8 billion euros by 2020. We anticipate major growth opportunities in three business segments: residential buildings, commercial buildings, and services. We are focusing on a combination of technical products and systems as the basis for heating and security installations, software and sensors, and comprehensive services for energy management, remote monitoring, and business process management.

For residential buildings, our portfolio includes eco-friendly products for heating, hot water, and cooling. The intelligent networking of heating systems is playing an increasingly important role. In 2014, we sold around 50,000 internet-enabled boilers, twice as many as in 2013. Smart heating helps to optimize heating systems and allows them to be controlled by devices such as smartphones or tablet computers. Since the spring of 2014, for example, we have offered such an app under our Buderus

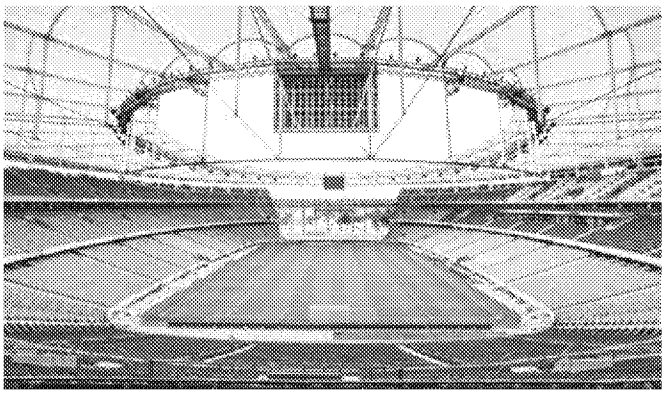
brand, jointly with a major German utility. Another example is the wifi-enabled Nefit Easy thermostat, which we now sell in the United Kingdom as well as in the Netherlands.

In 2014, we presented a system comprising a solar installation combined with modern heat-pump technology and a battery. At the heart of this system is an intelligent controller called e.Control, which is connected to the household's electricity meter and monitors energy use around the home. This solution allows users to consume most of their self-generated solar energy on site. We are also working to globalize the business and establish ourselves in the Chinese market. We benefit from being the first European company to manufacture gas-fired condensing boilers, air conditioners, and commercial boilers for the region in China itself.

For commercial buildings, we offer heating, hot-water generation, cooling, ventilation, power generation, and storage solutions, as well as large-scale heating installations. Especially in the case of commercial buildings, energy efficiency and associated cost savings, as well as the intelligent networking of energy systems, play a significant role. Our product portfolio ranges from networked hot-water and heating systems, highly efficient systems for combined heat and power generation, and waste heat recovery (ORC systems), through cogeneration plants, to electricity storage solutions and energy-efficiency advisory services.

In addition, we are a leading international supplier of products, solutions, and services for security and communication. The main priority is the protection of human life, buildings, and property. Around half the business currently relates to video surveillance with internet-enabled cameras. In 2014, we launched further new products. With them, we are setting new standards in areas such as the detailed monitoring of large sites, including football stadiums. In 2015, we will launch innovative products allowing 360-degree video surveillance.

We are also expanding our building technology business, which up to now has been focused on Germany, the Netherlands, and Switzerland. In this area we offer a one-stop shop for the planning, construction, maintenance, and financing of security systems and solutions. Our main customers are the manufacturing industry, the public sector, banks, and service providers.

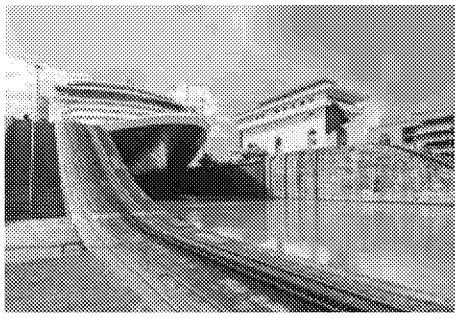


In this context, integrated and connected security solutions are playing an increasing role.

A further strategic element is the expansion of our service business, with which we aim to achieve sales of around one billion euros by 2020. We took an important step in the North American market at the beginning of 2015 with the acquisition of Climatec, LLC, based in Phoenix, Arizona (USA). This company offers building-automation, energy-efficiency, and security solutions. We also intend to grow our services in the field of energy efficiency through our service subsidiary Bosch Energy and Building Solutions, which is active in the German and European markets.

Furthermore, we have reorganized our business services operations, which are assigned to the Security Systems division. In this business, we are already one of the world's biggest providers. Since fall 2014, these services have no longer been provided under the Bosch Communication Center name, but as Bosch Service Solutions. This underlines our broader approach as a provider of services for business processes. Focal points include service solutions for transport and buildings, as well as customer communications and support. In the field of transport, for example, Bosch offers the automatic eCall emergency service for Mercedes-Benz vehicles in 27 European countries and ten languages. For buildings, Bosch Service Solutions offers cloud-based video surveillance, which can be connected to a control center that intervenes in response to certain events. We are already represented at 26 locations in 15 countries. In 2014, two new locations were added in the U.S. and the Philippines. Further locations are planned in the Americas and Asia. Independent studies forecast annual growth in the market for business process services of 5 to 6 percent, reaching a total volume of more than 200 billion dollars by 2017.

Our cross-selling activities are also assigned to the Energy and Building Technology business sector. Here, we offer solutions that are aimed in particular at verticals such as mining, hotels, large stadiums, airports, automobile manufacturing, train stations, and theaters. In 2014, we already achieved sales of more than 600 million euros through cross-selling. This included, for example, joint activities by the Drive and Control Technology, Security Systems, Automotive Aftermarket, and Power Tools divisions relating to the widening of the Panama Canal. For the renovation of the Cologne Opera, Drive and Control Technology



is supplying stage equipment, while Thermotechnology and Security Systems are supplying parts of the building technology.

Using agile units to enter new business areas

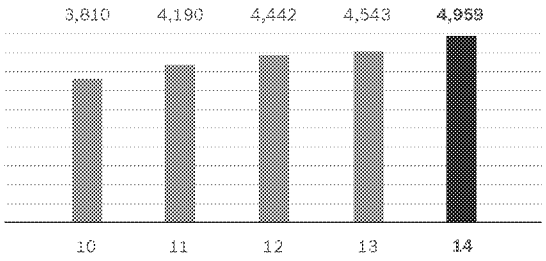
The accelerating pace of change in our business environment opens up additional opportunities through new business activities. We set aside an overall budget of approximately one percent of sales per year for new or related business areas. We deploy agile, independent teams to develop these new areas. Fields that are fundamentally new to the Bosch Group are designated new business areas. At Bosch Healthcare Solutions GmbH in Waiblingen, Germany, we have brought different approaches in the field of medical technology together under one roof. At the same time, we are divesting our telehealth and telecare operations. One of our new business areas' focal points is stationary electricity storage. This includes the Braderup project, a hybrid battery with a total capacity of 3 MWh which went into operation in 2014. It stores electricity generated by a community wind farm and feeds it into the grid as required. We designed and built the hybrid, and developed the electronic control system and related software.

We use innovation clusters to develop new business areas on the Internet of things on a cross-divisional basis. Here, we combine the IT and internet expertise of Bosch Software Innovations with the domain expertise of our divisions. Bosch Connected Devices and Solutions, based in Reutlingen, Germany, grew out of such an innovation cluster. It now has a workforce of around 100. Since 2014, it has offered compact electronic products and software know-how for connecting devices and objects on the Internet of things. At the end of 2014, we announced our intention to set up an international joint venture with ABB and Cisco. Its aim will be to develop and operate an open software platform for smart-home applications. It is hoped that this will allow easy exchange of data between different manufacturers' devices.

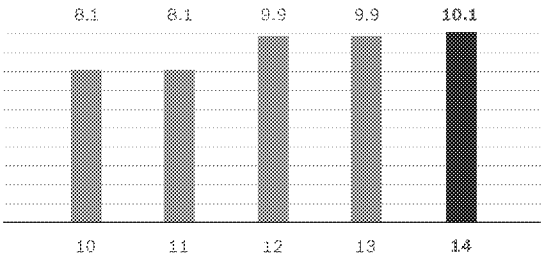
Furthermore, Robert Bosch Start-up GmbH, Ludwigsburg, Germany, commenced operations in 2014, providing internal start-ups with premises and infrastructure, a legal framework, and business expertise. We address the special needs of emerging markets with new business teams in those countries. For example, a team in India has developed a low-cost method of eye examination, which can give early warning of the onset of blindness, and thus allow preventive measures to be taken. In mature markets too, we aim to systematically develop additional growth opportunities, and have set up region-specific projects in Europe, North America, and Japan. Moreover, Robert Bosch Venture Capital GmbH, based in Gerlingen, Germany, participates in start-up companies and thematic funds.

But agile teams are not only employed to develop new business areas. In our existing businesses, we are using pilot projects to gather experience in order to prepare for dynamic changes. For example, the Car Multimedia division has a number of self-organizing teams. In a rapid succession of flexible development stages, working at the interface with the fast-paced world of consumer electronics, they develop software components and apps for the connected vehicle. Within Chassis Systems Control, we have worked with globally networked teams to develop chassis and safety systems for our customer Tesla. For this,

F.03
Total research and development cost [1]
Bosch Group 2010–2014
Figures in millions of euros



F.04
Total research and development cost [1]
Bosch Group 2010–2014
Figures as a percentage of sales revenue



[1] Including development cost charged directly to customers

we received Tesla's "Excellent Development Partner" award in 2014. In the Power Tools division, a pilot project is underway to develop a new platform for pneumatic hammers at our location in Hangzhou, China. The project focuses on customer needs in emerging markets.

Standardized processes – the basis for greater efficiency and agility

In a large company, simplified and standardized processes are an important prerequisite for greater efficiency, but also for more flexibility. We are developing a number of projects in this area. The "One BBM" project in the Mobility Solutions business sector creates the basis for simplified, cross-divisional collaboration. The goal is to standardize all processes from order placement to receipt of payment. This includes standardization of IT systems. A closely related issue is the development of central services in financial accounting (shared services). In the "OneAccounting at Bosch" project, we are bringing together all finance and accounting functions throughout the world. We intend to increase efficiency and effectiveness through consistent rules and IT standards, and by setting up a small number of specialized shared service centers.

The "target business plan" project that we have started in management accounting will have considerable implications. It will greatly simplify and speed up the process of group-wide business planning, and reduce planning effort. Targets derived from external benchmarks will be taken as the starting point for planning. The focus will then be on developing and carrying out measures designed to achieve the planning targets. We will introduce the target business plan for the first time in 2015, in the context of the 2016 business plan.

When it comes to simplifying processes, we deliberately involve Bosch associates. One example is the oneIT@i-Buy project, which creates a user-friendly environment for the procurement of indirect materials such as office supplies or IT services. The resulting Simplify! BonaPARTe procurement tool is now being introduced. A new, user-friendly interface with fewer input fields and an automatic, cross-catalog search feature quickly guides the user to the required product. A high degree of standardization and simplified sign-off rules also help speed up and simplify the operation. The "Bosch Human Resources System 3.0" project was also further rolled out in 2014. The multi-year project aims to introduce a new worldwide HR organization and an integrated information system, known as HR Global. So far it has already been introduced in more than 50 countries; by the end of 2015 it should cover more than 70.

Report on economic position

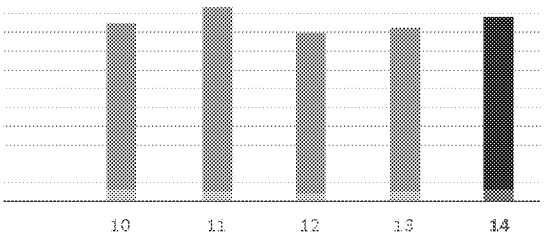
A good performance overall

The Bosch Group developed favorably overall, despite a weak economic environment. Sales growth was greater than forecast. In addition, our earnings forecast was fulfilled. Developments varied considerably across the business sectors and regions. The most successful business sectors were Mobility Solutions and Consumer Goods, while Asia Pacific and North America reported the best sales performance regionally.

F.08

Development of sales revenue and *EBIT*
Bosch Group 2010–2014
Figures in millions of euros

	10	11	12	13	14
Sales revenue	47,259	51,494	44,703	46,068	**48,951**
EBIT	*3,181*	*2,709*	*2,118*	*2,751*	***3,030***



Controlling system

The Bosch value concept as the basis for control
The Bosch value concept combines value creation with value preservation in order to achieve the group's business targets even in a complex, dynamic, and volatile environment. Particularly for an unlisted company such as the Bosch Group, being able to expand and maintain profitability over the long term is crucial for financing future growth. We secure value by closely tracking cost trends and through liquidity management that includes centralized financial planning.

The main control parameters are sales growth, earnings before interest and taxes (EBIT), and the internal "operating value contribution" indicator. The operating value contribution is calculated in the same way as EBIT, but also deducts the cost of capital. Internal reporting is based in principle on the International Financial Reporting Standards (IFRS). However, in certain respects, such as recognition of impairment losses, pension provisions, and provisions for losses arising from delivery commitments, internal reporting deviates from external accounting. The earnings fluctuations associated with these factors are adjusted for operational control and the executive incentive program.

Value contribution targets are used to calculate the result-based portion of executives' variable remuneration, from section-manager level to the board of management. They are also used for calculating associates' performance-related bonuses. The value contribution is also the basis for portfolio management. The central internal reporting tool is a monthly business report, which contains an up-to-date overview of the operating units' performance indicators. It provides both a variance analysis of target versus actual figures and a year-on-year comparison. The report is based on the business plan, which draws on comprehensive market forecasts and is embedded into longer-term strategic corporate planning.

Macroeconomic and sector-specific environment

Weak economic environment
World economic output, measured on the basis of global GDP, rose by 2.7 percent in 2014, just below our forecast of 2.8 percent. We began the fiscal year with a cautious assessment that economic conditions would improve only slightly compared with 2013. The only development we did not expect was the severe deterioration of the economy in South America, particularly Brazil. Total economic output in the advanced economies grew by 1.8 percent, somewhat stronger than the forecast of 1.6 percent. On the other hand, emerging markets grew by 4.3 percent, lagging behind our estimate of 5 percent.

At 2.7 percent, global economic growth in 2014 was again below the long-term trend of 3.3 percent. Reasons included the lingering effects of the sovereign-debt crisis in Europe, political tensions in eastern Europe, Japan's disappointing performance, and structural problems in a number of emerging markets. Added to this was the critical situation in certain countries in the Middle East. On the other hand, the North American economies performed positively. China again recorded strong growth of 7.4 percent, though this was well below the growth rates of previous years.

On average, commodity prices developed more weakly than we originally anticipated. In particular, oil and other fuel prices decreased significantly over the course of the year. Industrial and precious metal prices also fell year on year, in some cases significantly so. We believe this was due to slower growth in emerging markets and, in the case of oil and gas, increased supply. The euro performed largely as expected over the year. The average exchange rate of 1.33 euros to the dollar was slightly above our forecast of 1.30 euros. However, the euro recorded an unexpectedly sharp fall in the second half of the year.

In our core markets, the total number of vehicles produced worldwide in 2014 reached 90.4 million units, an increase of around 3 percent compared with the previous year, and thus in line with our growth forecast. Production of heavy trucks reached 3.1 million units, slightly less than the previous year. In our previous year's forecast we had assumed growth of 1 percent. Production of passenger cars and commercial vehicles in the European Union increased by 4 percent, a better performance than forecast, as we had expected only slight growth. Vehicle production in North America rose by 5 percent, a further slight year-on-year increase. Contrary to expectations, production figures in South America fell by a double-digit amount. As predicted, the strongest growth in vehicle production was in China, with an increase of 8 percent. However, this meant the growth rate fell to roughly half the previous year's. In India, production figures declined slightly owing to a weak first half-year, while our forecasts had predicted slight growth.

Weak economic performance overall in 2014 dampened global investment activity to a slightly lesser extent than in previous years. However, the performance of the mechanical engineering sector was disappointing overall. Admittedly, mechanical engineering output grew respectably, by just under 5 percent, well above the previous year's figure of 1.3 percent. However, production has stagnated since the spring of 2014. This mainly affected the emerging economies, notably Brazil and Russia, but also China to a lesser extent. In our important core European market, mechanical engineering production recovered slightly in the second half of the year, and slightly exceeded its prior-year level. Order intake also climbed slightly, which points to a moderate increase in European mechanical engineering.

Global private consumption grew by 2.3 percent in 2014, slightly below the forecast of 2.5 percent. This was mainly due to a weaker increase in emerging markets. But in the advanced economies too, consumption lagged behind our forecast. This particularly affected Japan, where households significantly reduced their spending after value added tax was increased in April 2014. Southern European countries, which were particularly affected by the European sovereign-debt crisis, showed rising levels of consumption for the first time since 2011. Global construction activity, as measured by construction expenditure, was more or less as we expected, and slightly stronger than in 2013. In the euro zone, this expenditure once again fell slightly. Moreover, construction activity in the Americas and Asia did not grow as strongly as in 2013.

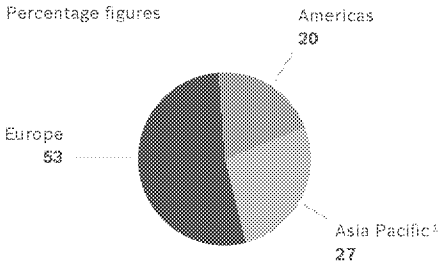
Course of business and sales trend

Sales growth better than forecast

Despite only moderate global economic growth, the Bosch Group's sales rose by 6.3 percent to 49 billion euros. These figures exclude the discontinued crystalline photovoltaics business. The discontinued photovoltaics business achieved a low sales figure of 20 million euros in 2014. After adjusting for exchange-rate effects, Bosch Group sales exceeded the prior-year figure by 7.4 percent. Sales growth thus comfortably exceeded the forecast target range of 3 to 5 percent. Exchange-rate losses caused by the euro's temporary strength total approximately 500 million euros. Our forecast had assumed exchange-rate effects of around 1 billion euros. The most significant exchange-rate effects in Europe were recorded against the Russian ruble and Turkish lira, in South America against the Brazilian real, and in Asia against the Indian rupee, Japanese yen, and Korean won. On the other hand, the exchange-rate effects over the year against the U.S. dollar were comparatively small.

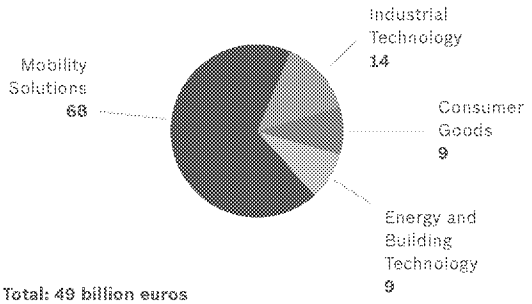
The sales effects as a result of divestments are in total 170 million euros higher than the effects from newly consolidated companies. The main new consolidations relate to the regional company in Indonesia, several companies in China, and Bosch Energy and Building Solutions.They are countered above all by the sale of the Drive and Control Technology division's pneumatics segment at the beginning of 2014. The complete acquisitions of the joint ventures BSH Bosch und Siemens Hausgeräte GmbH and

F.06
Sales structure by region
Bosch Group 2014
Percentage figures



Total: 49 billion euros
[1] Including other countries

F.07
Sales structure by business sector
Bosch Group 2014
Percentage figures



Total: 49 billion euros

ZF Lenksysteme will not affect the reported sales figures until 2015. The same applies to the acquisition of the U.S. building service provider Climatec. In December 2014, we disposed of our Garden and Watering unit, based in Peoria, Illinois (USA). However, this is still included in the 2014 sales figures.

Strongest regional growth in Asia Pacific

Regionally speaking, our strongest sales growth was in Asia Pacific, with a double-digit increase of 17 percent in nominal terms to 13 billion euros, and 19 percent after adjusting for exchange-rate effects. At just under 27 percent of total sales revenue, the region's share of sales reached a new high. Sales growth was especially strong in China, rising a nominal 27 percent to 6.4 billion euros. More stringent emissions regulations led to strongly increased demand for new generations of diesel and gasoline injection systems. But in other areas too, such as display systems, we achieved good growth. Sales in Korea were also very strong compared with the previous year. This is partly because we now operate the business with engine management systems for gasoline-powered vehicles ourselves, after an earlier joint venture was wound up. In India, sales growth picked up again year on year, particularly in local currency. In Japan too, we recorded significant growth in local currency terms.

In North America, sales reached 8.5 billion euros, an increase of 8.6 percent in nominal terms and 9.3 percent after adjusting for exchange-rate effects. This was primarily thanks to the Mobility Solutions business sector, but Industrial Technology also posted a good sales performance. On the other hand, we suffered a significant decline in sales in South America. In particular, Brazil's automotive industry faced a difficult economic situation, leading to a sharp decline in production figures. This was compounded by the depreciation of the Brazilian real. Sales in South America decreased by 13 percent in nominal terms to 1.5 billion euros. After adjusting for exchange-rate effects, the decline was 4.4 percent. In Europe we were able to increase sales by 2.1 percent to 26 billion euros. This was a positive result against the backdrop of a still difficult economic situation in the euro zone, tensions in eastern Europe, and negative effects due to the sale of the pneumatics segment. In Russia, sales in euros decreased significantly, though in local currency our sales increased.

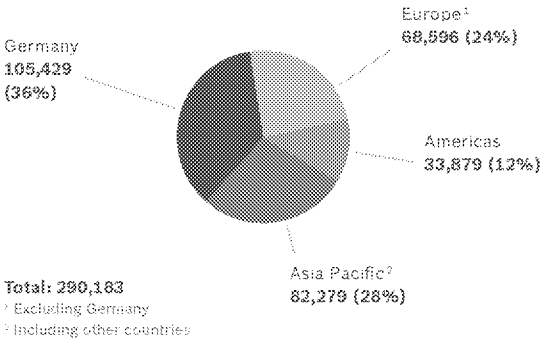
Mobility Solutions the fastest growing business sector

Performance also varied by business sector. As forecast, sales in the Mobility Solutions business sector rose by more than the average for the company as a whole. Sales rose 8.9 percent to 33.3 billion euros, an increase of 9.9 percent after adjusting for exchange-rate effects. In particular, there was strong demand for modern gasoline direct injection systems, transmission control systems, and continuously variable transmissions in 2014. Especially in Europe and China, our diesel technology business benefited from the ramp-up of new injection systems that meet the more stringent new Euro 6 and China IV exhaust emission standards. Exhaust-gas treatment systems remained very much in demand.

We achieved strong growth with innovative infotainment systems. There was a very substantial increase in demand for driver assistance systems. Brake control systems also developed favorably. Sensors, particularly sensors for consumer electronics, performed very positively. We also enjoyed great success in drive systems and control units for bicycles with an additional electric drive. In the Starter Motors and Generators division, we were successful with new generations of products such as start-stop systems. Bosch alternators for commercial vehicles were also in demand. The Electrical Drives division noticed the effect of its improved competitive position, which was due to

F.08

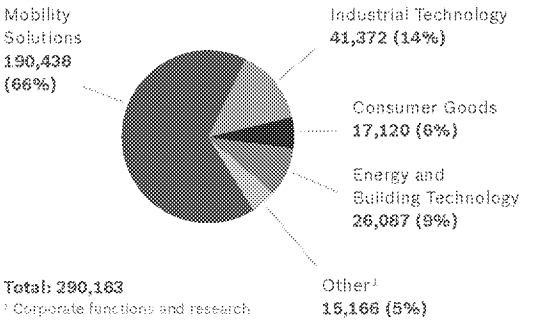
Associates by region
Bosch Group 2014, as per Dec. 31, 2014



Total: 290,183
[1] Excluding Germany
[2] Including other countries

F.09

Associates by business sector
Bosch Group 2014, as per Dec. 31, 2014



Total: 290,183
[1] Corporate functions and research

new heating and air-conditioning products. The spare parts business declined somewhat in 2014, especially in the independent aftermarket segment.

Sales in the Industrial Technology business sector continued to lag behind forecast. Sales declined by 2.0 percent in nominal terms to 6.7 billion euros, a drop of 1 percent allowing for exchange-rate effects. However, this was partially due to the disposal of the Drive and Control Technology division's pneumatics business at the beginning of 2014. Excluding these consolidation effects, sales increased by 2.5 percent, and 3.6 percent after adjusting for exchange-rate effects. Continuing economic weakness in the mechanical engineering segment particularly affects the Drive and Control Technology division. The market in China especially, where we made substantial investments in previous years, performed less well than expected. The packaging machinery business was stable, but there were regional differences. High growth rates in North America and eastern Europe were offset by declines in Asia and South America. Packaging machinery for the pharmaceuticals industry performed well, as did services. Our business with major international companies in the foodstuffs sector was also successful.

In the Consumer Goods business sector, sales rose by 5.0 percent in nominal terms to 4.2 billion euros, an increase of 7.0 percent after adjusting for exchange-rate effects. The sales figure relates to the Power Tools division only, as the previous fifty-fifty joint venture BSH was not yet consolidated in 2014. Power Tools again achieved very good results with a range of innovations. This concerns not only the expansion of our range of high-performance cordless appliances, but especially also laser devices in the measuring tools segment. The PLR15 digital laser rangefinder, aimed at the DIY market, has been sold nearly one million times since its launch at the end of 2013. Demand for garden tools and accessories was also good.

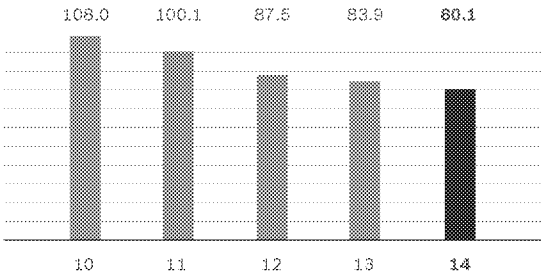
In the Energy and Building Technology business sector, we achieved sales of 4.6 billion euros with the Thermotechnology and Security Systems divisions. This was a nominal 1.7 percent above the previous year's figure, or 2.6 percent adjusted for exchange-rate effects. The Thermotechnology division was affected by the weakness of the German market. Demand in Russia also fell significantly short of expectations. On the other hand, the business performed well in the important U.K. market. The service subsidiary Bosch Energy and Building Solutions, consolidated for the first time, generated strong sales growth. The Security Systems division increased its sales in the building technology business, especially in its main market Germany, and in the product business, particularly in the case of IP-based video systems and portable speaker systems.

Rise in number of associates worldwide

Disregarding the joint-venture takeovers that have since been closed, the number of Bosch Group associates worldwide rose by 8,800 to 290,200. It should be noted that the 2,100 associates of the now divested pneumatics segment of the Drive and Control Technology division, as well as the workforce of the discontinued crystalline photovoltaics operations, were still included in the previous year's figures for 2013. Shortly before the end of 2014, we disposed of our Garden and Watering unit in the U.S., with its workforce of around 460. On balance, the effects of consolidation on headcount canceled each other out in 2014. Through first-time consolidations, 4,400 associates were added, while 4,200 people ceased to be employed by the Bosch Group owing to deconsolidation and divestments.

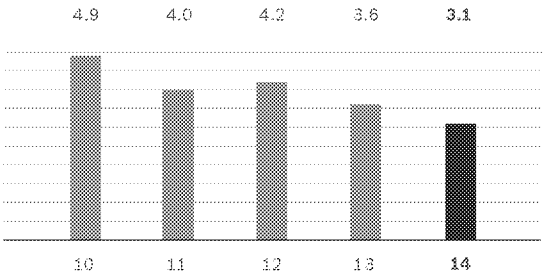
E.10

Development of CO_2 emissions
Bosch Group
As a percentage of value added[1]



E.11

Development of occupational health and safety
Bosch Group accident rate, 2010–2014
per million hours worked



[1] Difference between total net sales (third-party sales, intercompany sales, internal deliveries) and planned cost of materials procured externally

The biggest change in associate numbers took place in Asia Pacific (which in this case comprises other regions including Africa). The number of associates there rose by 8,800 to 82,300. In Europe, the number of associates was virtually unchanged at 174,000. The reduction caused by the disposal of pneumatics and photovoltaics was offset by expansion in Romania, Turkey, and Hungary. In Germany, the number of associates declined by 1,900 to 105,400, again largely due to consolidation effects. In North and South America, the number of associates increased by a total of roughly 400 to 33,900. The number in North America rose by around 700 to 25,300. In South America, it fell slightly by some 300 to 8,600. The number of associates employed worldwide in research and development increased by approximately 3,000 in 2014, to 45,700.

Training and continuing professional development are very important at our company. Worldwide, around 6,100 young people were in apprenticeship schemes at Bosch in 2014. Germany leads the field here with 4,300 apprentices. This is due to the strong tradition of dual education in companies and schools. At our locations worldwide, moreover, we have many training centers of our own that provide training specifically for technical trades. These include locations in France, Turkey, India, China, and Vietnam, as well as Brazil and North America. In 2014, we created around 100 additional apprenticeships for young people from southern Europe, about half of them in their countries of origin (Spain, Portugal, Italy) and half in Germany.

In 2014, we spent around 200 million euros on associate training, providing a total of 46,000 classroom-based events for 515,000 participants, significantly more than the previous year. On average, each of our associates attended 1.8 classroom-based events. In addition, 300,000 web-based training modules were completed. The Robert Bosch Kolleg offers continuing professional development at college level for specialists and executives.

We made further progress toward our goal of further increasing the number of international executives and of women in leadership positions. In the overwhelming majority of our focus countries, the percentage of local executives now stands at over 80 percent. We managed to raise the share of women in leadership positions, from 12.2 percent in 2013 to 12.9 percent in 2014. Our target is 20 percent by 2020. In countries such as China or Spain, this target is already exceeded. In 2014 we held our first global Diversity Day. For 24 hours, there were participative campaigns, discussions, and networked events around the world, designed to demonstrate the diversity within the Bosch Group. Diversity also means having mixed-age teams. Bosch has operated a senior expert model for the last 15 years. Besides Germany, Bosch Management Support GmbH has subsidiaries in the United Kingdom, the United States, Japan, Brazil, and India. At the present time, 1,600 former associates who retired for age reasons make their experience and expertise available when professional advice is needed for a limited period.

Great importance of environmental protection and occupational health and safety

Bosch has always considered environmental protection and occupational health and safety to be very important. Moreover, Robert Bosch GmbH has been a member of the United Nations Global Compact since 2004, and is committed to its ten worldwide principles for responsible corporate management.

For us, "Invented for life" is also about reducing the environmental impact of our production processes. Our target for 2020 is to cut relative, production-related CO_2 emissions from our locations

T.01

Most important items of the income statement
Figures in millions of euros

	2014	2013
Sales revenue	48,951	46,068
Cost of sales	–31,963	–30,460
Gross profit	**16,988**	**15,608**
Distribution and administrative cost	–9,469	–8,562
Research and development cost	–4,959	–4,543
Other operating income and expenses	214	86
Profit from entities consolidated using the equity method	256	162
EBIT	**3,030**	**2,751**
Financial income	345	76
Profit before tax	**3,375**	**2,827**
Income taxes	–714	–540
Profit after tax		
from continuing operations	2,661	2,287
from discontinued operations	–24	–1,036

by 20 percent from their 2007 level. In 2014, CO_2 emissions were already 19.9 percent lower than the 2007 reference level. At 2.5 million metric tons, they were on the same level as in the previous year. The effects created by the disposal of the energy-intensive photovoltaics business and by the first-time consolidation of energy-intensive sites such as the spark plug manufacturing facility in Nanjing largely balance each other out.

Our total energy consumption came to 6,102 gigawatt hours (previous year: 6,218 gigawatt hours). We are achieving further improvements with regard to CO_2 emissions through measures aimed at optimizing the energy value stream. For example, we have optimized the control unit assembly lines in the Automotive Electronics division. As a result, we are saving around 3,000 metric tons of CO_2 there.

We also attach immense importance to making continuous improvements in occupational health and safety. The total number of job-related accidents stood at 1,660 in 2014, compared with 1,787 in 2013. The relative number of job-related accidents per million hours worked further decreased to 3.1 (previous year: 3.6). This figure was also well below the current target figure of 3.4. We intend to make further progress in the coming years, and have therefore started worldwide training for executives using web-based training modules.

Results of operations

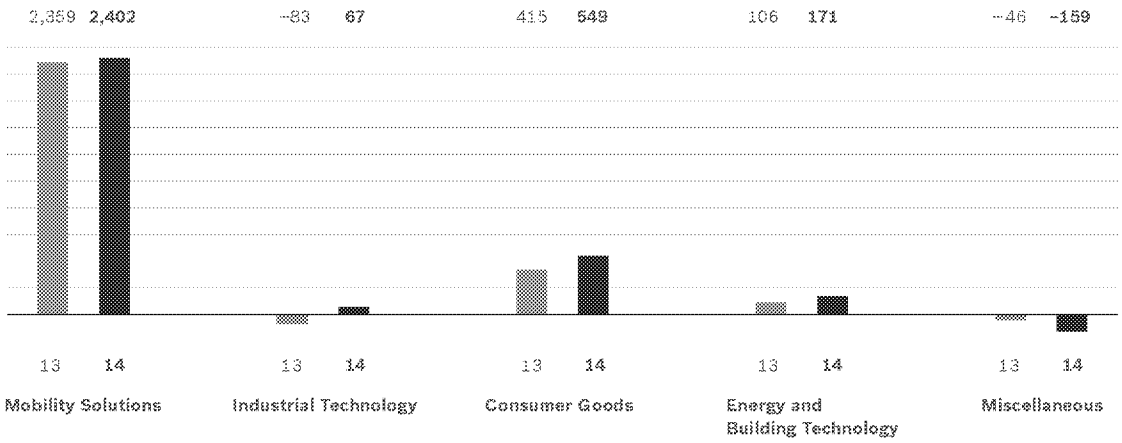
Further improvement in operating result

We fulfilled our forecast for result in 2014. In our continuing operations, we were able to slightly improve EBIT (earnings before interest and taxes). It rose to 3 billion euros, compared with a like-for-like previous-year figure (excluding the discontinued operations in crystalline photovoltaics) of 2.8 billion euros. In 2014, the impact on result due to discontinued operations was small. The related decline in EBIT amounted to 24 million euros. We improved EBIT margin by 0.2 percentage points to 6.2 percent, and by approximately one percentage point excluding exceptional items and consolidation effects. Last year's exceptional net gain of 370 million euros, which resulted from the revaluation of the assets of the Chinese subsidiary United Automotive Electronic Systems Co., Ltd., Shanghai, is significant in this respect. The company was fully consolidated for the first time in 2013.

The improvement in result is a further step toward our target EBIT margin of 8 percent. Compared with the previous year, and including the separately reported activities in crystalline photovoltaics, EBIT improved quite significantly. Including the cost of exiting this business, in 2013 we posted EBIT of only 1.5 billion euros and an EBIT margin of 3.2 percent.

Of the most important income-statement items, cost of sales increased by just under 5 percent, and thus at a slower rate than sales. Gross profit as a ratio of sales thus improved by roughly one percentage point year on year. Distribution and administrative cost increased by some 11 percent, and thus at a higher rate than sales. This was due to additional burdens in sales, mainly as a result of higher warranty provisions. At 5 billion euros, research and development cost is some 400 million euros higher than in the previous year. R&D intensity rose to 10.1 percent, compared with 9.9 percent in the previous year. The Mobility Solutions business sector accounted for around 82 percent of development costs, while Industrial Technology accounted for around 8 percent, and Consumer Goods (including other activities) and Energy and Building Technology for roughly 5 percent each.

1.12
EBIT by business sector
Bosch Group 2013/2014
Figures in millions of euros



Profit before tax totaled 3.4 billion euros and corresponded to a margin of 6.9 percent. At 345 million euros, financial income is 269 million euros up on the previous year. The main reasons are positive effects from changes in exchange rates and an improved investment result. We thus report an improved profit after tax from continuing operations of 2.7 billion euros, compared with 2.3 billion in the previous year. Including the discontinued photovoltaics business, we achieved an after-tax profit of 2.6 billion euros in 2014, compared with 1.3 billion euros in 2013.

Our internal control parameter, the operating value contribution, is calculated only for the consolidated group used in internal reporting. The operating value contribution – exclusive of all activities in photovoltaics – is positive at around 400 million euros. In 2013, operating value contribution was negative, at minus 220 million euros. The significant improvement in the operating value contribution relative to EBIT is especially due to the different method of calculation. The operating value contribution was not affected by the non-recurring net gain as a result of the revaluation of the assets of the Chinese subsidiary United Automotive Electronic Systems in the previous year.

The most crucial difference between EBIT and the operating value contribution is the imputed 2.6 billion-euro (previous year: 2.5 billion-euro) cost of capital, which reduces the operating value contribution compared with EBIT. Further differences in depreciation and amortization and other items total some 0.1 billion euros (previous year: 0.5 billion euros).

Of our business sectors, Mobility Solutions generated EBIT of 2.4 billion euros, or an EBT margin of 7.2 percent. Margin was thus lower than in the previous year. To a large extent this was due to the extraordinary net gain of the revaluation of assets following the full consolidation of the Chinese company United Automotive Electronic Systems in the previous year. Without this one-off effect, the year-on-year improvement in result is roughly 0.9 percentage points. On the other hand, the revaluation of the net assets of United Automotive Electronic Systems in the previous year will lead to increased depreciation and amortization from 2014 onward. Additional quality provisions also have a negative impact.

Due to a sluggish performance, the Industrial Technology business sector posted a positive result of only 67 million euros, which was however an improvement on the negative EBIT of around 80 million euros reported in the previous year. We have launched an extensive program to improve the business sector's result. EBIT in the Consumer Goods business sector amounted to around 550 million euros (previous year: 415 million euros) The double-digit margin of 13.1 percent was attributable to the inclusion of the pro-rata after-tax income of the joint venture BSH Bosch und Siemens Hausgeräte GmbH. In the Energy and Building Technology business sector, we increased result to around 170 million euros, against 106 million euros in the previous year. Margin was 3.7 percent, compared with 2.3 percent the previous year. We are working hard to further improve the business sector's profitability.

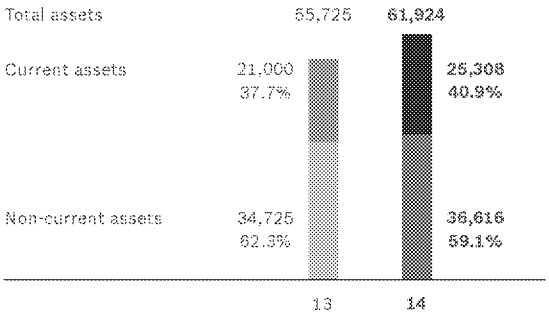
Net assets and financial position

Very solid statement of financial position

As before, the statement of financial position remains very solid. Our 2014 equity ratio was roughly 48 percent, compared with roughly 50 percent the previous year. This still includes

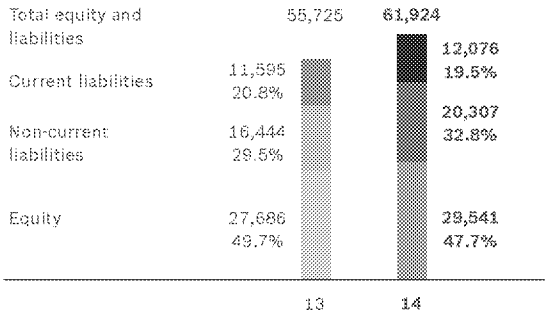
F.11

Structure of the statement of financial position
Bosch Group 2013/2014
Assets
Figures in millions of euros and as a percentage of total assets



F.12

Structure of the statement of financial position
Bosch Group 2013/2014
Equity and liabilities
Figures in millions of euros and as a percentage of total equity and liabilities



only the pro-rata share of equity of the joint venture companies fully taken over by the beginning of 2015. On the balance-sheet date, total assets stood at 61.9 billion euros, against a prior-year comparative figure of 55.7 billion euros.

The increase in assets was primarily due to a 2.4 billion-euro increase in financial assets. Liquidity as reported in the statement of financial position stood at 15.6 billion euros on the balance-sheet date, compared with 13.2 billion euros in the previous year. Apart from cash and cash equivalents, liquidity as per the statement of financial position includes marketable securities and bank balances with a term of more than 90 days. Thanks to good financial resources, we were able to finance the acquisition of all shares in the previous fifty-fifty joint ventures without difficulty. Non-current assets also increased disproportionately. Other key factors included an increase in property, plant, and equipment, higher trade receivables, and larger inventories as a result of increased sales and exchange-rate effects.

The biggest changes in equity and liabilities concerned the provisions reported under non-current liabilities, mainly because of higher pension provisions. Due to the reduction in discount rates, particularly for pension obligations in Germany, these had to be adjusted from an average of 3.5 percent in the previous year to 2 percent. The resulting increase in pension provisions was recognized in other comprehensive income, which negatively impacted equity by 1.8 billion euros. In total, however, equity rose by a total of 1.9 billion euros to 29.5 billion euros, essentially due to the good earnings situation and to exchange-rate effects. Other significant changes on the equities and liabilities side involved financial liabilities, which increased by approximately 700 million euros.

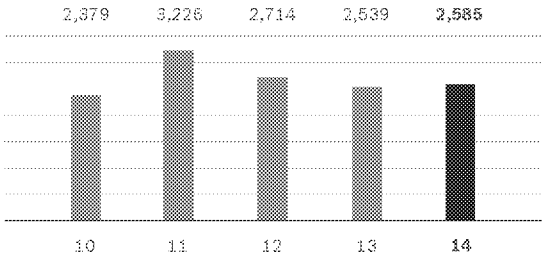
We took advantage of favorable interest rates to place two new bonds with maturities of 10 and 25 years for a total volume of 1 billion euros. The bond placement increased the proportion of financial liabilities raised in the capital markets, while lowering the level of bank borrowings. The bond interest rates are between 1.543 percent and 5.125 percent. The average maturity of the financial liabilities also increased because of the long terms of the new borrowings. Nonetheless, the more favorable interest rates meant that the average interest rate of the financial liabilities was reduced. Most of the remaining financial liabilities are denominated in euros.

Rise in capital expenditure

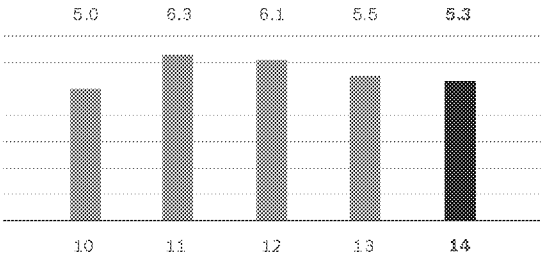
Bosch Group capital expenditure amounted to approximately 2.6 billion euros in 2014, some 60 million euros more than in 2013. As at the balance-sheet date, existing investment commitments as a result of orders already placed totaled roughly 500 million euros. Thanks to our very good liquidity position, we have ample financial resources at our disposal.

We invested around 1.7 billion euros in our European locations, compared with 1.6 billion euros in the previous year. Capital expenditure in Germany was roughly 1.1 billion euros, compared with 910 million euros the previous year. Focal points included the expansion of capacity for semiconductors and sensors, particularly at the Reutlingen location, and in the areas of gasoline direct injection systems and diesel technology. We also started moving into the new research center in Renningen, close to our corporate headquarters, which will be completed in 2015. This multi-year investment project will cost around 300 million euros in total. Another large-scale, multi-year project is the expansion of the main distribution center for vehicle spare parts in Karlsruhe.

F.15
Capital expenditure
Bosch Group 2010–2014
Figures in millions of euros



F.16
Capital expenditure
Bosch Group 2010–2014
As a percentage of sales revenue



There was significant investment in Europe outside Germany in the new automotive technology plant in Samara, Russia, though we are diluting our plans somewhat in view of the market situation. Among other things, it will manufacture antilock braking systems, wiper systems, and alternators; later it will also manufacture starters. In addition, the Thermotechnology division opened a new plant in Engels, Russia, in 2014, where we manufacture industrial boilers and wall-mounted conventional boilers. We also completed our new Russia headquarters in Moscow and further expanded the development center in Budapest. At our location in Cluj, Romania, we started manufacturing operations for electronic control units. In Bursa, Turkey, we expanded our manufacturing operations for high-pressure injectors for diesel vehicles. For this, we are investing around 300 million euros in total between 2013 and 2015.

In Asia Pacific, we invested around 620 million euros, after 615 million euros the previous year. Here, the investment in expanding capacity related especially to locations where we produce diesel and gasoline direction injection systems, above all in China. We also set up a new location in Qingdao, China. In Ho Chi Minh City, Vietnam, we began the construction of a new development center. Another focal point was India, where we invested around 160 million euros in the expansion of existing manufacturing facilities and a new software and engineering center at the Bangalore location.

In North and South America, we invested some 220 million euros, compared with 290 million euros in 2013. The main focus of these investments in the Americas included the expansion of the engineering location in Plymouth, Michigan (USA), and of the manufacturing sites in Toluca and Juárez, Mexico. Moreover, we began producing the latest generation of ABS and ESP® systems at our plant in Aguascalientes, Mexico, in 2014, and expanded our capacity accordingly. We also opened our first center for software development and engineering services in the Americas. Located in Guadalajara, Mexico's second largest city, we are investing around 5 million dollars in the first phase. The development center will offer cross-divisional programming and calibration services, mainly for the automotive industry and other Bosch locations in North and South America.

Broken down by business sector, we invested 2.2 billion euros in Mobility Solutions, as in the previous year. In Industrial Technology, we invested some 170 million euros, after 165 million euros the previous year. We invested approximately 130 million euros in the Consumer Goods business sector, compared with 120 million the previous year, and in Energy and Building Technology we invested 70 million euros, following 80 million the previous year.

Liquidity

Strong financial position and healthy liquidity situation
The Bosch Group has a strong financial position. In 2014, cash flow was 4.9 billion euros or 9.9 percent of sales, against comparative prior-year figures of 4 billion euros or 8.6 percent of sales. The increase is primarily due to the significant improvement in profit before tax.

Liquidity at year-end as per the consolidated statement of cash flows (cash and cash equivalents) stood at 5.5 billion euros, compared to 3.8 billion euros the previous year. In addition, the available financing under our euro medium-term note and

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Bosch Group, statement of cash flow
Figures in millions of euros

	2014	2013
Cash flow	**4,866**	**3,956**
as a percentage of sales	**9.9**	**8.6**
Liquidity at the beginning of the year (Jan. 1)	3,799	3,120
Cash flows from operating activities	+3,835	+4,276
Cash outflows from investing activities	−2,772	−3,872
Cash flows from financing activities	+470	+302
Other activities	+181	−27
Liquidity at the end of the year (Dec. 31)	**5,513**	**3,799**

commercial paper programs totaled 4.25 billion euros and 2 billion U.S. dollars.

Cash inflows from operating activities are a good 0.4 billion euros lower than in the previous year. This was due to lower increases in provisions and a year-on-year fall in liabilities. Cash outflows from investing activities were 1.1 billion euros lower than in the previous year. This was especially due to the reduced use of securities as a capital investment. The cash inflow from financing activities was 0.2 billion euros higher than in the previous year. A key factor was the higher net cash inflow from financial liabilities.

The Bosch Group has a central financial and currency management system. This is designed to control payment flows to optimum effect and to limit the risks of currency exposures at the Bosch Group level. Central financial management also manages our borrowings and investments. Our investment strategy is therefore aimed at broad diversification of shares and interest-bearing securities. Standard & Poor's reaffirmed Robert Bosch GmbH's long-term rating of AA− (with a "stable" outlook).

Report on post-balance sheet date events

Joint venture acquisitions change structure
The complete takeover of the two previous fifty-fifty joint ventures ZF Lenksysteme and BSH Bosch und Siemens Hausgeräte GmbH had a significant impact on the group's figures. As joint ventures, they were recognized only with their pro-rata equity capital in the statement of financial position and with their pro-rata after-tax income in the EBIT of the respective business sectors and the consolidated financial statements.

If their sales figures are included completely in the 2014 financial statements, the Bosch Group's sales figure, on a like-for like basis (also excluding discontinued operations in crystalline photovoltaics), is just under 7 percent higher than in 2013, at some 64 billion euros. The sales of the Mobility Solutions business sector increase by roughly 9 percent to some 37 billion euros. In view of the good sales performance of BSH, the sales of the Consumer Goods business sector rise by some 7 percent, reaching approximately 15.5 billion euros. Full consolidation considerably alters the relative shares of sales among the business sectors. The boost to the Consumer Goods business sector improves the balance between Mobility Solutions and the other three business sectors. If the joint ventures' associates are fully included, headcount increases by around 68,000 to approximately 357,800. Here too, the share of the Consumer Goods business sector increases significantly.

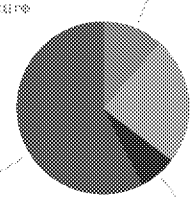
Still applying this premise, the Bosch Group's operating EBIT comes to 3.7 billion euros, with a margin of just under 6 percent. EBIT is roughly 0.5 billion euros higher than the comparative value for 2013, and margin nearly half a percentage point higher. This does not take account of the effects on earnings of the forthcoming revaluation of the at-equity shares of the two joint ventures due to the takeovers, as these do not have to be disclosed until 2015. For the Mobility Solutions business sector, this would result in EBIT of 2.6 billion euros and a margin of some 7 percent, and for Consumer Goods roughly one billion euros and just under 7 percent.

Apart from this, there were no events of material importance subsequent to the end of the reporting period that have not been covered in the business report section.

F.17

Pro forma statements[1]
Bosch Group 2014
Percentage figures

Sales structure



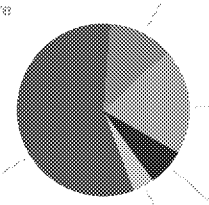
Total: 64 billion euros

[1] Complete pro forma inclusion of the former joint ventures BSH Bosch und Siemens Hausgeräte and ZF Lenksysteme

F.18

Pro forma statements[1]
Bosch Group 2014

Associate structure



Total: 357,790

[1] Complete pro forma inclusion of the former joint ventures BSH Bosch und Siemens Hausgeräte and ZF Lenksysteme
[2] Corporate functions and research

Outlook

Economic prospects remain subdued

For 2015, we expect a further year of subdued economic growth. We anticipate global economic growth of 2.7 percent. Growth will therefore remain similar to the 2014 level and well below the long-term trend of 3.3 percent. The advanced economies are likely to achieve growth of just under 2 percent, helped above all by robust growth in the U.S., where we expect GDP to increase by 2.5 percent. In the European Union, we are assuming that growth will remain sluggish in 2015 as well, reaching approximately 1.3 percent – a similar level to 2014. Stronger momentum is building in Spain and Portugal, but the French and Italian economies will likely do no more than stagnate in 2015.

The slow pace of reforms and continuing uncertainty about the future of monetary union will depress the investment climate, even in the economically stronger countries. In Germany, as a result, we expect economic output to rise by little more than 1 percent in 2015.

Globally speaking, the strongest momentum is likely to continue to come from the emerging markets, particularly in Asia. However, at just over 4 percent, their rate of growth will not accelerate significantly compared with 2014, and will remain well below the long-term average. As concerns the prospects for South America, we are very cautious. In addition, the outlook for the Russian economy has deteriorated significantly. In China, growth is expected to be slightly below the 2014 level.

The ongoing euro crisis, structural weaknesses in emerging markets, and the various geopolitical hotspots pose significant risks in 2015. These are counterbalanced by the positive effects of low oil prices, which provide economic stimulus for industrialized countries particularly. Nonetheless, given the many burdens and the geopolitical risks, we continue to take a cautious view of future economic developments.

In our core markets, our assumption is that global production figures for passenger cars and commercial vehicles will grow by some 3 percent, to approximately 93 million vehicles. In the heavy-truck segment, there are signs of slight growth. Once again, the biggest increase in overall production of passenger cars and commercial vehicles is expected to be in China.

In mechanical engineering, we see only a small chance of a sustainable recovery and expect somewhat reduced production growth of around 4 percent compared with 2014. Many customers are still operating at less than capacity, and there is continuing uncertainty about the future economic performance of some emerging markets and the euro zone. We are more optimistic about the prospects for the U.S., where a generally stable economic situation should encourage companies to invest.

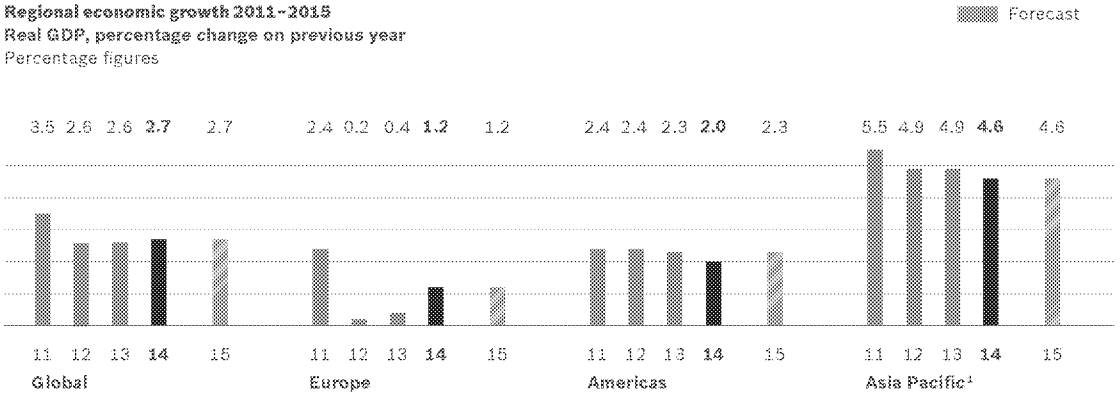
Private demand is expected to improve on a global level. Especially in the southern European markets which are important for our business, generally stronger growth is expected for 2015. Another supporting factor is the low oil price, which significantly increases purchasing power despite the weaker euro. We believe that the global construction business – another important market – will again see growth in 2015, at roughly the same level as in 2014. Impetus will come mainly from North America, but increasingly from the euro zone as well.

Sales growth and improved profitability

Against the backdrop of a still subdued economic environment,

F.10

Regional economic growth 2011–2015
Real GDP, percentage change on previous year
Percentage figures



[1] Including other countries

we anticipate sales growth for the Bosch Group in a range of 3 to 5 percent in the 2015 financial year. The forecast includes the fully acquired companies BSH Hausgeräte GmbH and Robert Bosch Automotive Steering GmbH as of the respective closing dates, and is calculated relative to a pro-forma base figure of around 64 billion euros in 2014. The Mobility Solutions business sector is expected to increase its sales by a significantly larger amount than the company as a whole, and to exceed the target range.

We also plan to at least slightly improve the operating EBIT of the Bosch Group on this basis. Moreover, the revaluation of the at-equity assets of BSH Hausgeräte and Robert Bosch Automotive Steering will lead to an extraordinary gain in EBIT; in subsequent years, however, the revaluations will lead to increased depreciation and amortization, with a negative impact on earnings. It is not yet possible to make a reliable forecast for operating value contribution based on the new scope of consolidation. The forecast improvements in EBIT relate especially to the Mobility Solutions business sector.

Report on opportunities and risks

Opportunities

Overall, we continue to see good growth opportunities for the Bosch Group. This is also reflected in our long-term target for annual sales growth in the consolidated group. For the consolidated group that has existed up to now, this target has averaged 8 percent. This assessment is essentially unchanged compared with the previous year. Reasons for this include our favorable position as a result of a broad sectoral presence, our high level of innovation, and our strong international presence. Special strategic opportunities will arise as a result of the growing importance of energy efficiency (and hence resource conservation), electrification, automation, the further expansion of our presence in emerging markets, and increased connectivity, especially through the internet of things. For further explanations, see the "Opportunities, objectives, and strategy" section, which describes specific opportunities in more detail, as well as the strategies that we are developing in response.

Risks

Comprehensive risk management system

The Bosch Group's risk management system is part of strategic and operations control. From strategic planning at the group level through medium-term planning by the operating units to our operational controlling, we consistently use risk management tools. At all levels of risk management, a key element is defining and implementing measures derived from the risk management system. The board of management of Robert Bosch GmbH – with support from the corporate departments – is responsible for risks of group-wide importance. The executive management of the divisions and the presidents of the regional organizations are responsible for identifying risks at the point of origin and for managing any necessary measures.

Strategic risks relate mainly to market developments and competitors, innovations in technologies and business models, acquisitions, and the Bosch brand. Therefore we constantly monitor developments at our main competitors. We also carry out business-field, competitor, and scenario analyses. In addition, we prepare forward-looking assessments of planned positions of the Bosch Group in the technological fields and business

models relevant to our company. Comprehensive strategic assessments of potential projects help control risks associated with acquisitions. To protect our brand, we carry out proactive reputation management, analyze social media, and carry out activities of our own in this area.

As part of operational controlling, an overview of all economically relevant transactions is compiled every month on the basis of a comprehensive reporting system, along with a list of major opportunities and risks. At meetings of committees such as the foreign exchange, raw materials, and investment committees, specific risks are examined on a regular basis. We have a group-wide liquidity planning system and permanently monitor our financial resources.

Overall risk assessment

We are not currently aware of any risks, beyond the market-related risks mentioned in the outlook above and the risks of the business sectors listed in this report, which could materially affect the net assets, financial position, and results of operations of the Bosch Group in 2015. Nor does the Bosch Group have any risk exposures that could jeopardize the group's continued existence as a going concern. An overall assessment of all risks confirms that our forecast is plausible. There are no significant differences from the previous year that would affect this overall assessment.

Risks affecting the business sectors

We analyze the medium-term risks for the business sectors in the risk areas of market, customers, competition, purchasing, technology, value-creation model, and business environment. The risks for our company are predominantly in the areas of market, customers, and competition. We assess any medium-term risks that we identify. An important criterion here is the product of the estimated economic impact and the estimated probability of occurrence.

Probability of occurrence	Description
Low	Up to 15 percent
Medium	Up to 33 percent
High	Up to 50 percent

Risks with a probability of occurrence of at least 50 percent are considered in our annual or interim forecasts. The assessment is based on our current planning.

We categorize these risks' economic impact as low, medium, high, and very high in terms of their relation to the anticipated accumulated EBIT of the respective business sector over a medium-term horizon of four years.

Degree of impact	Definition of impact
Low	Minor impact on the profitability of the business sector concerned
Medium	Some negative impact on the profitability of the business sector concerned
High	Considerable negative impact on the profitability of the business sector concerned
Very high	Damaging negative impact on the profitability and operations of the business sector concerned

Particular risks, that is to say, risks with at least a medium economic impact and probability of occurrence, relate in the case of the Mobility Solutions business sector to changes in automobile manufacturers' terms of delivery that could potentially be at automotive suppliers' expense. In addition, a large number of particular risks exist, each with low economic impact and different probabilities of occurrence. These particular risks relate above all to achieving target market shares and delivery shares, the targets for market positions in emerging countries, price trends, market changes due to new business models, technologies, competitors, environmental aspects, and potential substitution of diesel with natural gas. We counter these risks through extensive planning and tracking of results in acquiring delivery contracts, deliberate expansion of our presence in emerging markets, a broad customer and product portfolio, intensive market surveillance, and global trend scouting.

Added to this, extensive warranty exposure presents a fundamental risk. Due to automakers' extensive platform and modular-design strategies, quality issues relating to individual products can result in large-scale recalls. We counter these risks with continuous improvement of our quality management system.

In the Industrial Technology business sector, the Drive and Control Technology division is exposed to high and very high risks with at least medium probability of occurrence. These relate to the particular volatility of markets, increased price erosion, and growing competition partly as a result of market consolidation. We counter these risks with a product portfolio that is tailored specifically to the needs of the market and a comprehensive restructuring program.

In the Consumer Goods business sector, in which BSH is not yet included, particular risks concern above all the growing importance of sales over the internet. Measures include the consistent expansion of our own internet activities. In the Energy and Building Technology business sector, particular mention should be made of risks of price erosion due to increasing competition from Asian suppliers and of sales risks due to the high pace of innovation in IP technologies. In addition, there are risks associated with a potential trend toward low-price products, declining purchasing power in western Europe, rising personnel costs in the services business, and the proliferation of internet-based business models. Measures mainly concern the increased development of IP-enabled products and products for low-price market segments. We are also increasing productivity in the services business.

Due to our broad regional and sectoral presence, medium-term strategic and operating risks are on the whole broadly diversified. Our risk management system clearly presents the existing risks affecting each of the business sectors. By implementing deliberate measures, we limit both the probability of occurrence and the economic impact of the risks. Overall, the analysis of opportunities and risks shows that we operate in an environment rich in opportunities. Accordingly, there are currently no foreseeable sustained or severe threats to our profitability.

Risk management in group accounting

The internal control and risk management system for group accounting ensures proper accounting and financial reporting. The main components are a mandatory group-wide chart of accounts, mandatory standards for bookkeeping systems, group-wide accounting manuals, and software for recording the necessary data and for consolidation. Changes in legislation or accounting standards are examined with regard to their relevance to the consolidated financial statements and are included during regular updating in the accounting manuals, charts of accounts, and consolidation software. Group-wide compliance is ensured through controls and technical advice from the corporate accounting department.

The consolidated financial statements are prepared centrally on the basis of data reported by subsidiaries. The data are initially checked for plausibility by the corporate accounting department, with the data being reviewed from different regional and specialist perspectives. Consolidation then follows. The principle of dual control applies at every level. The quality of data recording and consolidation is ensured by means of authorization and access regulations. The system is supplemented by internal control measures which are implemented locally according to uniform group-wide standards, in which financially critical processes are spot-checked for accuracy.

IT risks: We have put in place comprehensive measures, valid throughout the company, to provide organizational and technical protection against all types of data loss, manipulation, and theft. We respond to constantly growing demands in the area of cyber-crime, protection of intellectual property, and sabotage risks, as well as increasing awareness of data protection in social networks, with our broad-based and well trained IT-security and data-protection organization. We ensure high availability of IT systems through redundant systems that run independently of location.

Legal risks, compliance: There are no apparent legal risks that could materially impair the net assets, financial position, or results of operations of the Bosch Group in fiscal 2015. This includes all risks resulting from ongoing or imminent litigation and compliance matters. The principle of legality is an integral part of Bosch's values. We deal rigorously with violations of applicable laws or the Bosch Code of Business Conduct. Reinforcing and monitoring compliance with this principle is the task of our global compliance organization. Worldwide classroom-based programs, web-based training courses, and a great number of publications are used to ensure that everyone in the group is aware of the need to comply with existing laws, rules, and regulations.

In 2014, the effectiveness of our existing compliance organization was the subject of a thorough review and confirmed by an external audit. Independently of this, we decided on a number of measures to strengthen our compliance organization and further develop the compliance management system. We began carrying these measures out in 2014. They include more intensive exchange about compliance issues between executives and their associates. Our aim is to move way from a largely rules-based form of compliance to one primarily based on values.

In addition, we set up a dedicated corporate department for compliance management at the start of 2015. It reports to the chief compliance officer, who coordinates the compliance organization and reports to the board of management direct or, if necessary, to the chairman of the supervisory board. Professionally, the compliance officers in the regions and divisions are assigned to the chief compliance officer. In addition, we have developed a concept for regularly analyzing risk in the divisions. This will be applied for the first time in 2015. For each division, we ascertain risk indicators, on the basis of which risk scenarios are drawn up, which are then tested through structured interviews with executives from the division under review. In a final step, measures are defined and taken to minimize the compliance risks that have been identified and confirmed.

Since 2010, the EU Commission and other antitrust authorities have been investigating a number of automotive suppliers for alleged anticompetitive behavior. The Bosch Group is also affected by these antitrust investigations. As early as 2013, we set aside 150 million euros as a provision for the associated risks. The company continues to cooperate fully with the authorities in their investigations into these allegations. Our negotiations with the competent U.S. antitrust authority (Department of Justice) about a settlement of the investigations against Bosch have reached an advanced stage. With respect to the ongoing investigations by the Brazilian antitrust authority relating to spark plugs, the existing leniency agreement leads Bosch to believe that it will not have to pay a fine. In connection with the anticompetitive behavior being investigated, we are preparing ourselves for burdens resulting from civil-law claims for damages. At the present time, however, these cannot be quantified.

Financial risks: The operating business of the Bosch Group is affected by fluctuations in exchange and interest rates. The aim of business policy is to limit these risks. Our strategy of maintaining a strong global presence with local production and worldwide purchasing activities generally reduces currency risks. A foreign exchange balance plan showing net positions per foreign currency is used as the basis for controlling currency risks. If necessary, these risks are hedged through centralized hedging transactions. Internal regulations and guidelines set down a mandatory framework and define responsibilities relating to payment transactions, investments, and hedging activities. According to our regulations, financial instruments such as forward transactions and interest swaps may only be used in connection with the operating business, financial investments, or financing transactions; speculative transactions are not allowed. Hedging transactions are entered into solely via banks whose creditworthiness is regarded as impeccable. Their credit ratings are constantly monitored and limits are adjusted accordingly.

We have extensive financial assets. These are subject to interest-rate and exchange-rate risks. We control these risks by means of an investment process geared to our financial exposure. The objective is to secure appropriate, risk-adjusted returns on invested capital. Here, we endeavor to spread our investments as widely as possible. A limit system is used to closely monitor investment risk. Prescribed risk limits for the specific investment categories limit the potential loss. The impact of changes in interest rates on borrowed funds is sharply limited over the short and medium term by balancing the maturities of financial liabilities. Changes in financial assets and liabilities are monitored on an ongoing basis. We identify liquidity risks as part of our liquidity planning. Thanks to our good credit rating and existing financing arrangements, we have good access to the capital markets.

Consolidated financial statements of the Bosch Group

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Income statement

for the period from January 1 to December 31, 2014

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Figures in million euro and since

	Note	2014	2013
Sales revenue	1)	**48,951**	**46,068**
Cost of sales		−31,963	−30,460
Gross profit		**16,988**	**15,608**
Distribution and administrative cost	2)	−9,469	−8,562
Research and development cost	3)	−4,959	−4,543
Other operating income	4)	1,126	1,480
Other operating expenses	5)	−812	−1,394
Profit from entities consolidated using the equity method		258	162
EBIT		**3,030**	**2,751**
Financial income	6)	2,114	1,535
Financial expenses	6)	−1,769	−1,459
Profit before tax		**3,375**	**2,827**
Income taxes	7)	−714	−540
Profit after tax from continuing operations		**2,661**	**2,287**
Profit after tax from discontinued operations		−24	−1,036
Profit after tax		**2,637**	**1,251**
of which attributable to non-controlling interests	8)	227	155
of which attributable to parent company		2,410	1,096

Statement of comprehensive income

for the period from January 1 to December 31, 2014

1.02

Figures in millions of euros

	2014	2013
Profit after tax	**2,637**	**1,251**
Change from marketable financial instruments		
recognized in other comprehensive income	420	249
of which attributable to non-controlling interests	11	2
transferred to profit or loss	−209	−240
of which attributable to non-controlling interests	−2	−3
Adjustment item from currency translation of entities outside the euro zone	1,149	−972
of which attributable to non-controlling interests	125	−61
Items that will be reclassified to profit or loss	**1,360**	**−963**
of which entities consolidated using the equity method	110	−139
Remeasurement of pension provisions	−1,837	202
of which attributable to non-controlling interests	−1	2
Items that will not be reclassified to profit or loss	**−1,837**	**202**
of which entities consolidated using the equity method	−178	6
Other comprehensive income	**−477**	**−761**
Comprehensive income	**2,160**	**490**
of which attributable to non-controlling interests	360	95
of which attributable to parent company	1,800	395

Statement of financial position

for the year ended December 31, 2014

I.03
Assets
Figures in millions of euros

	Note	12/31/2014	12/31/2013
Current assets			
Cash and cash equivalents	10)	5,513	3,799
Securities	11)	1,076	593
Trade receivables	12)	8,785	7,878
Income tax receivables		469	290
Other assets	13)	2,271	1,921
Inventories	14)	7,194	6,519
		25,308	**21,000**
Non-current assets			
Financial assets	15)	10,552	10,461
Income tax receivables		104	135
Property, plant, and equipment	16)	13,251	12,244
Intangible assets	17)	7,338	7,178
Investments measured at equity		1,566	1,669
Deferred taxes	7)	3,705	3,038
		36,616	**34,725**
Assets held for sale			**0**
Total assets		**61,924**	**55,725**

Equity and liabilities
Figures in millions of euros

	Note	12/31/2014	12/31/2013
Current liabilities			
Financial liabilities	18)	185	538
Trade payables	19)	3,599	3,235
Income tax liabilities		254	186
Other liabilities	20)	4,615	4,305
Income tax provisions		184	505
Other provisions	20)	3,239	2,826
		12,076	**11,595**
Non-current liabilities			
Financial liabilities	18)	5,028	4,003
Other liabilities	20)	162	186
Pension provisions	21)	9,935	7,613
Income tax provisions		611	275
Other provisions	20)	3,425	3,325
Deferred taxes	7)	1,146	1,042
		20,307	**16,444**
Liabilities held for sale			**0**
Equity	22)		
Issued capital		1,200	1,200
Capital reserve		4,557	4,557
Retained earnings		22,460	20,921
Unappropriated earnings		102	88
Non-controlling interests		1,222	920
		29,541	**27,686**
Total equity and liabilities		**61,924**	**55,725**

Statement of changes in equity

1.04

Figures in millions of euros

		Retained earnings				
	Issued capital	Capital reserve	Earned profit	Treasury stock	Currency translation	
1/1/2013	**1,200**	**4,557**	**22,052**	**–62**	**305**	
Comprehensive income					–911	
Dividends						
Transfer to retained earnings			1,008			
Other changes						
12/31/2013	**1,200**	**4,557**	**23,060**	**–62**	**–606**	
Comprehensive income					1,024	
Dividends						
Transfer to retained earnings			2,308			
Other changes						
12/31/2014	**1,200**	**4,557**	**25,368**	**–62**	**418**	

Other comprehensive income						
Securities	Other	Total	Unappropriated earnings	Equity parent company	Equity non-controlling interests	Group equity
517	**-2,205**	**-1,383**	**88**	**26,452**	**448**	**26,900**
10	200	-701	1,096	395	95	490
			-88	-88	-81	-169
			-1,008			
	7	7		7	458	465
527	**-1,998**	**-2,077**	**88**	**26,766**	**920**	**27,686**
202	-1,836	-610	2,410	1,800	360	2,160
			-88	-88	-88	-176
			-2,308			
	-159	-159		-159	30	-129
729	**-3,993**	**-2,846**	**102**	**28,319**	**1,222**	**29,541**

Statement of cash flows

T.05

Figures in millions of euros

	Note 23	2014	2013
EBIT[2]		3,006	1,478
Depreciation and amortization[1]		2,341	2,552
Increase in pension provisions		24	82
Increase in non-current provisions		45	602
Gains on disposal of non-current assets		–86	–64
Losses on disposal of non-current assets		104	105
Remeasurement of investments			–437
Gains from investments measured at equity		–256	–162
Financial income, cash effective		828	657
Financial expenses, cash effective		–980	–575
Interest and dividends received		679	507
Interest paid		–209	–207
Paid income taxes		–630	–582
Cash flow		**4,866**	**3,956**
Increase in inventories		–385	–312
Increase in receivables and other assets		–474	–369
Change in liabilities		–457	343
Increase in current provisions		285	658
Cash flows from operating activities (A)		**3,835**	**4,276**
Acquisition of subsidiaries and other business units		–27	–15
Disposal of subsidiaries and other operating units		–18	1
Additions to non-current assets		–3,140	–3,138
Proceeds from disposal of non-current assets		268	301
Purchase of securities		–6,516	–7,349
Disposal of securities		6,661	6,328
Cash flows from investing activities (B)		**–2,772**	**–3,872**
Borrowing		1,159	1,789
Repayment of financial liabilities		–513	–1,318
Dividends paid		–176	–169
Cash flows from financing activities (C)		**470**	**302**
Increase in liquidity (A+B+C)		**1,533**	**706**
Liquidity at the beginning of the period (January 1)		**3,799**	**3,120**
Exchange-rate related change in liquidity		123	–74
Increase in liquidity due to changes in the consolidated group		58	47
Liquidity at the end of the period (December 31)		**5,513**	**3,799**

[1] After offsetting reversals of impairments of EUR 28 million (previous year: EUR 7 million)
[2] EBIT including discontinued operations

Notes to the financial statements

Principles and methods

General explanations

The consolidated financial statements of the Bosch Group for the year ended December 31, 2014, have been prepared according to the standards issued by the *International Accounting Standards Board* (IASB), London. The *International Financial Reporting Standards* (IFRSs) and the *Interpretations of the IFRS Interpretations Committee* (IFRS IC) applicable in the EU at the end of the reporting period have been applied. The previous-year figures have been determined using the same principles.

The consolidated financial statements are in line with the provisions of Sec. 315a HGB ["Handelsgesetzbuch": German Commercial Code] and Regulation (EC) No 1606/2002 of the European Parliament and of the Council of July 19, 2002, on the application of international accounting standards.

On December 17, 2014, the EU endorsed the Annual Improvements to IFRSs, 2010–2012 Cycle. This contains amendments to IFRS 2 *Share-based Payment*, IFRS 3 *Business Combinations*, IFRS 8 *Operating Segments*, IAS 16 *Property, Plant, and Equipment*, IAS 24 *Related Party Disclosures*, IAS 37 *Provisions, Contingent Liabilities, and Contingent Assets*, IAS 38 *Intangible Assets*, and IAS 39 *Financial Instruments: Recognition and Measurement*. Likewise on December 17, 2014, the EU endorsed amendments to IAS 19 *Employee Benefits*. The aforementioned amendments are mandatory for fiscal years beginning on or after February 1, 2015. On December 18, 2014, the EU endorsed the Annual Improvements to IFRSs, 2011–2013 Cycle. This contains amendments to IFRS 3 *Business Combinations*, IFRS 13 *Fair Value Measurement*, and IAS 40 *Investment Property*. The aforementioned amendments are mandatory for fiscal years beginning on or after January 1, 2015. On June 13, 2014, the EU endorsed IFRIC Interpretation 21 *Levies*, the requirements of which are mandatory for fiscal years beginning on or after June 17, 2014. None of the aforementioned requirements will be early-adopted by the Bosch Group. First-time application of the amended standards is not expected to have any material effects on the consolidated financial statements of the Bosch Group. The effects on the Bosch Group of IFRS 9 *Financial Instruments* and IFRS 15 *Revenue Recognition*, which are still pending endorsement by the EU, are currently being reviewed.

To enhance the clarity and transparency of the consolidated financial statements, individual items of the consolidated income statement and the consolidated statement of financial position have been combined. These items are explained separately in the notes to the consolidated financial statements. The income statement has been prepared using the function of expense method.

The preparation of consolidated financial statements in accordance with IFRSs requires that assumptions be made for some items. These assumptions have an effect on the amount of the assets and liabilities, income and expenses, and contingent liabilities disclosed in the consolidated statement of financial position.

The group currency is the euro (EUR). Unless otherwise stated, all figures are in millions of euros (EUR million).

The consolidated financial statements prepared as of December 31, 2014, were authorized for disclosure by management on March 10, 2015. The consolidated financial statements and group management report will be filed with the Federal Gazette [*Bundesanzeiger*] and published there.

Basis of consolidation

Besides Robert Bosch GmbH, the consolidated financial statements include all subsidiaries for which Robert Bosch GmbH fulfills the criteria pursuant to IFRS 10 *Consolidated Financial Statements*. These entities are included in the consolidated financial statements from the date on which the Bosch Group obtains control. Conversely, subsidiaries are no longer fully consolidated when control of the entity is lost.

The capital of the companies consolidated in the fiscal year for the first time is consolidated pursuant to IFRS 3 *Business Combinations* using the acquisition method of accounting. At the time of combination, the purchase cost of the shares acquired is offset against pro-rata revalued equity. Assets, liabilities, and contingent liabilities are carried at fair value. Remaining debit differences are accounted for as goodwill. Any credit differences are recognized with effect on income. Any difference resulting from the purchase of additional non-controlling interests is offset against equity.

Joint ventures as defined by IFRS 11 *Joint Arrangements* are accounted for using the equity method.

Pursuant to IAS 28 *Investments in Associates and Joint Ventures*, investments are included in consolidation using the equity method if significant influence can be exercised. At present, no associates have been accounted for using the equity method.

Within the consolidated group, intercompany profits and losses, sales, expenses, and other income, as well as all receivables and liabilities or provisions are eliminated. In the case of consolidation measures with an effect on income, the effects for income tax purposes are considered and deferred taxes recognized.

Currency translation

In the separate financial statements of the group companies, all receivables and liabilities denominated in currencies other than the euro are measured at the closing rate at the end of the reporting period, regardless of whether they are hedged or not. Exchange-rate gains and losses from revaluations are recorded in profit or loss.

The financial statements of the consolidated companies outside the euro zone are translated into euros in accordance with IAS 21 *The Effects of Changes in Foreign Exchange Rates*. Assets and liabilities are translated at the closing rate at the end of the reporting period, while equity is translated at historical rates. The line items of the income statement are translated into euros at the annual average exchange rates. Any resulting exchange-rate differences are recorded directly in equity until the disposal of the subsidiaries, and disclosed as a separate position in equity.

For the most important non-euro currencies of the Bosch Group, the following exchange rates apply:

T.05

		Closing rate		Average rate	
	1 EUR =	12/31/2014	12/31/2013	2014	2013
Australia	AUD	1.48	1.54	1.47	1.38
Brazil	BRL	3.22	3.26	3.12	2.87
China	CNY	7.46	8.42	8.17	8.22
Czech Republic	CZK	27.73	27.43	27.53	25.97
Hungary	HUF	314.89	296.91	308.65	296.97
India	INR	76.72	85.37	81.04	77.93
Japan	JPY	145.23	144.72	140.31	129.66
Korea	KRW	1,334.60	1,450.93	1,398.14	1,455.91
Poland	PLN	4.27	4.15	4.18	4.20
Russian Federation	RUB	68.34	44.97	50.82	42.29
Switzerland	CHF	1.20	1.23	1.21	1.23
Turkey	TRY	2.83	2.96	2.91	2.53
United Kingdom	GBP	0.78	0.83	0.81	0.85
USA	USD	1.21	1.38	1.33	1.33

Accounting policies

Cash and cash equivalents consist of cash, reserve bank deposits, and bank balances with an original maturity of less than 90 days. Measurement is at amortized cost.

Trade receivables, income tax receivables, other assets (current), and other financial assets (non-current) are measured at amortized cost. All discernible specific risks and general credit risks are accounted for by appropriate valuation allowances. According to internal group guidelines, the carrying amounts of receivables are generally corrected via a valuation allowance account. For finance leases under which the Bosch Group is the lessor, a receivable is disclosed equivalent to the net investment value. Leases under which substantially all risks and rewards in connection with ownership have been transferred to the lessee are classified as finance leases. Derivative financial instruments are measured at fair value.

Inventories include raw materials, consumables, and supplies; work in process, finished goods, and merchandise; and prepayments. Inventories are stated at purchase cost or cost of conversion using the average cost method. In addition to direct cost, cost of conversion includes an allocable portion of necessary materials and production overheads as well as production-related depreciation that can be directly allocated to the production process. Appropriate allowance is made for risks associated with holding and selling inventories due to obsolescence. Inventories are devalued further when the net selling price of the inventories has fallen below cost.

Property, plant, and equipment are measured at cost of purchase or production cost less depreciation and, if necessary, impairment losses. Depreciation is charged on a straight-line basis over the economic useful life.

Depreciation is based on the following ranges of useful lives:

1.07

	Useful life
Buildings	10 – 50 years
Plant and equipment	8 – 11 years
Other equipment, fixtures, and furniture	3 – 25 years

In accordance with IAS 36 *Impairment of Assets*, impairment losses are recorded on property, plant, and equipment if the recoverable amount has fallen below the carrying amount. Impairment losses are reversed if the reasons for the impairment loss from previous years no longer apply. Repair costs are recognized in the income statement.

In accordance with IAS 17 *Leases*, leased items of property, plant, and equipment which, from a substance-over-form perspective, are deemed to be purchases of assets with long-term financing (finance leases) are recognized at the time of addition at the lower of the fair value of the leased assets or present value of the minimum lease payments. Depreciation is charged over the economic useful life. If it is uncertain whether title to the leased asset will be transferred, the asset is depreciated over the term of the lease agreement (if shorter than the economic useful life). The finance expense from these leases is disclosed under other financial expenses.

Investment property is measured at depreciated cost in accordance with IAS 40 *Investment Property*.

Government grants are only recognized pursuant to IAS 20 *Accounting for Government Grants and Disclosure of Government Assistance* if it is sufficiently certain that the assistance will be granted and the conditions attached to the assistance are satisfied. Grants related to assets are deducted in order to calculate the carrying amount of the asset. Grants related to income are recognized in the income statement of the period in which the expenses are incurred which the grants are intended to cover.

Purchased and internally generated intangible assets are capitalized pursuant to IAS 38 *Intangible Assets* if a future economic benefit will flow to the entity from the use of the asset and the cost of the asset can be reliably determined. These assets are generally carried at cost and amortized using the straight-line method over their economic useful life. As a rule, the useful life is four years. Intangible assets accounted for in the course of business combinations have a useful life of up to 20 years.

Borrowing costs incurred in connection with the acquisition, construction, or production of qualifying assets are included in the cost of this asset for the period of time until the asset is commissioned and subsequently written off with the asset concerned. Other borrowing costs are recorded as expenses.

Goodwill from business combinations represents the difference between the purchase price on the one hand and the pro-rata fair value of the equity at the time of acquisition on the other. Goodwill is allocated to the cash-generating units and tested annually for impairment. If the recoverable amount of the cash-generating unit does not cover the carrying amount of the net asset, impairment losses are charged in accordance with the requirements of IAS 36.

Pursuant to IFRS 1 *First-time Adoption of International Financial Reporting Standards*, goodwill existing as of January 1, 2004 (date of transition), was transferred at the carrying amount in accordance with the provisions of the German Commercial Code. Goodwill is also tested for impairment pursuant to the provisions of IAS 36.

Intangible assets with an indefinite useful life are tested annually for impairment. Intangible assets subject to wear and tear are only tested for impairment if there is any indication that they may be impaired. Impairment losses are recorded in accordance with IAS 36 if the recoverable amount of the asset concerned has fallen below the carrying amount. Impairment losses are reversed if the reasons for the impairment loss from previous years no longer apply.

Shares in jointly controlled entities are included in the consolidated financial statements using the equity method. The carrying amount of these shares is subsequently measured in accordance with the change in equity of the jointly controlled entity attributable to the Bosch Group.

Financial instruments

A financial instrument is any contract that gives rise to a financial asset of one entity on the one hand and to a financial liability or equity instrument of a second entity on the other. As a rule, financial instruments are determined as of the settlement date. Financial instruments are accounted for at amortized cost or fair value. In the case of a financial asset or financial liability not accounted for at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial asset or financial liability are taken into account.

When determining the fair value, the input factors of the measurement methods pursuant to IFRS 13 *Fair Value Measurement* are categorized as follows:

- Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities that the accounting entity can access at the measurement date
- Level 2: Inputs other than quoted prices included within level 1 that are observable for the asset or liability, either directly or indirectly
- Level 3: Inputs that are not based on observable market data

The fair value of current financial assets and liabilities is assumed to correspond to the carrying amount.

In accordance with IAS 39 *Financial Instruments: Recognition and Measurement*, the following categories of financial instruments are used in the Bosch Group:

- Held-to-maturity investments
- Loans and receivables
- Financial liabilities measured at amortized cost
- Financial assets and liabilities held for trading
- Available-for-sale financial assets

The fair-value option pursuant to IAS 39 is not exercised.

Financial investments held to maturity, loans and receivables, and current and non-current financial liabilities are measured at amortized cost using the effective interest method. These are mainly loans, trade receivables, and current and non-current other financial assets and liabilities. Impairments of loans and receivables to allow for anticipated credit risks based on past experience are recognized in the form of specific and general doubtful debt allowances. When determining valuation allowances for the general credit risk, financial assets that could potentially be impaired are grouped together by similar credit risk characteristics, collectively tested for impairment, and, if necessary, written down.

Financial assets and liabilities held for trading are measured at fair value. Changes in value are recognized in profit or loss. These are derivative financial instruments which are mainly used to limit currency, interest, and commodity risks in accordance with internal risk management. Hedge accounting is not used in the Bosch Group.

Available-for-sale financial assets are those non-derivative financial assets that cannot be allocated to any of the three preceding categories. They are carried at fair value. Unrealized gains and losses from changes in market value are disclosed in equity, net of deferred taxes, until they are realized. Interest received is generally recognized through profit or loss using the effective interest method. Dividends are recognized through profit or loss as soon as payment is legally enforceable. If impairment losses are necessary, the accumulated net loss is eliminated from equity and disclosed in profit or loss. If an impairment loss recorded on equity instruments is reversed in accordance with IAS 39, this is offset directly against equity. Reversals of impairment losses on debt instruments may not exceed the amount for which the impairment loss was recorded. The amount of the reversal is recognized in profit or loss.

If the fair value of available-for-sale financial assets cannot be reliably determined, they are accounted for at acquisition cost. These are investments for which there is no active market. Necessary impairment losses are recognized in profit or loss and are not reversed.

As of every reporting date, the carrying amounts of the financial assets which are not measured at fair value through profit or loss are examined for substantial objective indications that an asset may be impaired. Such indications may, for instance, be serious financial difficulties suffered by the debtor, the high probability that insolvency proceedings will be instituted against the debtor, the loss of an active market for the financial asset, a permanent drop in the fair value of the financial asset below amortized cost, or significant changes in the technological, economic, legal, or market environment of the issuer. A possible impairment loss is given if the fair value of the asset is lower than the carrying amount. The fair value of loans and receivables is the present value of the estimated future cash flows discounted using the original effective interest rate.

In accordance with IAS 12 *Income Taxes*, **deferred tax assets and liabilities** are recorded for temporary differences between the tax carrying amounts and the carrying amounts in the consolidated statement of financial position unless they arise from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affect neither the profit before tax nor the taxable profit. This also applies to unused tax losses and tax credits if there is assurance beyond reasonable doubt that future taxable profit will be available against which they can be utilized. The deferred tax item equals the estimated tax burden/relief in later periods. The tax rate applicable at the time of realization is taken as a basis. Tax implications from profit distributions are generally not considered until the resolution for the appropriation of profits has been adopted. If it is uncertain whether recognized deferred taxes can be realized, they are adjusted accordingly.

Assets and liabilities held for sale are classified as held for sale if most of their carrying amount is redeemed by a sale and the sale is highly likely to be effected. They are valued at the lower of carrying amount or fair value, less selling cost.

Liabilities are measured at amortized cost. Liabilities from finance leases are disclosed under other liabilities, at the present value of the future lease payments. The effective interest method is applied when measuring bonds.

Pursuant to IAS 19 *Employee Benefits*, **pension provisions** are recognized using the projected unit credit method, taking estimated future increases in pensions and salaries into account, among other things.

Tax provisions pertain to obligations relating to income tax and other taxes. Deferred taxes are disclosed in separate positions of the statement of financial position.

Pursuant to IAS 37 *Provisions, Contingent Liabilities, and Contingent Assets*, **other provisions** are recognized if there is a current obligation from a past event which will probably lead to an outflow of resources embodying economic benefits in the future. In addition, it must be possible to reliably estimate the amount of this outflow. Other provisions are measured at full cost. Provisions due in more than one year are stated at their discounted settlement amount.

Revenue from the supply of products and goods or from the provision of services is recognized when title and risk is transferred to the purchaser, less sales deductions. Interest and lease income is recorded according to the contractual agreement and, where appropriate, accrued pro rata temporis. In the case of finance leases, the payments are divided up using actuarial methods.

Cost of sales contains the cost of internally manufactured goods and the cost price of resold merchandise. The production cost of internally manufactured goods contains materials and production cost that can be allocated directly, the allocable parts of indirect overheads, including the depreciation of production equipment and the amortization of other intangible assets, and the devaluation of inventories.

Development cost that cannot be recognized is released to profit or loss in the period incurred.

Consolidation

Consolidated group

Robert Bosch GmbH is headquartered in Stuttgart, Germany. The shareholders of Robert Bosch GmbH are Robert Bosch Stiftung GmbH, Stuttgart (92.0 percent of the shares), the Bosch family (7.4 percent of the shares), and Robert Bosch Industrietreuhand KG, Stuttgart, which performs the entrepreneurial ownership functions. Robert Bosch GmbH holds treasury stock equivalent to 0.6 percent of capital.

Besides Robert Bosch GmbH, the consolidated group comprises a further 340 (previous year: 360) fully consolidated companies. The group developed as follows:

	Germany	Outside Germany	Total
Included in consolidation at December 31, 2012	**62**	**300**	**362**
Additions/formations in fiscal year 2013	2	12	14
Disposals/mergers in fiscal year 2013	1	14	15
Included in consolidation at December 31, 2013	**63**	**298**	**361**
Additions/formations in fiscal year 2014	7	11	18
Disposals/mergers in fiscal year 2014	4	34	38
Included in consolidation at December 31, 2014	**66**	**275**	**341**

The consolidated group includes 13 special funds, as well as other investments.

In the fiscal year 2014, the following companies were included in the consolidation for the first time:

- Bosch Connected Devices and Solutions GmbH, Reutlingen, Germany,
- Bosch Energy and Building Solutions GmbH, Ditzingen, Germany,
- Bosch Financial Software GmbH, Immenstaad, Germany,
- Bosch Technology Licensing Administration GmbH, Gerlingen, Germany,
- Bosch Thermotechnik Vermögensverwaltung 1 GmbH, Wetzlar, Germany,
- Robert Bosch Immobilienverwaltungs GmbH & Co. KG, Stuttgart, Germany,
- Bosch (Ningbo) e-scooter Motor Co., Ltd., Ningbo, China,
- Bosch Automotive Components (Changchun) Co., Ltd., Changchun, China,
- Bosch Automotive Diagnostics Equipment (Shenzhen) Ltd., Shenzhen, China,
- Bosch Automotive Products (Nanjing) Co., Ltd., Nanjing, China,
- Bosch Car Multimedia (Wuhu) Co., Ltd., Wuhu, China,
- Bosch Laser Equipment (Dongguan) Limited, Dongguan, China,
- P.T. Robert Bosch, Jakarta, Indonesia,
- ARESI S.p.A., Brembate, Italy,
- Bosch Service Solutions, Inc. (formerly Robert Bosch Communication Center, Inc.), Manila, Philippines,
- Robert Bosch DOO, Belgrade, Serbia,
- Robert Bosch Automotive Technologies (Thailand) Co., Ltd., Rayong, Thailand.

The first-time consolidation of the companies listed above resulted in a negative difference of EUR 115 million, which is disclosed under other changes in equity.

Due to changes to the consolidated group, sales revenue decreased by EUR 170 million, while total assets increased by EUR 56 million.

Condensed financial information on fully consolidated subsidiaries with material non-controlling interests

100

Currency factor in millions of euros

	Bosch Automotive Diesel Systems Co., Ltd., Wuxi, China		United Automotive Electronic Systems Co., Ltd., Shanghai, China		Bosch Ltd., Bangalore, India	
	2014	2013	2014	2013	2014	2013
Current assets	725	373	966	714	622	609
Non-current assets	331	292	1,308	1,166	686	564
Current liabilities	276	194	807	632	344	259
Non-current liabilities			154	150	38	33
Sales revenue	1,228	680	1,663	1,343	1,182	1,108
Profit after tax	218	114	224	176	144	118
Comprehensive income	301	106	372	178	271	–19
Cash flows from operating activities	70	56	251	255	148	208
Cash flows from investing activities	–48	–17	–91	–63	–107	–160
Cash flows from financing activities	–17	–36	–136	–127	–25	–28
Share of capital attributable to non-controlling interests	34.0%	34.0%	49.0%	49.0%	28.8%	28.8%
Profit/loss attributable to non-controlling interests	74	39	110	86	41	34
Equity attributable to non-controlling interests	255	160	549	454	325	254
Dividends paid to non-controlling interests			73	67	7	8

The condensed financial information of the respective entities corresponds to the figures before consolidation entries.

Joint ventures

The following entities are joint ventures and were accounted for using the equity method in accordance with IFRS 11:

- Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart, Germany (50%),
- BSH Bosch und Siemens Hausgeräte GmbH, Munich, Germany (50%),
- EM-motive GmbH, Hildesheim, Germany (50%),
- ZF Lenksysteme GmbH, Schwäbisch Gmünd, Germany (50%),
- Hytec Holdings (Pty.) Ltd., Johannesburg, South Africa (50%),
- Associated Fuel Pump Systems Corporation, Anderson, SC, USA (50%).

The share of capital corresponds to the share of voting rights.

In the fiscal year, 50 percent of the shares in Hytec Holdings (Pty.) Ltd., Johannesburg, South Africa, were acquired; the purchase price was paid by transfer of cash and cash equivalents.

Condensed financial information on material joint ventures

T.10

Figures in millions of euros

	BSH Bosch und Siemens Hausgeräte GmbH, Munich, Germany		ZF Lenksysteme GmbH, Schwäbisch Gmünd, Germany	
	2014	2013	2014	2013
Sales revenue	11,389	10,508	4,388	4,114
Depreciation and amortization	–330	–335	–244	–205
EBIT	705	512	249	167
Interest income	45	34	5	5
Interest expenses	–129	–104	–7	–7
Profit before tax	637	439	248	166
Income taxes	–190	–130	–64	–45
Profit after tax	447	309	184	121
Other comprehensive income	–41	–159	–96	–34
Comprehensive income	406	150	88	87
Current assets	5,454	5,342	1,474	1,308
of which cash and cash equivalents	493	985	265	208
Non-current assets	3,692	3,400	1,519	1,200
Current liabilities	3,591	3,243	1,055	890
of which financial liabilities	300	246	49	4
Non-current liabilities	3,168	3,002	1,072	836
of which financial liabilities	1,151	1,283	105	150
Equity	2,387	2,497	866	782
of which non-controlling interests	3	6	172	123
Pro-rata equity attributable to the group	1,192	1,245	347	330
Dividends received	250	117		20

The carrying amount of investments measured using the equity method in the consolidated financial statements of the Bosch Group corresponds to the proportionate share in equity.

The condensed financial information corresponds to the figures from the IFRS financial statements of the aforementioned joint ventures.

In 1967, the joint venture BSH Bosch und Siemens Hausgeräte GmbH was established together with Siemens AG, Munich, Germany. The company is one of the world's leading players in the household-appliances industry. Effective January 5, 2015, the Bosch Group acquired all shares in BSH Bosch und Siemens Hausgeräte GmbH. The fifty-fifty joint venture ZF Lenksysteme GmbH controlled together with ZF Friedrichshafen AG, Friedrichshafen, Germany, was established in 1999. The company develops, manufactures, and sells steering systems for passenger cars and commercial vehicles worldwide. Effective January 30, 2015, the Bosch Group acquired all shares in ZF Lenksysteme GmbH. Both companies are of strategic importance to the Bosch Group.

Condensed financial information on individually immaterial joint ventures

131

Figures in millions of euros

	2014	2013
Carrying amount of the investments	127	94
Group share of profit after tax	–33	–32
Group share of other comprehensive income of the period	1	–2
Group share of comprehensive income	–32	–34

Obligations to joint ventures come to EUR 1 million as of the reporting date. There were no corresponding obligations in the previous year.

Business combinations

In September 2014, it was agreed that Robert Bosch GmbH would take over Siemens AG's 50 percent share in the fifty-fifty joint venture BSH Bosch und Siemens Hausgeräte GmbH, Munich, Germany. The transaction was completed on January 5, 2015, following approval by the antitrust authorities, at a purchase price of EUR 3,014 million. The company was renamed BSH Hausgeräte GmbH. The complete takeover serves to strengthen the Bosch Group's consumer goods business. A further objective is to build up the Bosch Group's activities in the area of connected buildings and appliances. The condensed financial information of BSH Bosch und Siemens Hausgeräte GmbH as of December 31, 2014, is presented in the table in the "Joint ventures" chapter. Following the acquisition in stages of shares, the interest already held by the Bosch Group, which had a carrying amount of EUR 1,192 million as of December 31, 2014, will be remeasured at fair value. This is expected to result in a gain of roughly EUR 1.6 billion in the fiscal year 2015. The value of the remeasured interest and the purchase price for the remaining interest will be subsequently compared with the acquisition-date equity of BSH Bosch und Siemens Hausgeräte GmbH. Any resulting difference will be allocated as part of the purchase price allocation to the identified assets and liabilities.

Likewise in September 2014, it was announced that Robert Bosch GmbH planned to increase its 50 percent interest in the joint venture ZF Lenksysteme GmbH, Schwäbisch Gmünd, Germany, to 100 percent. The transaction was completed on January 30, 2015, following approval by the antitrust authorities, at a purchase price of EUR 884 million. The company will be renamed Robert Bosch Automotive Steering GmbH. With the acquisition, the Bosch Group is strengthening its position in the field of electric steering, a key technology for automated driving, more efficient vehicles, and electric cars. The condensed financial information of ZF Lenksysteme GmbH as of December 31, 2014, is presented in the table in the "Joint ventures" section. Following the acquisition in stages of shares, the interest already held by the Bosch Group, which had a carrying amount of EUR 347 million as of December 31, 2014, will be remeasured at fair value. This is expected to result in a gain of roughly EUR 0.5 billion in the fiscal year 2015. The value of the remeasured interest and the purchase price for the remaining interest will be subsequently compared with the acquisition-date equity of ZF Lenksysteme GmbH. Any resulting difference will be allocated as part of the purchase price allocation to the identified assets and liabilities.

Due to the complexity of the acquired companies and the timing of the acquisitions, the purchase price allocations and the calculation of the remeasurement of the net assets in connection with the first-time full consolidation of BSH Bosch und Siemens Hausgeräte GmbH and ZF Lenksysteme GmbH have not yet been completed. Also pending completion is the preparation of opening statements of financial position as of the respective acquisition dates. Consequently, the reported disclosures should be considered provisional; no further disclosures are available at present. Both business combinations were financed by transferring cash and cash equivalents.

On January 6, 2015, 100 percent of the shares in Climatec, LLC, Phoenix, AZ, USA, were acquired. With the acquisition, the Bosch Group is expanding its services business in the North American market and strengthening its position as full-service provider of energy-efficiency, building-automation, and security solutions. The purchase price for the shares came to EUR 186 million; the business combination was financed by transferring cash and cash equivalents. Based on the provisional opening statement of financial position currently available, current assets of EUR 141 million, non-current assets of EUR 2 million, current liabilities of EUR 127 million, and non-current liabilities of EUR 1 million are being acquired or assumed. In the course of the provisional purchase price allocation, unrecognized intangible assets of EUR 98 million and goodwill of EUR 73 million were identified.

Discontinued operations

In March 2013, the management of the Bosch Group announced its decision to discontinue the manufacture of ingots, wafers, cells, and modules, and to exit from the crystalline photovoltaics business segment. Negotiations on the sale of a large portion of the activities of Bosch Solar Energy AG, Arnstadt, Germany, were completed in fall 2013. The transaction was executed on March 12, 2014. The production facilities and a large portion of the assets of Bosch Solar Energy AG were sold. At the beginning of 2014, aleo solar AG i.L. signed an agreement for the sale of its module activities at its Prenzlau (Germany) location. The factory in Prenzlau was closed at the end of March 2014, the sale of the significant portion of the operating activities was completed on May 16, 2014. The sale of the module plant in Vénissieux, France, was completed on June 16, 2014.

The result of discontinued operations in the fiscal year breaks down as follows:

142

Figures in millions of euros

	2014	2013
Sales revenue	20	306
Other income		51
Expenses	–44	–1,637
Result of discontinued operations	**–24**	**–1,280**
Income taxes		244
Profit after tax	**–24**	**–1,036**
of which attributable to non-controlling interests		–10
of which attributable to parent company	–24	–1,026

The effects of discontinued operations on the statement of comprehensive income are presented below:

143

Figures in millions of euros

	2014	2013
Profit after tax	**–24**	**–1,036**
Items that will be reclassified to profit or loss		1
Items that will not be reclassified to profit or loss		1
Comprehensive income	**–24**	**–1,034**
of which attributable to non-controlling interests		–10
of which attributable to parent company	–24	–1,024

The cash flows of discontinued operations break down as follows:

TAB

Figures in millions of euros	2014	2013
Operating activities	−16	−167
Investing activities	0	−1
Financing activities	0	7

The pneumatics business unit of the Drive and Control Technology division was sold as of January 1, 2014. The transaction consisted of the sale of assets of EUR 167 million and the transfer of liabilities of EUR 134 million. The transaction resulted in a gain of EUR 26 million.

Notes to the income statement

1 Sales revenue

74

Sales revenue amounted to EUR 48,951 million (previous year: EUR 46,068 million). The Mobility Solutions (formerly Automotive Technology) business sector accounted for EUR 33,318 million (previous year: EUR 30,588 million) of this total, the Industrial Technology business sector for EUR 6,709 million (previous year: EUR 6,844 million), the Consumer Goods business sector for EUR 4,179 million (previous year: EUR 3,979 million), and the Energy and Building Technology business sector for EUR 4,627 million (previous year: EUR 4,551 million). Sales revenue that cannot be allocated to the business sectors came to EUR 118 million (previous year: EUR 106 million). Sales of discontinued operations amounting to EUR 20 million (previous year: EUR 306 million) are not allocable to the business sectors.

2 Distribution cost and administrative expenses

TAB

Figures in millions of euros	2014	2013
Administrative expenses	2,528	2,454
Distribution cost	6,949	6,309
	9,477	**8,763**
Discontinued operations	−8	−201
	9,469	**8,562**

The distribution cost includes personnel and indirect costs, depreciation charged in the distribution function, customer service, logistics, market research, sales promotion, shipping, advertising, and warranty costs.

3 Research and development cost

Research and development cost contains both research cost as well as development cost that cannot be capitalized and depreciation on capitalized development cost. In addition, it includes development work charged directly to customers.

T.16

Figures in millions of euros

	2014	2013
Total research and development cost	4,997	4,615
Development cost recognized in the reporting period	–225	–233
Depreciation on recognized development cost	188	179
	4,960	**4,561**
Discontinued operations	–1	–18
	4,959	**4,543**

4 Other operating income

T.17

Figures in millions of euros

	2014	2013
Income from exchange-rate fluctuations	520	472
Income from the disposal of non-current assets	73	63
Income from rent and leases	10	9
Income from the reversal of provisions	74	55
Sundry other operating income	449	932
	1,126	**1,531**
Discontinued operations		–51
	1,126	**1,480**

In the previous year, sundry other operating income contained EUR 437 million resulting from the remeasurement of the net assets of United Automotive Electronic Systems Co., Ltd., Shanghai, China, in the course of its full consolidation for the first time.

The income from exchange-rate fluctuations is offset by expenses which are disclosed in other operating expenses. These items contain the effective exchange-rate results and the results from foreign-currency derivatives allocable to the operating business.

Leases are accounted for according to the rules pertaining to operating leases, provided that substantially all the risks and rewards associated incidental to ownership lie with the lessor. The assets concerned are recognized in property, plant, and equipment, and the lease payments received, provided they are not disclosed as sales revenue, are recorded in other operating income.

Government grants related to income amounted to EUR 88 million (previous year: EUR 82 million). They are offset against the respective expenses. If there are no such expenses, the grants are disclosed in sundry other operating income.

5 Other operating expenses

TAB

Figures in millions of euros	2014	2013
Expenses from exchange-rate fluctuations	436	555
Valuation allowances on receivables and other assets	43	233
Expenses from the disposal of non-current assets	102	101
Other taxes	64	47
Expenses from the recognition of provisions	92	167
Impairment of goodwill		39
Sundry other operating expenses	189	561
	926	**1,703**
Discontinued operations	–14	–309
	912	**1,394**

6 Financial result

TAB

Figures in millions of euros	2014	2013
Investment income	42	5
Result from the disposal of investments	11	–2
Income from investments	**53**	**3**
Interest and similar income	356	305
Interest and similar expenses	–178	–172
Interest result	**178**	**133**
Gains on disposal of securities	458	344
Losses on disposal of securities	–111	–79
Exchange-rate gains	917	458
Exchange-rate losses	–659	–806
Gains on derivatives	311	377
Losses on derivatives	–610	–276
Other income	19	46
Other expenses	–211	–131
Other financial result	**114**	**–67**
Financial result, total	**345**	**69**
of which financial income	2,114	1,535
of which financial expenses	–1,769	–1,466
Discontinued operations		7
	345	**76**

The line items "gains/losses on derivatives" contain transactions to hedge financial assets. The line item "other expenses" contains impairments of securities totaling EUR 100 million (previous year: EUR 10 million).

Capitalized borrowing costs of EUR 16 million (previous year: EUR 17 million) were deducted from interest expenses. The underlying borrowing rate is 3.5 percent (previous year: 4.0 percent).

Interest income and expenses are attributable to financial instruments not measured at fair value through profit or loss as follows:

T.20

Figures in millions of euros

	2014		2013	
	Interest income	Interest expenses	Interest income	Interest expenses
Loans and receivables	88		64	
Available-for-sale financial assets	267		240	
Financial liabilities measured at amortized cost		178		172
	355	**178**	**304**	**172**

7 Income taxes

Income taxes are classified according to their origin as follows:

T.21

Figures in millions of euros

	2014	2013
Current taxes	597	786
Deferred taxes	117	-490
	714	**296**
Discontinued operations		244
	714	**540**

Deferred taxes are calculated on the basis of the tax rates that apply or that are expected to apply given the current legislation in the individual countries at the expected time of realization. The corporate income tax rate for German companies is 15 percent. Taking into account the solidarity surcharge of 5.5 percent and the trade tax levied on profits recorded in Germany, the total tax rate is 29 percent. The tax rates outside Germany range between 9 percent and 38 percent (previous year: between 7 percent and 41 percent).

As of December 31, the deferred tax assets and liabilities presented in the statement of financial position are attributable to the following items:

T.22

Figures in millions of euros

	2014		2013	
	Assets	Liabilities	Assets	Liabilities
Receivables, other assets, and inventories	485	153	424	140
Securities, investments	2	362	7	294
Property, plant, and equipment	135	437	273	430
Intangible assets	175	581	178	583
Other assets	114	1	76	1
Liabilities	656	63	405	42
Provisions	2,466	51	1,725	44
Other liabilities	1	151	1	22
Unused tax losses and tax credits	354		463	
Total	**4,358**	**1,799**	**3,552**	**1,556**
Netting	–653	–653	–514	–514
	3,705	**1,146**	**3,038**	**1,042**

In the reporting period, deferred tax assets were written down by EUR 333 million (previous year: EUR 285 million).

There are EUR 731 million in unused tax losses for which no deferred tax assets have been recognized (previous year: EUR 762 million). Within the next three years, EUR 27 million (previous year: EUR 23 million) will be forfeited. In addition, deferred tax assets were not recognized on tax credits of EUR 142 million (previous year: EUR 136 million).

Consolidation measures give rise to deferred tax assets of EUR 114 million (previous year: EUR 114 million) and deferred tax liabilities of EUR 9 million (previous year: EUR 9 million).

In the reporting period, changed tax rates in the Bosch Group resulted in a deferred tax expense of EUR 38 million (previous year: deferred tax income of EUR 8 million).

In the reporting period, deferred taxes of EUR 746 million (previous year: EUR 66 million) were recorded directly in equity. Of this total, EUR 55 million decreases (previous year: increase of EUR 49 million) the surplus from securities and EUR 801 million increases retained earnings due to the change in actuarial parameters in accordance with IAS 19 (previous year: EUR 17 million).

The basis for the expected income tax expense is the German tax rate of 29 percent. The difference between expected and disclosed income tax expense is attributable to the following factors:

T-23

Currency figures in millions of euros

	2014	2013
Profit before tax	3,375	2,827
Expected income tax expense	979	820
Variances due to tax rate	–20	–88
Non-deductible expenses	101	132
Zero-rated income	–360	–244
Other differences	14	–80
Income tax expense disclosed	**714**	**540**
Effective tax rate	21%	19%

8 Non-controlling interests

Profits attributable to non-controlling interests amount to EUR 233 million (previous year: EUR 156 million). They are counterbalanced by losses of EUR 6 million (previous year: EUR 11 million).

9 Other notes to the income statement

In the reporting period, personnel expenses of EUR 15,325 million (previous year: EUR 14,907 million) were incurred.

Cost of materials amounted to EUR 21,810 million (previous year: EUR 20,640 million).

Information about amortization and depreciation is contained in the notes on non-current assets.

Notes to the statement of financial position

10 Cash and cash equivalents

T-24

Figures in millions of euros

	2014	2013
Bank balances (term up to 90 days)	5,502	3,788
Cash and reserve bank deposits	11	11
	5,513	**3,799**
Assets held for sale		0
	5,513	**3,799**

The bank balances are partly invested as secured deposits in tri-party repo transactions. As of the reporting date, the carrying amount of the secured deposits is EUR 2,490 million. The bank provided collateral of the same amount in the form of securities.

11 Securities (current)

The securities classified as current are listed securities with a residual term of less than one year as well as securities which are intended for sale within a year.

12 Trade receivables

T 25

Figures in millions of euros

	2014	2013
Trade receivables	8,785	7,878
Assets held for sale		0
	8,785	**7,878**

Information about valuation allowances on trade receivables is contained in the credit risk section of the "Capital and risk management" chapter.

Of the trade receivables, EUR 9 million (previous year: EUR 10 million) are due in more than one year.

13 Other assets (current)

T 26

Figures in millions of euros

	2014	2013
Bank balances (term of more than 90 days)	303	130
Loan receivables	331	434
Receivables from finance leases	29	30
Derivative financial assets	52	50
Prepaid expenses	192	151
Receivables from tax authorities (without income tax receivables)	944	800
Receivables from board of management, associates	47	48
Sundry other receivables	373	278
	2,271	**1,921**
Assets held for sale		0
	2,271	**1,921**

The receivables from finance leases stem from products leased by the Security Systems division. As a rule, the agreed term is ten years. The receivables are due as follows:

T.77

Figures in millions of euros

	2014	2013
Gross capital expenditures on finance leases		
due not later than one year	39	39
due later than one year and not later than five years	121	117
due later than five years	54	54
	214	**210**
Present value of outstanding minimum lease payments		
due not later than one year	29	30
due later than one year and not later than five years	98	94
due later than five years	48	49
	175	**173**
Unearned finance income	**39**	**37**

There were no unguaranteed residual values.

The outstanding minimum lease payments from operating leases mainly stem from activities of the Security Systems division, and are due as follows:

T.78

Figures in millions of euros

	2014	2013
Due not later than one year	49	37
Due later than one year and not later than five years	125	103
Due later than five years	43	43
	217	**183**

14 Inventories

T.79

Figures in millions of euros

	2014	2013
Raw materials, consumables, and supplies	2,266	2,070
Work in process	1,364	1,236
Finished goods and merchandise	3,330	3,008
Prepayments	234	205
	7,194	**6,519**
Assets held for sale		0
	7,194	**6,519**

Of the total amount of inventories, an amount of EUR 234 million (previous year: EUR 247 million) is carried at the net realizable value. In the fiscal year, impairment reversals of EUR 31 million (previous year: impairment losses of EUR 20 million) were recognized in profit or loss. No inventories were pledged as collateral.

15 Non-current financial assets

130

Figures in millions of euros	2014	2013
Securities	8,731	8,531
Investments	1,179	1,278
Loan receivables	269	243
Receivables from finance leases	146	143
Derivative financial assets	58	23
Other receivables and other assets	169	143
	10,552	**10,461**
Assets held for sale		0
	10,552	**10,461**

Loans with a residual term of more than five years amount to EUR 1 million (previous year: EUR 1 million). There are no other receivables due in more than five years.

Information about valuation allowances on loan receivables and finance lease receivables is contained in the credit risk section of the "Capital and risk management" chapter.

Non-current securities and investments
The securities consist of interest-bearing and other securities as well as shares.

The pledged securities have a carrying amount of EUR 1,075 million (previous year: EUR 1,008 million). The pledged securities satisfy the legal requirement to secure obligations to employees and bank guarantees. Medium-term interest-bearing securities and units equivalent to at least the value of the claims were pledged.

Investments include unlisted investments amounting to EUR 577 million (previous year EUR 687 million). There is no active market for these investments; they are therefore carried at amortized cost. The decline in the number of unlisted investments is due above all to the first-time consolidation of subsidiaries that had previously not been consolidated. At the time of derecognition, these investments were stated at a carrying value of EUR 180 million. There were no material divestments of unlisted investments in the reporting period or in the previous year.

As of the reporting date, the group plans to sell unlisted investments on a small scale.

16 Property, plant, and equipment

T.31

Figures in millions of euros

	Land, buildings belonging to operating assets	Investment property	Plant and equipment	Other equipment, fixtures and furniture, leased assets	Prepayments and assets under construction	Total
Gross values 1/1/2013	**7,412**	**151**	**17,606**	**6,787**	**1,457**	**33,413**
Changes in consolidated group	108		409	11	64	592
Additions	210		791	508	1,030	2,539
Reclassifications	171	1	541	255	−968	
Disposals	−84	−37	−699	−553	−96	−1,469
Exchange differences	−366	−2	−864	−173	−64	−1,469
Gross values 12/31/2013	**7,451**	**113**	**17,784**	**6,835**	**1,423**	**33,606**
Depreciation 1/1/2013	**3,247**	**70**	**12,877**	**5,069**	**34**	**21,297**
Changes in consolidated group	26		195	7		228
Additions	259	1	1,106	642		2,008
Reclassifications	8		−30	30	−8	
Disposals	−53	−35	−648	−493	−1	−1,230
Write-ups	−4		−3			−7
Exchange differences	−175		−637	−121	−1	−934
Depreciation 12/31/2013	**3,308**	**36**	**12,860**	**5,134**	**24**	**21,362**
Carrying amounts 12/31/2013	**4,143**	**77**	**4,924**	**1,701**	**1,399**	**12,244**
Assets held for sale						0
						12,244
Gross values 1/1/2014	**7,451**	**113**	**17,784**	**6,835**	**1,423**	**33,606**
Changes in consolidated group	55		24	−40	12	51
Additions	193		715	570	1,107	2,585
Reclassifications	250	−7	640	196	−1,079	
Disposals	−334	−2	−1,263	−507	−44	−2,150
Exchange differences	173	2	513	135	45	868
Gross values 12/31/2014	**7,768**	**106**	**18,413**	**7,189**	**1,464**	**34,960**
Depreciation 1/1/2014	**3,308**	**36**	**12,860**	**5,134**	**24**	**21,362**
Changes in consolidated group	−7		−12	−34		−53
Additions	197	1	1,019	651		1,868
Reclassifications	−6		34	−21	−7	
Disposals	−281	−1	−1,149	−452	−3	−1,886
Write-ups	−3		−24	−1		−28
Exchange differences	54		303	88	1	446
Depreciation 12/31/2014	**3,262**	**36**	**13,031**	**5,365**	**15**	**21,709**
Carrying amounts 12/31/2014	**4,506**	**70**	**5,382**	**1,824**	**1,449**	**13,251**

In the past fiscal year, there were no indications that items of property, plant, and equipment could be impaired. Consequently, no impairment tests were conducted.

The total depreciation charge for the previous year contained the following impairment losses:

- Land and buildings: EUR 63 million
- Plant and equipment: EUR 124 million
- Other equipment, fixtures and furniture: EUR 27 million

The carrying amounts contain the following amounts from finance leases under which the Bosch Group is the lessee:

- Land and buildings: EUR 7 million (previous year: EUR 17 million)
- Plant and equipment: EUR 1 million (previous year: EUR 2 million)
- Other equipment, fixtures and furniture: EUR 12 million (previous year: EUR 5 million)

The obligations entered into to purchase items of property, plant, and equipment amounted to EUR 499 million (previous year: EUR 343 million), restrictions on title totaled EUR 6 million (previous year: EUR 1 million). Government grants for assets of EUR 19 million (previous year: EUR 12 million) were deducted from the additions in the reporting period.

Investment property comprises rented properties which were measured at amortized cost. Measured at fair value, the portfolio comes to EUR 150 million (previous year: EUR 141 million). The fair values were calculated at corporate headquarters. The land and buildings allocated to level 3 of the fair value hierarchy pursuant to IFRS 13 are measured as follows: land in Germany (fair value: EUR 45 million) is valued on the basis of existing purchase offers, residential property in Germany and Asia (fair value: EUR 105 million) is valued using the discounted earnings or comparative method, based on the ImmoWertV (Verordnung über die Grundsätze für die Ermittlung der Verkehrswerte von Grundstücken. Ordinance on principles to assess the market value of land) and taking the current fabric and market values of the individual properties into account. The rental income from investment property came to EUR 7 million (previous year: EUR 9 million), maintenance expenses totaled EUR 3 million (previous year: EUR 5 million).

A review of the useful lives of property, plant, and equipment revealed that special-purpose machinery is used for a longer period than previously estimated. The useful life on which depreciation is based was therefore extended to eight years. The effect of this change on the depreciation of property, plant, and equipment is presented in the following table.

[illegible]

Figures in millions of euros

	2014	2015	2016	2017–2020
Depreciation of property, plant, and equipment	–105	–19	22	281

17 Intangible assets

T33

Figures in millions of euros

	Acquired intangible assets (without goodwill)	Acquired goodwill	Internally generated intangible assets	Total
Gross values 1/1/2013	**3,070**	**5,352**	**1,047**	**9,469**
Changes in consolidated group	673	213	37	923
Additions	112	14	271	397
Disposals	−135	−74	−184	−393
Exchange differences	−92	−64		−156
Gross values 12/31/2013	**3,628**	**5,441**	**1,171**	**10,240**
Amortization 1/1/2013	**1,565**	**756**	**536**	**2,857**
Changes in consolidated group	10			10
Additions	291	39	223	553
Disposals	−132		−184	−316
Exchange differences	−37	−5		−42
Amortization 12/31/2013	**1,697**	**790**	**575**	**3,062**
Carrying amounts 12/31/2013	**1,931**	**4,651**	**596**	**7,178**
Assets held for sale				0
				7,178
Gross values 1/1/2014	**3,628**	**5,441**	**1,171**	**10,240**
Changes in consolidated group	13	−29		−16
Additions	185	4	270	459
Disposals	−96	−668	−199	−963
Exchange differences	178	100		278
Gross values 12/31/2014	**3,908**	**4,848**	**1,242**	**9,998**
Amortization 1/1/2014	**1,697**	**790**	**575**	**3,062**
Changes in consolidated group	1			1
Additions	274		227	501
Disposals	−89	−668	−199	−956
Exchange differences	46	6		52
Amortization 12/31/2014	**1,929**	**128**	**603**	**2,660**
Carrying amounts 12/31/2014	**1,979**	**4,720**	**639**	**7,338**

The amount of amortization for the fiscal year contains the following impairment losses:

- Purchased intangible assets (without goodwill): EUR 0 million (previous year: EUR 7 million)
- Internally generated intangible assets: EUR 64 million (previous year: EUR 69 million)

The goodwill of EUR 4,720 million (previous year: EUR 4,651 million) is attributable to the divisions (cash generating units) as follows:

T.34

Figures in millions of euros

	2014	2013
Gasoline Systems	300	271
Diesel Systems	54	54
Automotive Aftermarket	351	313
Drive and Control Technology	2,115	2,161
Packaging Technology	96	96
Power Tools	362	347
Security Systems	351	333
Thermotechnology	998	996
Other	93	80
	4,720	**4,651**

Goodwill is subjected to an annual impairment test. An impairment loss is recorded when the recoverable amount is below the carrying amount of the cash-generating unit. The recoverable amount is derived from the future cash flows. The cash flows are based on business plans with a planning period of five years.

The parameters used in impairment testing are presented in the following table.

T.35

Percentage figures

	Mobility Solutions		Industrial Technology		Consumer Goods		Energy and Building Technology	
	2014	2013	2014	2013	2014	2013	2014	2013
Growth rate	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0
Pre-tax discount rate	11.9	12.5	11.4	12.1	11.2	12.7	10.4	11.5

A risk-free interest rate of 2.1 percent (previous year: 2.5 percent) and a market risk premium of 6.0 percent (previous year: 6.0 percent) were assumed. The standard tax rate used is 29 percent (previous year: 29 percent).

In the reporting period, the annual impairment test did not give rise to any impairment requirement for goodwill. Neither an increase in the discounting rate by 0.5 of a percentage point nor a decrease in the growth rate used after the detailed planning period by 0.5 of a percentage point would have led to the impairment of goodwill.

18 Current and non-current financial liabilities

T.36

Figures in millions of euros

	2014		2013	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Bonds		4,223		3,233
Promissory loans		154	346	154
Liabilities to banks	185	648	177	613
Other financial liabilities		3	15	3
	185	**5,028**	**538**	**4,003**
Liabilities held for sale			0	0
	185	**5,028**	**538**	**4,003**

Financial liabilities amounting to EUR 2,576 million (previous year: EUR 1,952 million) are due in more than five years.

Bond conditions

T.37

Currency figures in millions of euros

Interest terms	Interest rate	Beginning of term	End of term	Currency	Nominal value	Fair value 12/31/2014
Fixed	4.375%	05/2006	05/2016	EUR	750	793
Fixed	5.125%	06/2009	06/2017	EUR	600	673
Fixed	5.000%	08/2009	08/2019	EUR	300	364
Fixed	1.543%	08/2012	08/2017	EUR	100	103
Fixed	1.625%	05/2013	05/2021	EUR	500	534
Fixed	2.625%	05/2013	05/2028	EUR	750	862
Fixed	2.979%	05/2013	05/2033	EUR	250	301
Fixed	1.750%	07/2014	07/2024	EUR	750	810
Fixed	2.950%	07/2014	07/2039	EUR	250	295

19 Trade payables

138

Figures in millions of euros

	2014	2013
Trade payables	3,578	3,220
Notes payable	21	15
	3,599	**3,235**
Liabilities held for sale		0
	3,599	**3,235**

There are no trade payables which are due in more than one year.

20 Other liabilities and provisions

Other liabilities

139

Figures in millions of euros

	2014		2013	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Loans	83	10	142	18
Accruals in the personnel area	1,671		1,439	
Accruals in the sales and marketing area	521		460	
Other accruals	368		355	
Deferred income	142		146	
Tax liabilities (without income tax liabilities)	413		359	
Finance lease obligations	4	14	5	11
Deferred income from tooling compensation received	16	33	21	25
Prepayments received for inventories	484		533	
Derivative financial liabilities	94	16	55	33
Sundry other liabilities	819	99	790	99
	4,615	**162**	**4,305**	**186**
Liabilities held for sale			0	0
	4,615	**162**	**4,305**	**186**

There are neither loans nor sundry other liabilities due in more than five years in the fiscal year 2014 (previous year: EUR 1 million in each case).

The accruals in the personnel area mainly relate to vacation and salary entitlements as well as accrued special payments, while those in the sales and marketing area mainly pertain to bonus and commission payments.

Finance lease obligations primarily stem from vehicle lease agreements with terms of three to six years. The liabilities are due as follows:

T.40

Figures in millions of euros

	2014	2013
Future minimum lease payments		
due not later than one year	6	6
due later than one year and not later than five years	16	12
due later than five years	8	9
Interest portion contained in the future minimum lease payments		
due not later than one year	2	1
due later than one year and not later than five years	6	5
due later than five years	4	5
Present value of outstanding minimum lease payments		
due not later than one year	4	5
due later than one year and not later than five years	10	7
due later than five years	4	4
	18	**16**

Provisions (without income tax provisions and pension provisions)

T.41

Figures in millions of euros

	2014		2013	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Tax provisions (without income tax provisions)	25	86	17	63
Provisions in the personnel area	709	1,208	636	1,124
Provisions in the sales and marketing area	1,937	933	1,510	969
Other provisions	568	1,218	663	1,169
	3,239	**3,425**	**2,826**	**3,325**
Liabilities held for sale			0	0
	3,239	**3,425**	**2,826**	**3,325**

Provisions developed as follows:

T.42

Figures in millions of euros

	At 1/1/2014	Changes in consolidated group	Amounts used	Amounts reversed	Increase incl. increase in discounted amount	Exchange adjustments	At 12/31/2014
Tax provisions	860		–74	–68	164	4	886
Provisions in the personnel area	1,760	–1	–483	–99	731	9	1,917
Provisions in the sales and marketing area	2,479	–3	–840	–366	1,519	81	2,870
Other provisions	1,832	4	–322	–112	361	23	1,786
	6,931	**0**	**–1,719**	**–645**	**2,775**	**117**	**7,459**

Of the total increase in provisions, an amount of EUR 49 million (previous year: EUR 40 million) relates to increases in the discounted amount.

Provisions in the personnel area relate to obligations from personnel adjustment measures, from early phased retirement, and from other special benefits for which the time or amount cannot yet be precisely determined. Provisions in the sales and marketing area mainly take account of losses from delivery and warranty obligations, including risks from recall, exchange, and product liability cases. Other provisions are recognized, among other things, for risks from restructuring, purchasing obligations, renewal obligations for rent and lease agreements, litigation risks, and antitrust risks.

Contingent liabilities and other financial obligations

No provisions were recognized for the following contingent liabilities, as it is more likely than not that they will not occur.

T.43

Figures in millions of euros

	2014	2013
Contingent liabilities related to notes issued and transferred	25	17
Contingent liabilities from guarantees	14	526
Other contingent liabilities	16	10
	55	**553**

Obligations from operating leases mainly pertain to lease agreements for technical equipment, for IT equipment, for vehicles, and for buildings. The minimum amount of the undiscounted future payments from operating leases amounts to EUR 670 million (previous year: EUR 600 million).

The obligations are due as follows:

T.40

Figures in millions of euros

	2014	2013
Due not later than one year	213	192
Due later than one year and not later than five years	372	322
Due later than five years	85	86
	670	600

The payments of the period of EUR 249 million (previous year: EUR 228 million) recognized in profit or loss are contained in the costs of the functional areas (cost of sales, and distribution, administrative, and research and development cost).

21 Pension provisions and similar obligations

Associates of the companies included in the consolidated financial statements have certain rights in connection with the company pension scheme, depending on the conditions existing in the various countries. The benefit obligations include both currently claimed benefits and future benefit obligations of active associates or associates that have left the company.

The group's post-employment benefits include both defined contribution plans and defined benefit plans. In the case of defined contribution plans, the company pays voluntary contributions to state or private pension or insurance funds, based on legal or contractual provisions. No further payment obligations arise for the company from the payment of these contributions. The defined benefit plans are funded or unfunded pension systems, or systems financed by insurance premiums.

The major pension and post-retirement medical-care plans operated by the Bosch Group are described below. These plans are subject to actuarial risks such as longevity risks, interest fluctuation risks, and capital market risks.

Germany

The company pension scheme (Bosch bAV Plan), introduced on January 1, 2006, is a contribution-based plan with salary-based contributions. The Bosch bAV Plan is partly funded via an external pension fund. The value of the assets of the external pension fund is offset against the pension obligation calculated using the projected unit credit method. In Germany, the external pension funds are Bosch Pensionsfonds AG and Bosch Hilfe e.V.

During the vesting period, employer and employee contributions are added to the assets of Bosch Pensionsfonds AG up to the tax-allowed ceiling. Contributions that exceed the tax-allowed ceiling are allocated to the unfunded obligation. The benefit amount rises in line with the performance of Bosch Pensionsfonds. Grandfather provisions were transferred to the Bosch bAV Plan. For a constantly decreasing number of employees in the vesting period, a transitional arrangement guarantees a fixed rate of return on the defined benefit obligation.

On reaching retirement, or in the event of occupational disability or death, the earned benefits are paid out in the form of a lump-sum payment, pension payments, or a lifelong annuity.

Japan
The majority of the pension obligations are corporate pension plans (CPPs), generally in the form of funded career average pension plans. The benefits are based on salary-based contributions that are subject to interest. The rate of return depends on the structure of the plan.

There are also obligations from unfunded retirement allowance plans (RAPs), the benefits of which are based on years of service and final salary.

All the benefits are paid out in the form of lump-sum payments on termination, death, or reaching retirement age. In some CPPs, annuity payments are possible for associates after a certain period of service.

Switzerland
Bosch has a funded pension plan. The Bosch pension plan is organized as a foundation. All the demographic and financial risks are borne by the foundation and regularly assessed by the foundation's board of trustees. In the case of a deficit, adjustments can be made such as a change in the pension factors or an increase in future contributions.

Pension plans are governed by the BVG (Bundesgesetz über die berufliche Alters-, Hinterlassenen- und Invalidenvorsorge: Swiss Pension Fund Law). All benefits are defined by law, and the BVG stipulates the minimum benefits to be paid. The Bosch pension plan meets all legal requirements.

Both employer and associates make contributions to the Bosch pension plan. The benefits are paid out either as a lump sum or a lifelong annuity.

United Kingdom
Bosch finances a closed final-salary pension plan. The obligation is funded via a trust association which is legally independent of Bosch, and which is operated in accordance with the law. The trustees are required to comply with the legal requirements. The plan is in deficit and is being restructured.

The benefits earned are paid out on reaching retirement age, or in the event of occupational disability or death.

United States
Bosch maintains the Bosch pension plan and eight additional smaller pension plans, all of which are funded and in line with the ERISA requirements. The legal minimum funding provisions therefore apply to these plans. The Bosch pension plan is a cash balance plan under which the benefits depend on age, term of service, and salary. Benefits are paid out on reaching retirement age or in the event of death. The plan does not accept new members.

Two unfunded pension plans are also closed for new members; these provide benefits for certain members of management or for members of the Bosch pension plan whose income lies above the statutory contribution assessment basis. The benefits depend on age, term of service, and salary, and are paid out on reaching retirement age or in the event of death.

In addition, Bosch finances thirteen unfunded plans for post-employment medical care. Eight plans are already closed. The level of benefits and the contributions for pensioners vary depending on location, age, and term of service. The benefits include healthcare benefits and life assurance contributions for pensioners and their spouses.

Actuarial calculations and estimates are made for all defined benefit plans. Besides assumptions about life expectancy, and taking index-linked developments into account, the calculations are based on the following parameters, which vary from one country to another depending on local economic circumstances:

T.45

Percentage figures

	Germany		Japan		Switzerland		UK		USA		Total	
	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013
Discount factor	2.0	3.5	0.6	1.0	1.4	2.3	3.4	4.4	4.0	4.8	2.3	3.6
Future salary increases	3.0	3.0	2.5	2.5	2.0	2.0	3.8	4.1	3.5	3.5	3.0	3.0
Pension increases	1.8	1.8	n.a.	n.a.	0.1	0.2	3.0	3.1	n.a.	n.a.	1.6	1.6

n.a. not applicable

To determine the discount factor in the euro zone, reference was made to bonds which were rated AA by at least one rating agency as of the reporting date.

The estimates of future salary increases are made, among other things, on the basis of the economic situation and inflation.

The pension plans are measured using the current mortality tables as of December 31 of the fiscal year concerned. As of December 31, 2014, the following mortality tables are used in the key countries:

T.46

Germany	Heubeck 2005G mortality tables
Japan	EPF 2009
Switzerland	BVG 2010 generation tables for pensioners, BVG 2010 P19 for future beneficiaries
UK	S1PXA with 2011 CMI projections
USA	RP2014, projected by MP2014; unadjusted

For the key regions, the present value of the defined benefit obligation can be reconciled to the provision as follows:

1.47

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
At 12/31/2014					
Germany	11,409	−2,400			9,009
Japan	217	−203	14		28
Switzerland	997	−961	2		38
UK	281	−203			78
USA	1,796	−1,320			476
Other	458	−160	1	7	306
	15,158	**−5,247**	**17**	**7**	**9,935**
At 12/31/2013					
Germany	9,055	−2,064	0		6,991
Japan	211	−184	1		28
Switzerland	920	−906	10		24
UK	222	−170			52
USA	1,382	−1,091			291
Other	352	−141	4	12	227
	12,142	**−4,556**	**15**	**12**	**7,613**

The development of the net liability of the defined benefit obligation is presented in the following table:

T.48

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
At 1/1/2014	**12,142**	**–4,556**	**15**	**12**	**7,613**
Pension cost charged to profit or loss					
Current service cost	439				439
Past service cost	–7				–7
Gains from plan settlements not related to past service cost	–2				–2
Net interest income/expense	427	–172		2	257
Other		6			6
	857	**–166**	**0**	**2**	**693**
Remeasurement					
Return on plan assets (excluding amounts included in net interest)		–196			–196
Losses arising from changes in demographic assumptions	46				46
Losses from changes in financial assumptions	2,356				2,356
Experience losses	65				65
Other adjustments				–7	–7
	2,467	**–196**	**0**	**–7**	**2,264**
Contributions					
Employer		–335			–335
Beneficiaries	16	–16			0
	16	**–351**	**0**	**0**	**–335**
Benefits paid	–536	189			–347
Special effects (plan settlement)					0
Transfers	12	1			13
Currency translation	251	–192			59
Changes in consolidated group	–51	24			–27
Changes in other assets			2		2
At 12/31/2014	**15,158**	**–5,247**	**17**	**7**	**9,935**

149

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
At 1/1/2013	**12,003**	**–4,282**	**1**	**10**	**7,732**
Pension cost charged to profit or loss					
Current service cost	442				442
Past service cost	1				1
Gains from plan settlements not related to past service cost	–1				–1
Net interest income/expense	423	–149		1	275
Other	0	6			6
	865	**–143**	**0**	**1**	**723**
Remeasurement					
Return on plan assets (excluding amounts included in net interest)		–236			–236
Losses arising from changes in demographic assumptions	33				33
Losses from changes in financial assumptions	73				73
Experience gains	–32				–32
Other adjustments		0		4	4
	74	**–236**	**0**	**4**	**–158**
Contributions					
Employer		–319			–319
Beneficiaries	15	–15			0
	15	**–334**	**0**	**0**	**–319**
Benefits paid	–649	315			–334
Special effects (plan settlement)	2	–2			0
Transfers	–1	0			–1
Currency translation	–169	127		–3	–45
Changes in consolidated group	2	–1			1
Changes in other assets			14		14
At 12/31/2013	**12,142**	**–4,556**	**15**	**12**	**7,613**

The fund assets comprise the following components:

T.50

Percentage figures

	Germany		Japan		Switzerland		UK		USA	
	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013
Cash and cash equivalents	1	2	1	0	6	5			3	1
Equity instruments	38	36	40	41	25	21	40	46	43	48
of which Europe	50	58	10	11	53	55	58	70	14	14
of which North America	23	17	25	24	34	32	22	15	72	73
of which Asia Pacific	18	16	65	65	7	8	16	12	8	7
of which emerging markets	9	9			5	5	4	3	6	6
of which other					2	0			0	0
Debt instruments	48	48	54	53	23	22	54	48	54	51
of which government bonds	41	46	85	83	33	36	28	29	35	35
of which corporate bonds	50	43	5	6	52	39	72	71	65	65
of which other debt instruments	9	11	10	11	15	25				
Property	8	8			33	35				
Insurance			5	5			4	4		
Other	5	6	0	1	13	17	2	2		

Quoted prices in an active market are available for the asset classes cash, equity instruments, and debt instruments. For most other classes of assets, there are no quoted prices in an active market.

Duration and estimated maturities of the pension obligation

The weighted duration of the pension obligation as of December 31, 2014, is 15.5 years (previous year: 14.7 years).

Estimated maturities of the undiscounted estimated pension payments

T.51

Figures in millions of euros

	2014	2013
Less than one year	565	501
Between one and two years	550	526
Between two and three years	580	531
	1,695	**1,558**

The estimated additions to plan assets in the fiscal year 2015 amount to EUR 318 million (previous year: EUR 343 million).

The estimated benefits to be paid directly in the fiscal year 2015 amount to EUR 354 million (previous year: EUR 328 million).

Sensitivity of the pension provision relating to actuarial parameters:

T.52

Percentage figures

	Germany		Japan		Switzerland		UK		USA	
	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013
Discount rate										
Increase of 0.5 percentage points	−6.7	−6.0	−4.9	−4.3	−4.9	−5.0	−9.0	−8.5	−6.5	−6.1
Decrease of 0.5 percentage points	7.4	6.7	5.3	3.8	5.5	5.6	10.2	9.6	7.3	6.8
Salary increase										
Increase of 0.25 percentage points	0.1	0.1	0.7	0.7	0.3	0.3	0.9	0.9	0.0	0.0
Decrease of 0.25 percentage points	−0.1	−0.1	−0.7	−0.7	−0.3	−0.3	−0.8	−0.8	0.0	0.0
Pension increase										
Increase of 0.25 percentage points	0.7	0.7	n.a.	n.a.	2.5	2.5	1.5	1.5	n.a.	n.a.
Decrease of 0.25 percentage points	−0.6	−0.6	n.a.	n.a.	−2.4	−2.4	−1.4	−1.4	n.a.	n.a.
Life expectancy										
Increase by one year	2.1	2.1	n.a.	n.a.	3.3	3.3	4.1	4.1	2.7	2.7

n.a. not applicable

The sensitivity analyses of the defined benefit obligation for the main actuarial assumptions are based on the same methods as those used for the post-employment benefit obligations presented in the consolidated statement of financial position (projected unit credit method). In each case, one assumption was changed leaving the other assumptions unchanged. This means that possible correlation effects were not considered.

Defined contribution plans
Expenses for defined contribution plans amounted to EUR 899 million (previous year: EUR 841 million).

22 Equity

The issued capital of EUR 1,200 million and capital reserve of EUR 4,557 million correspond to the items of the statement of financial position disclosed by Robert Bosch GmbH. The issued capital is divided between the shareholders as follows:

Shareholders of Robert Bosch GmbH

T.53

Percentage figures

	Shareholding	Voting rights
Robert Bosch Stiftung GmbH	92.0	
Robert Bosch Industrietreuhand KG		93.2
Bosch family	7.4	6.8
Robert Bosch GmbH (treasury stock)	0.6	

Retained earnings contain profits that have not been distributed and that were generated in the past by the entities included in the consolidated financial statements, as well as other comprehensive income. The effects of changes in actuarial parameters in the pension provisions are disclosed in the "Other changes" column of other comprehensive income. This position also contains differences between purchase price and purchased pro-rata equity of additional share purchases.

Retained earnings also consider treasury stock of EUR 62 million.

The unappropriated earnings of the group match those of Robert Bosch GmbH.

Non-controlling interests
The shares of non-controlling interests in the equity of the consolidated subsidiaries mainly comprise the non-controlling interests in United Automotive Electronic Systems Co., Ltd., Shanghai, Bosch Automotive Diesel Systems Co., Ltd., Wuxi, both China, and Bosch Ltd., Bangalore, India.

Other notes

23 Statement of cash flows

The statement of cash flows presents cash inflows and outflows from operating activities, investing activities, and financing activities. The presentation was changed in the fiscal year 2014 to the extent that the statement of cash flows takes EBIT as the starting point. The previous year's figures have been presented in a comparable format.

The cash flow is derived indirectly, starting from EBIT. EBIT is earnings before taxes and before the financial result. Cash inflows from operating activities are adjusted for non-cash expenses and income (mainly depreciation of non-current assets), and take into account cash-effective financial expenses, financial income, and taxes, as well as changes in working capital.

The investing activities mainly comprise additions to non-current assets, including leased assets and the purchase and disposal of subsidiaries and other business entities, as well as of securities.

Financing activities combine the inflows and outflows of cash and cash equivalents from borrowing and repayment of financial liabilities, from dividends, and from the acquisition of non-controlling interests.

Changes in items of the statement of financial position contained in the statement of cash flows cannot be directly derived from the statement of financial position, as these have been adjusted for exchange-rate effects and changes in the consolidated group. The change in accounting for pensions is adjusted to eliminate actuarial gains and losses.

The liquidity contained in the statement of cash flows contains cash of EUR 5,513 million (previous year: EUR 3,799 million). In the reporting period, there was no transfer restriction for cash and cash equivalents.

Effects of acquisitions on the cash flow are explained in the section on business combinations.

24 Segment reporting

Business sector data

Sales and earnings of continuing operations

T.54

Figures in millions of euros

	Mobility Solutions		Industrial Technology		Consumer Goods	
	2014	2013	2014	2013	2014	2013
External sales	33,318	30,588	6,709	6,844	4,179	3,979
EBIT	2,402	2,359	67	–83	549	415

Disclosures including discontinued operations

T.55

Figures in millions of euros

	Mobility Solutions		Industrial Technology		Consumer Goods	
	2014	2013	2014	2013	2014	2013
External sales	33,318	30,588	6,709	6,844	4,179	3,979
Intersegment sales	254	137	237	180	35	34
Total sales	33,572	30,725	6,946	7,024	4,214	4,013
EBIT	2,402	2,359	67	–83	549	415
of which: profit from entities consolidated using the equity method	32	8	1		223	154
Non-cash expenses (without depreciation)	2,425	2,186	456	381	210	235
Amortization and depreciation	1,759	1,657	254	282	127	137
Impairment losses on intangible assets and property, plant, and equipment	64	81		116		16
Non-cash income	448	556	102	93	35	35
Assets	10,881	9,400	2,901	2,828	1,664	1,542
Investments measured at equity	445	424	29		1,192	1,245

	Energy and Building Technology		All other segments		Consolidation		Group	
	2014	2013	2014	2013	2014	2013	2014	2013
	4,627	4,551	118	106			48,951	46,068
	171	106	-159	-46			3,030	2,751

	Energy and Building Technology		All other segments		Consolidation		Group	
	2014	2013	2014	2013	2014	2013	2014	2013
	4,627	4,551	138	412			48,971	46,374
	17	21			-543	-372		
	4,644	4,572	138	412	-543	-372	48,971	46,374
	171	106	-183	-1,319			3,006	1,478
							256	162
	244	1,118	135	9			3,470	3,929
	135	140	20	16			2,305	2,232
		83		33			64	329
	95	64	55	15			735	763
	1,586	1,913	257	58			17,289	15,741
							1,666	1,669

Based on the internal management and reporting structure, the Bosch Group is divided into four business sectors. These are the reportable segments and result from the combination of divisions in accordance with the criteria set forth in IFRS 8. The operating business within the business sectors is the responsibility of the divisions.

From the start of the fiscal year 2015 onwards, the business sectors have had English designations only. The renaming did not have any substantive effect, i.e., in terms of the activities allocated to the individual business sectors.

The Mobility Solutions (formerly Automotive Technology) business sector mainly consists of the following business segments: injection technology for internal-combustion engines, alternative powertrain concepts, efficient and networked powertrain peripherals, systems for active and passive driving safety, assistance and comfort functions, technology for user-friendly infotainment as well as car-to-car and Car2X communication, and concepts, technology, and services for the automotive aftermarket.

The Industrial Technology business sector combines the following activities:

- Automation technology (technologies for drives, controls, and motion)
- Packaging technology (machinery and packaging lines for the confectionery, foodstuffs, beverage, and tobacco industry, as well as for the pharmaceuticals industry)

The operations of the Consumer Goods business sector comprise the production and distribution of

- Power tools (tools for the trade, industry, and DIY, accessories, garden tools, as well as industrial tools and measuring equipment)
- Household appliances (appliances for cooking, washing-up, washing, drying, cooling, freezing, floor care, etc.). These business activities are included in the consolidated financial statements using the equity method

The Energy and Building Technology business sector comprises the following activities:

- Heating systems (heating and hot-water boilers including open- and closed-loop control systems)
- Security systems (video surveillance, public address systems, evacuation systems, and access control)
- Services to increase energy-efficiency in non-residential buildings

Business segments which are not reportable are combined and presented in the category "All other segments." This mainly relates to financial and holding companies as well as other service companies. From the fiscal year 2014 onwards, the remaining activities in the photovoltaics area are likewise allocated to the "All other segments" category. The previous-year disclosures were presented accordingly.

Positions that belong to financing activities are not included in the segment reporting.

Operating value contribution is the main controlling parameter of our value-based management. In addition to this earnings ratio, the internal reporting to management also reports EBIT at segment level.

Transfer prices between the business segments are determined at arm's length.

The main items included in non-cash expenses are bad debt allowances, additions to provisions, as well as losses on the disposal of items of property, plant, and equipment and of intangible assets.

The main items included in non-cash income are income from the reversal of provisions as well as gains on the disposal of items of property, plant, and equipment and of intangible assets.

Segment assets comprise trade receivables as well as inventories, in both cases before valuation allowances.

Reconciliation statements

T.50

Figures in millions of euros

	2014	2013
Sales		
Sales by reportable segment	49,376	46,334
Sales of all other segments	138	412
Consolidation	−543	−372
	48,971	**46,374**
Discontinued operations	20	306
Group sales	**48,951**	**46,068**
EBIT		
EBIT by reportable segment	3,189	2,797
EBIT of all other segments	−183	−1,319
Financial income	2,114	1,535
Financial expenses	−1,769	−1,466
	3,351	**1,547**
Discontinued operations	−24	−1,280
Profit before tax	**3,375**	**2,827**
Assets		
Assets by reportable segment	17,032	15,683
Assets of all other segments	257	58
Impairment losses on segment assets	−1,310	−1,344
Other current assets	9,329	6,603
Non-current assets	36,616	34,725
	61,924	**55,725**
Assets held for sale		0
Group assets	**61,924**	**55,725**

Disclosures by important country

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Figures in millions of euros

	Sales by registered office of the customer		Non-current assets[1]	
	2014	2013	2014	2013
Europe	**26,057**	**25,766**	**13,554**	**13,180**
of which Germany	10,858	10,720	8,859	8,481
of which France	2,211	2,350	218	233
of which the U.K.	2,302	2,151	263	209
of which Italy	1,799	1,765	485	494
Americas	**9,939**	**9,498**	**2,340**	**2,183**
of which the U.S.	7,352	6,715	1,820	1,726
Asia	**12,308**	**10,414**	**4,646**	**4,012**
of which China	6,383	5,009	3,000	2,536
of which Japan	1,962	1,956	468	493
Other regions	**667**	**696**	**49**	**47**
	48,971	**46,374**	**20,589**	**19,422**
Discontinued operations	20	306		0
Group	**48,951**	**46,068**	**20,589**	**19,422**

[1] The non-current assets consist of intangible assets and property, plant, and equipment

The customer structure of the Bosch Group in the reporting period does not reveal any concentration on individual customers.

25 Additional disclosures on financial instruments

Net profit/loss by category

The table below presents the net effects of financial instruments recognized in the income statement, classified by the categories defined in IAS 39:

X.30

Figures in millions of euros

	2014	2013
Loans and receivables	230	–299
Available-for-sale financial assets	693	410
Assets and liabilities held for trading	–285	34
Financial liabilities measured at amortized cost	–213	–266

The net profit/loss contains the result of the receivables and loan valuation, the result of the reversal of the reserve from securities in equity, exchange-rate gains and losses, interest income and expenses, as well as the result from derivatives.

The valuation gains and losses from securities and equity investments are presented in the statement of comprehensive income.

Book values, carrying amounts, and fair values by category

T 59

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 2014	Carrying amount pursuant to IAS 39			Carrying amount pursuant to IAS 17	Fair value 2014
			(Amortized cost)	Fair value recognized in other comprehensive income	Fair value recognized in profit or loss		
Assets							
Cash and cash equivalents	LaR	5,513	5,513				
Current securities		1,076					
Available-for-sale financial assets	AfS	1,076		1,076			1,076
Trade receivables	LaR	8,785	8,785				
Other current assets		2,271					
Receivables from finance leases	n.a.	29				29	
Other financial assets	LaR	952	952				
Derivative financial assets	FAHfT	52			52		52
Non-financial assets within the meaning of IFRS 7	n.a.	1,238					
Non-current financial assets		10,552					
Available-for-sale financial assets	AfS	8,731		8,731			8,731
Investments	AfS	1,179	577	602			602
Derivative financial assets	FAHfT	58			58		58
Receivables from finance leases	n.a.	146				146	
Other financial assets	LaR	354	354				351
Non-financial assets within the meaning of IFRS 7	n.a.	84					

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 2014	Carrying amount pursuant to IAS 39			Carrying amount pursuant to IAS 17	Fair value 2014
			(Amortized cost)	Fair value recognized in other comprehensive income	Fair value recognized in profit or loss		
Equity and liabilities							
Trade payables	FLAC	3,599	3,599				
Current financial liabilities		185					
Liabilities to banks	FLAC	185	185				
Current other liabilities		4,615					
Derivative financial liabilities	FLHfT	94			94		94
Finance lease obligations	n.a.	4				4	
Sundry financial liabilities	FLAC	811	811				
Other non-financial liabilities within the meaning of IFRS 7	n.a.	3,706					
Non-current financial liabilities		5,028					
Bonds	FLAC	4,223	4,223				4,735
Promissory loans	FLAC	154	154				188
Liabilities to banks	FLAC	648	648				677
Other financial liabilities	FLAC	3	3				3
Other non-current liabilities		162					
Derivative financial liabilities	FLHfT	16			16		16
Finance lease obligations	n.a.	14				14	
Sundry financial liabilities	FLAC	54	54				56
Other non-financial liabilities within the meaning of IFRS 7	n.a.	78					

LaR Loans and receivables
AfS Available-for-sale financial assets
FAHfT Financial assets held for trading
FLAC Financial liabilities measured at amortized cost
FLHfT Financial liabilities held for trading
n.a. not applicable

T 60

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 2013	Carrying amount pursuant to IAS 39			Carrying amount pursuant to IAS 17	Fair value 2013
			(Amortized cost)	Fair value recognized in other comprehensive income	Fair value recognized in profit or loss		
Assets							
Cash and cash equivalents	LaR	3,799	3,799				
Current securities		593					
Available-for-sale financial assets	AfS	593		593			593
Trade receivables	LaR	7,878	7,878				
Other current assets		1,921					
Receivables from finance leases	n.a.	30				30	
Other financial assets	LaR	802	802				
Derivative financial assets	FAHfT	50			50		50
Non-financial assets within the meaning of IFRS 7	n.a.	1,039					
Non-current financial assets		10,461					
Available-for-sale financial assets	AfS	8,631		8,631			8,631
Investments	AfS	1,278	687	591			591
Derivative financial assets	FAHfT	23			23		23
Receivables from finance leases	n.a.	143				143	
Other financial assets	LaR	311	311				312
Non-financial assets within the meaning of IFRS 7	n.a.	75					

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 2013	Carrying amount pursuant to IAS 39			Carrying amount pursuant to IAS 17	Fair value 2013
			(Amortized cost)	Fair value recognized in other comprehensive income	Fair value recognized in profit or loss		
Equity and liabilities							
Trade payables	FLAC	3,235	3,235				
Current financial liabilities		538					
Promissory loans	FLAC	346	346				
Liabilities to banks	FLAC	177	177				
Other financial liabilities	FLAC	15	15				
Current other liabilities		4,305					
Derivative financial liabilities	FLHfT	55			55		55
Finance lease obligations	n.a.	5				5	
Sundry financial liabilities	FLAC	846	846				
Other non-financial liabilities within the meaning of IFRS 7	n.a.	3,399					
Non-current financial liabilities		4,003					
Bonds	FLAC	3,233	3,233				3,394
Promissory loans	FLAC	154	154				186
Liabilities to banks	FLAC	613	613				634
Other financial liabilities	FLAC	3	3				3
Other non-current liabilities		185					
Derivative financial liabilities	FLHfT	33			33		33
Finance lease obligations	n.a.	11				11	
Sundry financial liabilities	FLAC	76	76				79
Other non-financial liabilities within the meaning of IFRS 7	n.a.	65					

The carrying amounts of the financial assets and liabilities, classified by the categories of IAS 39, are as follows:

T.61

Figures in millions of euros

	2014	2013
Loans and receivables	15,604	12,790
Available-for-sale financial assets	10,986	10,502
Financial assets held for trading	110	73
Financial liabilities measured at amortized cost	9,677	8,698
Financial liabilities held for trading	110	88

Composition of the derivative financial instruments

T.62

Figures in millions of euros

	Market values				Nominal values	
	2014	2014	2013	2013	2014	2013
	up to 1 year	more than 1 year	up to 1 year	more than 1 year		
Derivatives with a positive market value						
Interest derivatives	**0**		**0**	**0**	**2**	**133**
of which interest swaps				0		114
of which other interest derivatives	0		0		2	19
Foreign currency derivatives	**45**	**1**	**45**	**2**	**1,568**	**2,686**
Other derivatives	**7**	**57**	**5**	**21**	**80**	**56**
Derivatives with a negative market value						
Interest derivatives	**1**	**1**	**1**	**1**	**77**	**296**
of which interest swaps	0	1	1	1	11	327
of which other interest derivatives	1		0	0	66	69
Foreign currency derivatives	**66**	**1**	**37**	**19**	**4,413**	**2,662**
Other derivatives	**27**	**14**	**17**	**13**	**398**	**206**

The foreign currency derivatives are mainly forward exchange contracts.

The fair values of the financial assets and financial liabilities in accordance with IFRS 13 are derived as follows:

T.63

Figures in millions of euros

	Category pursuant to IAS 39	Level 1[1]		Level 2[2]		Total	
		2014	2013	2014	2013	2014	2013
Financial assets							
Investments	AfS	602	591			602	591
Derivative financial instruments	FAHfT	5	1	105	72	110	73
of which current		5	1	47	49	52	50
of which non-current				58	23	58	23
Available-for-sale financial assets	AfS	3,829	3,231	5,978	5,993	9,807	9,224
of which current		563	105	513	488	1,076	593
of which non-current		3,266	3,126	5,465	5,505	8,731	8,631
Other financial assets	LaR			351	312	351	312
Financial liabilities							
Derivative financial instruments	FLHfT	2	4	108	84	110	88
of which current		2	4	92	51	94	55
of which non-current				16	33	16	33
Bonds	FLAC			4,735	3,394	4,735	3,394
Promissory loans	FLAC			188	186	188	186
Liabilities to banks	FLAC			677	634	677	634
Other financial liabilities	FLAC			3	3	3	3
Sundry financial liabilities	FLAC			56	79	56	79

[1] Fair value is calculated on the basis of listed, unadjusted market prices on active markets.
[2] Fair value is determined on the basis of market data such as share prices, exchange rates, or interest curves using market-based valuation techniques (e.g. discounted cash flow method or Black-Scholes model)

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At the end of the fiscal year, items are reviewed to determine whether they need to be reclassified between individual levels of the fair value hierarchy. In the current fiscal year, a small volume of available-for-sale securities were reclassified from level 1 to level 2, as they were no longer measured at their stock market price.

26 Capital and risk management

Capital management
The main objective of the centralized capital management of the Bosch Group is to maintain the company's sound financial substance and thus to secure the financial independence and flexibility required for further growth.

The operating value contribution is the central controlling variable of our financial management accounting system. It is calculated by deducting the cost of capital from EBIT. Additional adjustments are also made in certain other respects, such as recognition of impairment losses, pension provisions, and provisions for losses arising from delivery commitments. The development of the operating value contribution is the yardstick used to assess performance. It is also used for portfolio management. It is supplemented for capital management purposes by the conventional financial, liquidity, and indebtedness indicators.

Hedging policy and financial derivatives
The operative business of the Bosch Group is impacted in particular by fluctuations in exchange and interest rates as well as commodity-price risks on the procurement side. Business policy aims to limit these risks by means of hedging. All hedging transactions are implemented at corporate level.

Internal regulations and guidelines set down a mandatory framework and define the responsibilities related to investment and hedging transactions. According to these regulations, derivatives may only be used in connection with operative business, financial investments, or financing transactions; speculative transactions are not allowed. Trading limits are an important component of the guidelines. Hedges are closed solely via banks whose creditworthiness is regarded as impeccable. The rating given by leading agencies as well as current developments in the financial markets are taken into account. The creditworthiness of the banking partners of the Bosch Group is closely monitored and the risk mitigated by counterparty limits.

To reduce the credit risk of the bank, fixed-term deposits are in some cases entered into as secured deposits in tri-party repo transactions. In such cases, the bank provides predefined securities as collateral. The transactions themselves, as well as the management and valuation of the securities, are managed by a clearing center. For details, please refer to the "Cash and cash equivalents" chapter.

The decision-making bodies are committees for commodities, foreign currencies, and investments that meet at regular intervals. There is a spatial and functional segregation of trading, settlement, and control functions. Key tasks of the control function include determining risks using the value-at-risk method as well as the basis-point-value method, and ongoing compliance checks with instructions and guidelines.

Each month, the risk of financial investments is calculated using the value-at-risk concept for the next month. Prescribed risk limits for the various investment categories limit the potential loss. The forecast quality of the value-at-risk method is tested by means of monthly backtesting. Management is informed monthly about risk analyses and the results of investments and hedges.

Currency risk
Currency risks of the operative business are mitigated by the central management of selling and purchasing currencies. The currency risk is determined on the basis of the worldwide consolidated cash flow in the respective currencies. Based on the business plan, estimated inflows and outflows in the various countries for the planning period are aggregated in a foreign exchange balance plan. The resulting net position is used for the central management of currency exposures.

The largest net currency position of the planned currency cash flow is in CNY and USD.

Hedging largely takes the form of forward exchange contracts; currency options and currency swaps to secure group financing are used to a lesser extent. These transactions, which are only entered into with banks, are subject to minimum requirements with respect to nature, scope, and complexity.

The risk of the entire operative foreign currency position is determined using the value-at-risk concept, supplemented by worst-case analyses. These risk analyses and the hedge result are determined monthly and presented to management.

To present the currency risks in accordance with IFRS 7 for the most important foreign currencies, all monetary assets and monetary liabilities denominated in foreign currency for all consolidated companies were analyzed at the end of the reporting period and sensitivity analyses carried out for the respective currency pairs, in terms of the net risk.

A change in the EUR of 10 percent (starting from the closing rate) against the foreign currencies listed in the table would have the following implications for the profit before tax:

T.64

Figures in millions of euros

	10% increase in EUR		10% decrease in EUR	
	2014	2013	2014	2013
CHF	18	13	-17	-10
CNY	-38	-25	37	25
CZK	-42	-35	46	39
GBP	2	0	-2	-3
HUF	-10	-16	12	13
JPY	1	7	0	-10
PLN	-5	-9	5	9
RUB	-15	-9	14	5
TRY	-66	-65	68	65
USD	-41	-146	41	146

A change in the USD of 10 percent (starting from the closing rate) against the foreign currencies listed in the table would have the following implications for the profit before tax:

T.65

Figures in millions of euros

	10% increase in USD		10% decrease in USD	
	2014	2013	2014	2013
CNY	-27	-60	27	60

The effects on earnings shown here mainly result from loans within the Bosch Group which, by way of an exception, were granted in a currency other than the local currency of the borrower, e.g. because it can be repaid from expected cash flows in this currency. The currency risk for the statement of financial position does not correspond to the economic risk, which is determined on the basis of forecast cash flows.

Interest-rate risks
Risks from anticipated changes in interest rates on investments and borrowings are limited by select use of derivative financial instruments. These are mainly interest swaps and interest futures.

An analysis of the interest risk was carried out in accordance with IFRS 7. The sensitivity analysis considered assets and liabilities subject to floating interest rates, available-for-sale fixed-rate securities, and interest derivatives. Mutual funds and money market funds are not considered.

A change in the market interest rate by 100 basis points (starting from interest rate on the cut-off date) would have the following effect on the reserve from securities in equity and the profit before tax:

T 06
Figures in millions of euros

	Increase in market interest level by 100 basis points		Decrease in market interest level by 100 basis points	
	2014	2013	2014	2013
Reserve from securities	–235	–196	235	196
Profit before tax	25	30	–25	–30

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Share-price risks
Derivatives are used on a small scale to limit the risks from investments in shares.

The analysis of the share-price risk in accordance with IFRS 7 took into account share portfolios in the "available-for-sale financial assets" category, investments measured at fair value, as well as share derivatives with a total carrying amount of EUR 3,493 million (previous year: EUR 3,115 million).

A change in the share price of 10 percent (starting from share price on the cut-off date) would have the following effect on the reserve from securities in equity and the profit before tax:

T 07
Figures in millions of euros

	10% increase in share price		10% decrease in share price	
	2014	2013	2014	2013
Reserve from securities	350	313	–318	–301
Profit before tax	2	2	–34	–14

Other price risks
Derivatives and physical fixed-price contracts are used to limit the risks of fluctuating commodity prices. The analysis of the commodity-price risk in accordance with IFRS 7 took into account commodity derivatives measured as of the reporting date.

A change in the forward-rate level of 10 percent (starting from forward rate on the reporting date) would have the following effect on the profit before tax:

T.68

Figures in millions of euros

	10% increase in forward rates		10% decrease in forward rates	
	2014	2013	2014	2013
Profit before tax	39	19	−39	−19

As of the reporting date, the Bosch Group is not aware that it is exposed to any significant other price risks as defined by IFRS 7.

Credit risks
The maximum credit risk for each class of financial instruments is the carrying amount of the financial assets recognized in the statement of financial position.

The credit risk from customer receivables is recorded and monitored on an ongoing basis. Responsibilities and duties relating to credit risks are governed by an internal directive. This mainly concerns the stipulation of payment terms, fixing of credit limits, release of deliveries, and receivables monitoring.

The credit risk for trade receivables is reduced by processing invoices with the corresponding credit notes in a single work step; the net amount is reported in the statement of financial position. This procedure is only performed if there is a legal right to offset and there is an intention to settle the receivable based on the net amount or to settle the receivable by offsetting against the corresponding liability. Moreover, trade receivables are partly secured by retention of title. For some trade receivables, collateral has been additionally provided in the form of guarantees, property liens, and mortgages.

The table below shows the remaining credit risk for trade receivables:

T.69

Figures in millions of euros

	2014	2013
Trade receivables (gross value)	9,173	8,086
Offsetting of credit notes	388	208
Trade receivables (carrying amount)	8,785	7,878
Financial guarantee contracts (received)	91	187
Remaining credit risk	**8,694**	**7,691**

The change in valuation allowances for specific risks as well as for the general credit risk is presented in the following table:

170

Figures in millions of euros

	Trade receivables	Loan receivables
At 1/1/2013	**453**	**5**
Change in the valuation allowance for specific risks	13	1
Change in the valuation allowance for the general credit risk	6	0
At 12/31/2013	**472**	**6**
Change in the valuation allowance for specific risks	–25	–1
Change in the valuation allowance for the general credit risk	21	0
At 12/31/2014	**468**	**5**

Apart from this, valuation allowances were recognized on a small scale on receivables from finance leases.

There is no indication at the end of the reporting period of any significant defaults of trade receivables or of other financial assets exposed to credit risks that are neither impaired nor past due.

116 The table below shows a maturity analysis of the unimpaired trade receivables:

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Figures in millions of euros

	2014	2013
Trade receivables	8,785	7,878
of which not impaired and not past due at the end of the reporting period	1,055	342
of which not impaired and past due at the end of the reporting period	99	44
for less than one month	50	34
for more than one month, but less than three months	16	9
for more than three months	33	1

Of the loans and receivables from finance leases (both current and non-current), an amount of EUR 319 million (previous year: EUR 272 million) is not impaired and not past due. There are no loan receivables and receivables from finance leases (both current and non-current) which are not impaired but past due.

Derivative transactions are entered into in accordance with the German master agreement or the ISDA (International Swaps and Derivatives Association). These do not satisfy the set-off criteria of IAS 32, as netting is only enforceable in the case of insolvency.

The credit risk for derivatives that do not currently satisfy the set-off criteria of IAS 32 (offsetting only enforcable in the case of insolvency of the contracting party) is presented in the following table:

172

Figures in millions of euros

	2014	2013
Derivatives with a positive market value (carrying amount)	110	73
Value of derivatives not netted in the statement of financial position	11	20
Remaining credit risk	**99**	**53**

Liquidity risks

The development of financial assets and liabilities is monitored on an ongoing basis. Internal directives regulate the duties and responsibilities of liquidity management and planning. The company has liquidity reserves in the form of highly liquid assets totaling EUR 6,589 million (previous year: EUR 4,392 million). In addition to that, there is a Euro commercial paper program with a volume of EUR 1,000 million and a U.S. commercial paper program with a volume of USD 2,000 million, neither of which had been drawn at the end of the reporting period. There is also a medium-term-note program with a volume of EUR 7,500 million, of which EUR 4,250 million had been drawn.

The liquidity risk is reduced by processing invoices for trade payables with the corresponding credit notes received in a single work step. This procedure is only performed if there is a legal right to offset and there is an intention to settle the liability based on the net amount or to settle the liability by offsetting against the corresponding receivable. Moreover, collateral is provided in the form of guarantees.

The table below shows the remaining liquidity risk for trade payables:

173

Figures in millions of euros

	2014	2013
Trade payables (gross value)	3,987	3,304
Offsetting of credit notes	388	69
Trade payables (carrrying amount)	3,599	3,235
Financial guarantee contracts (granted)	7	228
Remaining liquidity risk	**3,592**	**3,007**

The liquidity risk for derivatives that do not currently satisfy the set-off criteria of IAS 32 (offsetting only enforcable in the case of insolvency) is presented in the following table:

174

Figures in millions of euros

	2014	2013
Derivatives with a negative market value (carrying amount)	110	88
Value of derivatives not netted in the statement of financial position	11	20
Remaining liquidity risk	**99**	**68**

The undiscounted cash flows of the non-derivative and derivative financial liabilities are presented in the tables below:

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Figures in millions of euros

	Carrying amount	Undiscounted cash flows					
	2014	2015	2016	2017	2018	2019	2020 ff.
Non-derivative financial liabilities							
Trade payables	3,599	3,599					
Bonds	4,223	136	866	786	71	365	2,980
Promissory loans	154	9	9	9	9	157	
Liabilities to banks	833	199	79	287	304		
Other financial liabilities	3		1	1	1		
Sundry financial liabilities	865	821	44	5	5	2	1
Finance lease obligations	18	6	6	5	3	2	8
Derivative financial liabilities							
Gross settlement	68						
Cash outflows		2,866	89	1	1	1	
Cash inflows		2,800	87				
Net settlement	42						
Cash outflows		29	13				

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Figures in millions of euros

	Carrying amount	Undiscounted cash flows					
	2013	2014	2015	2016	2017	2018	2019 ff.
Non-derivative financial liabilities							
Trade payables	3,235	3,235					
Bonds	3,233	115	115	845	765	50	2,121
Promissory loans	500	357	9	9	9	9	157
Liabilities to banks	790	193	17	76	256	304	
Other financial liabilities	18	16	1	1	1		
Sundry financial liabilities	922	852	55	17	3	1	3
Finance lease obligations	16	7	3	3	2	2	8
Derivative financial liabilities							
Gross settlement	59						
Cash outflows		2,537	212	26	1	1	2
Cash inflows		2,499	169	24			1
Net settlement	29						
Cash outflows		25	4				

The undiscounted cash flows contain interest and principal payments. All on-call financial liabilities are allocated to the earliest possible period. The variable interest payments were determined using the last interest rate determined before the respective balance sheet date.

27 Related parties disclosures

As shareholder, Robert Bosch Industrietreuhand KG exercises majority voting rights at Robert Bosch GmbH. In addition, Robert Bosch Industrietreuhand KG is accountable for the internal audit of the Bosch Group. The costs incurred for this of EUR 13 million (previous year: EUR 12 million) were borne by Robert Bosch GmbH.

A part of the pension obligations and funds has been outsourced to Bosch Pensionsfonds AG. Robert Bosch GmbH is the sole shareholder of Bosch Pensionsfonds AG. Bosch Hilfe e.V. provides assistance to associates of co-owners in emergencies (emergency assistance). Bosch Hilfe e.V. is co-owned by Robert Bosch GmbH, Stuttgart, Germany, Robert Bosch Car Multimedia Holding GmbH, Hildesheim, Germany, and Robert Bosch Elektronik GmbH, Salzgitter, Germany. A part of the asset portfolio of Bosch Hilfe e.V. consists of its ownership in Robert Bosch Wohnungsgesellschaft mbH, Stuttgart, Germany, which builds and rents property for Bosch associates.

Robert Bosch Stiftung GmbH, Stuttgart, is the tenant of several properties belonging to Robert Bosch GmbH, Stuttgart.

Sales, receivables, and liabilities due to and from related parties

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Figures in millions of euros

	Sales		Receivables		Liabilities	
	2014	2013	2014	2013	2014	2013
Weifu High Technology Co., Ltd., China		5		3	10	6
Knorr-Bremse Systeme für Nutzfahrzeuge GmbH, Germany	40	44	6	9	1	
SupplyOn AG, Germany						2
Oleodinamica Gambini S.r.l., Italy	3	3	1	1		
Johnson Controls Autobatterie GmbH & Co. KGaA, Germany	1	5			1	
Akebono Brake Industry Co., Ltd., Japan					1	1
Loos Centrum Sp.z o.o., Poland		3				
Rotzinger AG, Switzerland			3	3		2
North America Fuel Systems Remanufacturing LLC, USA	4	3				

All transactions with related parties were at arm's length.

Total remuneration of management in key positions
The members of management in key positions are the general partners of Robert Bosch Industrietreuhand KG, the members of the supervisory board, and the members of the board of management of Robert Bosch GmbH.

The total remuneration of members of management in key positions totals EUR 27 million in the fiscal year 2014 (previous year: EUR 30 million) and breaks down as follows:

170

Figures in millions of euros

	2014	2013
Short-term benefits	18	18
Post-employment benefits	6	10
Other long-term benefits	3	2

Share-based payments are not made.

There are no provisions (valuation allowances) for doubtful debts due from key management personnel. Moreover, no expenses were incurred for uncollectible or doubtful receivables.

The Bosch Group pays other related parties compensation totaling EUR 0.6 million (prior year: 0.5 million) for various services, mainly consulting activities. At the end of the fiscal year there were neither receivables nor liabilities from these business transactions. Guarantees have neither been given nor received.

28 Additional disclosures pursuant to Sec. 315a HGB

Declaration of compliance with the German Corporate Governance Code
The declaration of compliance required by Sec. 161 AktG ["Aktiengesetz": German Stock Corporations Act] for the listed company aleo solar AG i.L., Prenzlau, Germany, which was included in the consolidated financial statements of the Bosch Group for the first time in the fiscal year 2009, was issued by the board of management and supervisory board of aleo solar AG i.L., and is publicly accessible on the internet site of aleo solar AG i.L.

Remuneration of members of the board of management and supervisory board
The total remuneration of the members of the board of management (including provisions) comes to EUR 16 million in the fiscal year 2014 (previous year: EUR 15 million), and that of the former members of the board of management and their dependants to EUR 15 million (previous year: EUR 20 million). The remuneration of the members of the supervisory board comes to approximately EUR 2 million. An amount of EUR 169 million (previous year: EUR 165 million) has been accrued at Robert Bosch GmbH for pension obligations to former members of the board of management and their surviving dependants.

Headcount

T.79

	Annual average 2014	Annual average 2013
EU countries	158,276	160,557
Rest of Europe	14,630	14,091
Americas	33,714	32,988
Asia, Africa, Australia	79,464	72,103
	286,084	**279,739**

Auditor's fees

The fees of the group auditor for audit and advisory services in Germany amount to:

T.80

Figures in millions of euros

	2014	2013
Fees for		
Audit services	4.1	4.1
Audit-related services	0.1	0.1
Tax advisory services	1.6	1.5
Other services	2.6	2.3

29 Events after the reporting date

In January 2015, Robert Bosch GmbH executed the following transactions: acquisition of the 50 percent interest of Siemens AG, Munich, Germany, in BSH Bosch und Siemens Hausgeräte GmbH, Munich, Germany, acquisition of the 50 percent interest of ZF Friedrichshafen GmbH, Friedrichshafen, Germany, in ZF Lenksysteme GmbH, Schwäbisch Gmünd, Germany, and acquisition of 100 percent of the shares in Climatec, LLC, Phoenix, AZ, USA. Further disclosures on these acquisitions are presented in the "Business combinations" chapter.

List of shareholdings of the Bosch Group as of December 31, 2014

1 Consolidated group

T.80

	Company name	Registered office	Percentage share of capital
Germany	Robert Bosch GmbH	Stuttgart	
	aleo solar AG i. L.	Prenzlau	95.5
	AS Abwicklung und Solar-Service Deutschland GmbH i. L.	Oldenburg	100.0
	AS Abwicklung Dritte Produktion GmbH i. L.	Oldenburg	100.0
	Ampack GmbH	Königsbrunn	100.0 [1]
	Beissbarth GmbH	Munich	100.0 [1,2]
	Bosch Access Systems GmbH	Würselen	100.0 [1]
	Bosch Automotive Service Solutions GmbH	Pollenfeld	100.0 [1]
	Bosch Communication Center Magdeburg GmbH	Magdeburg	100.0 [1]
	Bosch Connected Devices and Solutions GmbH	Reutlingen	100.0 [1]
	Bosch Emission Systems GmbH & Co. KG	Stuttgart	100.0 [3]
	Bosch Energy and Building Solutions GmbH	Ditzingen	100.0 [1]
	Bosch Engineering GmbH	Abstatt	100.0 [1]
	Bosch Engineering Holding GmbH	Abstatt	100.0 [1,2]
	Bosch Financial Software GmbH	Immenstaad	100.0
	Bosch Healthcare Solutions GmbH	Waiblingen	100.0 [1]
	Bosch Industriekessel GmbH	Gunzenhausen	100.0 [1]
	Bosch KWK Systeme GmbH	Lollar	100.0 [1]
	Bosch Packaging Systems GmbH	Remshalden	100.0 [1]
	Bosch Pensionsgesellschaft mbH	Stuttgart	100.0 [1]
	Bosch Power Tec GmbH	Hamburg	100.0
	Bosch Rexroth AG	Stuttgart	100.0 [1,2]
	Bosch Sensortec GmbH	Kusterdingen	100.0 [1]
	Bosch Sicherheitssysteme Engineering GmbH	Nuremberg	100.0 [1]
	Bosch Sicherheitssysteme GmbH	Stuttgart	100.0 [1,2]
	Bosch Sicherheitssysteme Montage und Service GmbH	Weimar	100.0 [1]
	Bosch Silicon Trading GmbH	Erfurt	100.0
	Bosch Software Innovations GmbH	Berlin	100.0 [1]
	Bosch Solar CISTech GmbH	Brandenburg/ Havel	100.0 [1]
	Bosch Solar Energy AG	Erfurt	100.0 [1,2]
	Bosch Solar Operations GmbH	Erfurt	100.0 [1]
	Bosch Solar Thin Film GmbH	Erfurt	100.0 [1]
	Bosch Solarthermie GmbH	Wettringen	100.0 [1]

Company name	Registered office	Percentage share of capital
Bosch Technology Licensing Administration GmbH	Gerlingen	100.0
Bosch Telecom Holding GmbH	Stuttgart	100.0 [1,2]
Bosch Thermotechnik GmbH	Wetzlar	100.0 [1,2]
Bosch Thermotechnik Vermögensverwaltung 1 GmbH	Wetzlar	100.0 [1]
Buderus Guss GmbH	Breidenbach	100.0 [1]
Buderus Immobilien GmbH	Wetzlar	98.0 [1]
Elektra-Versicherungsvermittlungs-GmbH	Frankfurt	100.0 [1]
ETAS GmbH	Stuttgart	100.0 [1,2]
EVI Audio GmbH	Straubing	100.0 [1]
Hawera Probst GmbH	Ravensburg	100.0 [1]
Holger Christiansen Deutschland GmbH	Wilnsdorf	100.0 [1]
Hüttlin GmbH	Schopfheim	100.0 [1]
Landau Electronic GmbH	Mörfelden-Walldorf	100.0 [1]
Matra-Werke GmbH	Hainburg	100.0 [1]
Moehwald GmbH	Homburg/Saar	100.0 [1]
Pharmatec GmbH	Dresden	100.0 [1]
Pollux Beteiligungsgesellschaft mbH	Stuttgart	90.0
Robert Bosch Battery Systems GmbH	Stuttgart	100.0 [1]
Robert Bosch Car Multimedia GmbH	Hildesheim	100.0 [1]
Robert Bosch Car Multimedia Holding GmbH	Hildesheim	100.0 [1,2]
Robert Bosch Elektronik GmbH	Salzgitter	100.0 [1]
Robert Bosch Elektrowerkzeuge GmbH	Sebnitz	100.0 [1]
Robert Bosch Fahrzeugelektrik Eisenach GmbH	Eisenach	100.0 [1]
Robert Bosch Fünfte Vermögensverwaltungsgesellschaft mbH	Gerlingen	100.0 [1]
Robert Bosch Immobilienverwaltungs GmbH & Co. KG	Stuttgart	100.0
Robert Bosch Lizenzverwaltungsgesellschaft mbH	Holzkirchen	100.0
Robert Bosch Risk and Insurance Management GmbH	Stuttgart	100.0 [1]
Robert Bosch Venture Capital GmbH	Gerlingen	100.0 [1]
Robert Bosch Vierte Vermögensverwaltungsgesellschaft mbH	Gerlingen	100.0 [1]
Robert Bosch Zweite Vermögensverwaltungsgesellschaft mbH	Stuttgart	100.0 [1]
sia Abrasives Deutschland GmbH	Solingen	100.0
Sieger Heizsysteme GmbH	Siegen	100.0 [1]
UC Vermögensverwaltung GmbH	Stuttgart	100.0 [1]

[1] These companies make use of the exemption provided for in Sec. 264 (3) HGB.
[2] These companies make use of the exemption provided for in Sec. 291 (2) HGB.
[3] The company makes use of the exemption provided for in Sec. 264b HGB.

	Company name	Registered office	Percentage share of capital
Europe			
Austria	Bosch Industriekessel Austria GmbH	Bischofshofen	100.0
	Bosch Rexroth GmbH	Pasching	100.0
	Robert Bosch AG	Vienna	100.0
	Robert Bosch Holding Austria GmbH	Vienna	100.0
	SBM Schoeller-Bleckmann-Medizintechnik GmbH	Ternitz	100.0
Belgium	Bosch Rexroth N.V.	Brussels	100.0
	Bosch Thermotechnology N.V. / S.A.	Leuven-Heverlee	100.0
	Robert Bosch Produktie N.V.	Tienen	100.0
	Robert Bosch S.A.	Anderlecht (Brussels)	100.0
	sia Abrasives Belgium N.V. / S.A.	Moilem	100.0
Czech Republic	Bosch Diesel s.r.o.	Jihlava	100.0
	Bosch Rexroth spol. s.r.o.	Brno	100.0
	Bosch Thermotechnika s.r.o.	Kmov	100.0
	Robert Bosch odbytova s.r.o.	Prague	100.0
	Robert Bosch, spol. s.r.o.	České Budějovice	100.0
Denmark	Bosch Rexroth A/S	Hvidovre	100.0
	Holger Christiansen A/S	Esbjerg	100.0
	Robert Bosch A/S	Ballerup	100.0
Finland	Bosch Rexroth Oy	Vantaa	100.0
	Robert Bosch Oy	Vantaa	100.0
France	Bosch Automotive Service Solutions SARL	La Ferté-Bernard	100.0
	Bosch Centre de Service S.A.S.	Forbach	100.0
	Bosch Packaging Services S.a.r.l.	Hoenheim	100.0
	Bosch Rexroth DSI S.A.S.	Vénissieux	100.0
	Bosch Rexroth S.A.S.	Vénissieux	100.0
	Bosch Security Systems S.A.S. France	Clamart	100.0
	Bosch Thermotechnologie S.A.S.	Saint Thégonnec	100.0
	E.L.M. Leblanc S.A.S.U.	Drancy	100.0
	Holger Christiansen France SAS	Olivet	100.0
	Robert Bosch (France) S.A.S.	Saint-Ouen (Paris)	100.0
	sia Abrasives France S.a.r.l.	Roissy Ch.-de-Gaulle	100.0
Greece	Robert Bosch S.A.	Koropi (Athens)	100.0
Hungary	Bosch Rexroth Kft.	Budapest	100.0

	Company name	Registered office	Percentage share of capital
	Robert Bosch Elektronika Gyártó Kft.	Hatvan	100.0
	Robert Bosch Energy and Body Systems Kft.	Miskolc	100.0
	Robert Bosch Kft.	Budapest	100.0
	Robert Bosch Power Tool Elektromos Szerszámgyártó Kft.	Miskolc	100.0
Ireland	Robert Bosch Ireland Ltd.	Portlaoise	100.0
Italy	ARESI S.p.A.	Brembate	100.0
	AS Solar Service Italia S.r.l. i.l.	Treviso	100.0
	Bosch Automotive Service Solutions S.R.L.	Parma	100.0
	Bosch Energy and Building Solutions Italy S.r.l.	Cinisello Balsamo	100.0
	Bosch Rexroth Oil Control S.p.A.	Milan	100.0
	Bosch Rexroth S.p.A.	Cernusco	100.0
	Bosch Security Systems S.p.A.	Milan	100.0
	Centro Studi Componenti per Veicoli S.p.A.	Modugno (Bari)	100.0
	Freud S.p.A.	Brugherio	100.0
	Holger Christiansen Italia S.r.l.	Bologna	100.0
	ROBERT BOSCH S.p.A. Società Unipersonale	Milan	100.0
	SICAM S.r.l.	Correggio	100.0
	Tecnologie Diesel e Sistemi Frenanti S.p.A.	Modugno (Bari)	100.0
	VHIT S.p.A.	Offanengo	100.0
Luxembourg	Ferroknepper Buderus S.A.	Esch-sur-Alzette	100.0
Malta	Robert Bosch Finance Malta, Ltd.	Valletta	100.0
	Robert Bosch Holding Malta, Ltd.	Valletta	100.0
	Robert Bosch IC Financing Malta Limited	St. Julians	100.0
Netherlands	Bosch Communications Center B.V.	Nimwegen	100.0
	Bosch Packaging Technology B.V.	Schiedam	100.0
	Bosch Rexroth B.V.	Boxtel	100.0
	Bosch Security Systems B.V.	Eindhoven	100.0
	Bosch Thermotechniek B.V.	Deventer	100.0
	Bosch Transmission Technology B.V.	Tilburg	100.0
	Nefit Vastgoed B.V.	Deventer	100.0
	Robert Bosch B.V.	Boxtel	100.0
	Robert Bosch Holding Nederland B.V.	Boxtel	100.0
	Robert Bosch Investment Nederland B.V.	Boxtel	100.0
	Robert Bosch Licensing Administration C.V.	Boxtel	100.0
	Robert Bosch Packaging Technology B.V.	Weert	100.0
	Ski Europe B.V.	Breda	100.0
	Telex Holding Germany B.V.	Boxtel	100.0

	Company name	Registered office	Percentage share of capital
	Telex Holding Hong Kong B.V.	Boxtel	100.0
	Telex Holding Singapore B.V.	Boxtel	100.0
Norway	Bosch Rexroth A/S	Ski	100.0
	Robert Bosch A/S	Ski	100.0
Poland	Bosch Rexroth Sp. z o.o.	Pruszkow	100.0
	ROBERT BOSCH Sp. z o.o.	Warsaw	100.0
Portugal	Bosch Car Multimedia Portugal, S.A.	Braga	100.0
	Bosch Security Systems, S.A.	Ovar	100.0
	Bosch Termotechnologia, S.A.	Aveiro	100.0
	Robert Bosch Portugal, SGPS, S.A.	Lisbon	100.0
	Robert Bosch, S.A.	Lisbon	100.0
Romania	Bosch Communication Center S.R.L.	Timişoara	100.0
	Bosch Rexroth S.R.L.	Blaj	100.0
	ROBERT BOSCH S.R.L.	Bucharest	100.0
Russian Federation	OOO "Construction & investments"	Khimki	100.0
	OOO Bosch Power Tools	Engels	100.0
	OOO Bosch Rexroth	Moscow	100.0
	OOO Bosch Thermotechnik	Moscow	99.0
	OOO Robert Bosch	Moscow	100.0
	OOO Robert Bosch Saratow	Engels	100.0
Serbia	Robert Bosch DOO	Belgrade	100.0
Slovakia	Holger Christiansen Produktion Slovakia s.r.o.	Bernolákovo	100.0
Slovenia	Indramat elektromotorji d.o.o.	Škofja Loka	100.0
Spain	aleo solar distribución España S.L.	Barcelona	100.0
	aleo solar España S.L.	Barcelona	100.0
	Bosch Rexroth, S.L.	Madrid	100.0
	Bosch Security Systems S.A.	Madrid	100.0
	BOSCH SISTEMAS DE FRENADO, S.L.U.	Madrid	100.0
	ROBERT BOSCH ESPAÑA FÁBRICA CASTELLET S.A.	Castellet	100.0
	ROBERT BOSCH ESPAÑA FÁBRICA MADRID S.A.	Madrid	100.0
	ROBERT BOSCH ESPAÑA FÁBRICA TRETO S.A.	Treto	100.0
	Robert Bosch España Gasoline Systems S.A.	Aranjuez	100.0

	Company name	Registered office	Percentage share of capital
	ROBERT BOSCH ESPAÑA, S.L.U.	Madrid	100.0
	sia Abrasives Espana S.A.U.	Madrid	100.0
Sweden	Bosch Rexroth Mellansel AB	Mellansel	100.0
	Bosch Rexroth Teknik AB	Stockholm	100.0
	Bosch Thermoteknik AB	Tranås	100.0
	Holger Christiansen Sverige AB	Örebro	100.0
	Robert Bosch AB	Kista	100.0
Switzerland	Bosch Packaging Services AG	Beringen	100.0
	Bosch Packaging Systems AG	Beringen	100.0
	Bosch Packaging Technology SA	Romanel-sur-Lausanne	100.0
	Bosch Pouch Systems AG	Beringen	100.0
	Bosch Rexroth Schweiz AG	Buttikon	100.0
	Buderus Heiztechnik AG	Pratteln	100.0
	Robert Bosch AG	Zuchwil	100.0
	Robert Bosch Internationale Beteiligungen AG	Zuchwil	100.0
	Sapal S.A.	Ecublens	100.0
	Scintilla AG	Solothurn	100.0
	sia Abrasives Industries AG	Frauenfeld	100.0
Turkey	Bosch Fren Sistemleri Sanayi ve Ticaret A.S.	Bursa	84.5
	Bosch Rexroth Otomasyon Sanayi ve Ticaret A.S.	Bursa	100.0
	Bosch Sanayi ve Ticaret A.S.	Bursa	100.0
	Bosch Termoteknik Sanayi ve Ticaret A.S.	Manisa	100.0
Ukraine	Holger Christiansen Production Ukraine	Krakovets	100.0
United Kingdom	Bosch Automotive Service Solutions Ltd.	Brixworth	100.0
	Bosch Lawn and Garden Ltd.	Stowmarket	100.0
	Bosch Packaging Technology Limited	Derby	100.0
	Bosch Rexroth Ltd.	St. Neots	100.0
	Bosch Security Systems Ltd.	Denham	100.0
	Bosch Thermotechnology Ltd.	Worcester	100.0
	Hägglunds Drives Limited	Wakefield	100.0
	Holger Christiansen UK Ltd.	Nottingham	100.0
	Robert Bosch Investment Ltd.	Warndon, Worcester	100.0
	Robert Bosch Ltd.	Denham	100.0
	Robert Bosch UK Holdings Limited	Denham	100.0
	sia Abrafoam Ltd.	Alfreton	100.0

	Company name	Registered office	Percentage share of capital
	sia Abrasives (G.B.) Ltd.	Greetland	100.0
	sia Abrasives Holding Ltd.	Greetland	100.0
	sia Fibral Ltd.	Greetland	100.0
	Worcester Group plc	Warndon, Worcester	100.0
Americas			
Argentina	Bosch Rexroth S.A.I.C.	Buenos Aires	100.0
	Robert Bosch Argentina Industrial S.A.	Buenos Aires	100.0
Brazil	Bosch Rexroth Ltda.	Atibaia-SP	100.0
	Robert Bosch Centro de Comunicação Limitada	Campinas	100.0
	Robert Bosch Ltda.	Campinas	100.0
	Robert Bosch Tecnologia de Embalagem Ltda.	Alphaville	100.0
	Bosch Solutions Serviços Automotivos Ltda.	São Paulo	100.0
	sia Abrasivos Industriais Ltda.	São José dos Pinhais	100.0
Canada	Bosch Rexroth Canada Corporation	Welland, ON	100.0
	Extreme CCTV Inc.	Burnaby, BC	100.0
	Freud Canada Inc.	Mississauga, ON	100.0
	ROBERT BOSCH INC.	Mississauga, ON	100.0
Chile	Robert Bosch S. A.	Santiago de Chile	100.0
Mexico	Bosch Rexroth, S.A. de C.V.	Mexico City	100.0
	Frenados Mexicanos, S.A. de C.V.	Aguascalientes	100.0
	Robert Bosch México Sistemas de Frenos, S. de R.L. de C.V.	Juarez	100.0
	Robert Bosch México Holding, S.A. de C.V.	Mexico City	100.0
	Robert Bosch México S.A. de C.V.	Mexico City	100.0
	Robert Bosch México Sistemas Automotrices, S.A. de C.V.	San Luis Potosi	100.0
	Robert Bosch Sistemas Automotrices, S.A. de C.V.	Juarez	100.0
	Robert Bosch Tool de México, S.A. de C.V.	Mexicali	100.0
	Robert Bosch, S. de R.L. de C.V.	Toluca	100.0
	Saguaro Electronica, S.A. de C.V.	Hermosillo	100.0
United States	AS Solar Service NA, Inc.	Westminster, CO	100.0
	Bosch Automotive Service Solutions Holdings, Inc.	Wilmington, DE	100.0
	Bosch Automotive Service Solutions LLC	Warren, MI	100.0
	Bosch Brake Components LLC	Broadview, IL	100.0
	Bosch Packaging Services Inc.	Raleigh, NC	100.0

	Company name	Registered office	Percentage share of capital
	Bosch Packaging Technology, Inc.	New Richmond, WI	100.0
	Bosch Rexroth Corporation	Lehigh Valley, PA	100.0
	Bosch Security Systems Inc.	Burnsville, MN	100.0
	Bosch Solar Energy Corp.	Detroit, MI	100.0
	Bosch Thermotechnology Corp.	Londonderry, NH	100.0
	BSE PV LLC	Palo Alto, CA	100.0
	Compu-Spread Corporation	Delano, MN	100.0
	ETAS Inc.	Ann Arbor, MI	100.0
	FHP Manufacturing Company	Fort Lauderdale, FL	57.0
	Freud America Inc.	High Point, NC	100.0
	Ovonic Energy Products, Inc.	Orion, MI	100.0
	Robert Bosch Battery Systems LLC	Orion, MI	100.0
	Robert Bosch Finance LLC	Broadview, IL	100.0
	ROBERT BOSCH FUEL SYSTEMS LLC	Kentwood, MI	100.0
	Robert Bosch Healthcare Systems, Inc.	Farmington Hills, MI	100.0
	Robert Bosch LLC	Broadview, IL	100.0
	Robert Bosch North America Corporation	Broadview, IL	100.0
	Robert Bosch Packaging Technology Inc.	Minneapolis, MN	100.0
	Robert Bosch Tool Corporation	Mt. Prospect, IL	100.0
	sia Abrasives, Inc. USA	Charlotte, NC	100.0
	Vetronix Corporation	Santa Barbara, CA	100.0
Venezuela	Inversiones 421.10 (Venezuela Holding)	Caracas	100.0
	Skil Venezolana SRL	Caracas	100.0
Asia			
China	AUTOBOSS Tech. Inc.	Shenzhen	100.0
	Bosch (Ningbo) e-scooter Motor Co., Ltd.	Ningbo	60.0
	Bosch (Shanghai) Security Systems Ltd.	Shanghai	100.0
	Bosch (Zhuhai) Security Systems Co., Ltd.	Zhuhai	100.0
	Bosch Automotive Components (Changchun) Co., Ltd.	Changchun	55.0
	Bosch Automotive Diagnostics Equipment (Shenzhen) Ltd.	Shenzhen	100.0
	Bosch Automotive Diesel Systems Co., Ltd.	Wuxi	65.0
	Bosch Automotive Products (Changsha) Co., Ltd.	Changsha	100.0
	Bosch Automotive Products (Chengdu) Co., Ltd.	Chengdu	100.0
	Bosch Automotive Products (Nanjing) Co., Ltd.	Nanjing	100.0
	Bosch Automotive Products (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch Automotive Service Solutions (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch Car Multimedia (Wuhu) Co., Ltd.	Wuhu	60.0
	Bosch (China) Investment Ltd.	Shanghai	100.0
	Bosch Inspection Technology (Shanghai) Co., Ltd.	Shanghai	100.0
	Bosch Laser Equipment (Dongguan) Limited	Dongguan	100.0

	Company name	Registered office	Percentage share of capital
	Bosch Packaging Technology (Chengdu) Co., Ltd.	Chengdu	100.0
	Bosch Packaging Technology (Hangzhou) Co., Ltd.	Hangzhou	100.0
	Bosch Power Tools (China) Ltd.	Hangzhou	100.0
	Bosch Rexroth (Beijing) Hydraulic Co., Ltd.	Beijing	100.0
	Bosch Rexroth (Changzhou) Co., Ltd.	Changzhou	100.0
	Bosch Rexroth (China) Ltd.	Hongkong	100.0
	Bosch Rexroth (Xi'an) Electric Drives and Controls Co., Ltd.	Xi'an	100.0
	Bosch Security Systems Ltd.	Hong Kong	100.0
	Bosch Thermotechnology (Beijing) Co., Ltd.	Beijing	100.0
	Bosch Trading (Shanghai) Co., Ltd.	Shanghai	100.0
	ETAS Automotive Technology (Shanghai) Co., Ltd.	Shanghai	100.0
	Hägglunds Drives Shanghai Ltd.	Shanghai	100.0
	Robert Bosch Company Ltd.	Hong Kong	100.0
	Shanghai Bosch Rexroth Hydraulics & Automation Ltd.	Shanghai	100.0
	Taixiang Vehicle Replace Parts (Shenzhen) Co., Ltd.	Shenzhen	100.0
	United Automotive Electronic Systems Co., Ltd.	Shanghai	51.0
India	Bosch Automotive Electronics India Private Ltd.	Bangalore	100.0
	Bosch Chassis Systems India Ltd.	Pune	97.9
	Bosch Electrical Drives India Private Ltd.	Chennai	89.2
	Bosch Ltd.	Bangalore	71.2
	Bosch Rexroth (India) Ltd.	Ahmedabad	96.4
	Robert Bosch Engineering and Business Solutions Ltd.	Bangalore	100.0
Indonesia	P.T. Robert Bosch	Jakarta	100.0
Japan	Bosch Automotive Service Solutions Corporation	Tokyo	100.0
	Bosch Corporation	Tokyo	100.0
	Bosch Packaging Technology K.K.	Tokyo	100.0
	Bosch Rexroth Corporation	Tsuchiura-shi	99.9
	ETAS K.K.	Yokohama	100.0
	Bosch Security Systems Ltd.	Tokyo	100.0
	FA Niigata Co., Ltd.	Niigata	100.0
	Fuji Aitac Co., Ltd.	Gunma	100.0
	Gunma Seiki Co., Ltd.	Gunma	100.0
	Nippon Injector Corporation	Odawara	50.0
Korea	Bosch Electrical Drives Co., Ltd.	Buyong	100.0
	Bosch Rexroth Korea Ltd.	Busan	100.0
	Robert Bosch Korea Diesel Ltd.	Daejeon	100.0
	Robert Bosch Korea Ltd.	Daejeon	100.0

	Company name	Registered office	Percentage share of capital
Malaysia	Bosch Power Tools Engineering Sdn. Bhd.	Penang	100.0
	Bosch Rexroth Sdn. Bhd.	Shah Alam	100.0
	Bosch Solar Energy Malaysia Sdn. Bhd.	Penang	100.0
	ROBERT BOSCH (MALAYSIA) SDN. BHD.	Penang	100.0
	ROBERT BOSCH POWER TOOLS SDN. BHD.	Penang	100.0
	Robert Bosch Sdn. Bhd.	Kuala Lumpur	100.0
Philippines	Bosch Service Solutions, Inc.	Manila	100.0
Singapore	BOSCH PACKAGING TECHNOLOGY (SINGAPORE) PTE. LTD.	Singapore	100.0
	Bosch Rexroth Pte. Ltd.	Singapore	100.0
	Robert Bosch (South East Asia) Pte. Ltd.	Singapore	100.0
	Robert Bosch Security Solutions Pte.	Singapore	100.0
Taiwan	Bosch Rexroth Co. Ltd.	Taipei	100.0
	Robert Bosch Taiwan Co., Ltd.	Taipei	100.0
	Unipoint Electric MFG Co., Ltd.	Taipei	100.0
Thailand	Bosch Automotive Thailand Co. Ltd.	Rayong	87.9
	Robert Bosch Ltd.	Bangkok	100.0
	Robert Bosch Automotive Technologies (Thailand) Co., Ltd.	Rayong	100.0
United Arab Emirates	Robert Bosch Middle East FZE	Dubai	100.0
Vietnam	Bosch Vietnam Co., Ltd.	Dong Nai Province	100.0
Rest of world			
Australia	Abrasives Products Pty. Ltd.	Rowville	100.0
	aleo solar Australia Pty. Ltd.	Thornbury	100.0
	Australian Industrial Abrasives Pty. Ltd.	Rowville	100.0
	Bosch Automotive Service Solutions Pty. Ltd.	Melbourne	100.0
	Bosch Rexroth Pty. Ltd.	Kings Park	100.0
	Bosch Security Systems Pty. Ltd.	Sydney	100.0
	Robert Bosch (Australia) Pty. Ltd.	Clayton	100.0
	sia Abrasives Australasia Holding Pty. Ltd.	Rowville	100.0
	sia Abrasives Australia Pty. Ltd.	Rowville	100.0
New Zealand	Bosch Security Systems Ltd.	Auckland	100.0
South Africa	Robert Bosch (Pty.) Ltd.	Brits	100.0

2 Investments measured using the equity method

	Company name	Registered office	Percentage share of capital
Germany	Bosch Mahle Turbo Systems GmbH & Co. KG	Stuttgart	50.0
	BSH Bosch und Siemens Hausgeräte GmbH	Munich	50.0
	EM-motive GmbH	Hildesheim	50.0
	ZF Lenksysteme GmbH	Schwäbisch Gmünd	50.0
South Africa	Hytec Holdings (Pty.) Ltd.	Johannesburg	50.0
United States	Associated Fuel Pump Systems Corporation	Anderson, SC	50.0

3 Investments measured at amortized cost

	Company name	Registered office	Percentage share of capital
Germany	AIG Planungs- und Ingenieurgesellschaft mbH	Stuttgart	100.0
	Alltrucks GmbH & Co. KG	Munich	33.3
	Asanetwork GmbH	Willstätt	23.3
	BD Kompressor GmbH	Lollar	100.0
	BD Kompressor Holding GmbH & Co. KG	Lollar	100.0
	BD Kompressor Management GmbH	Lollar	100.0
	Bosch Emission Systems Verwaltungs-GmbH	Stuttgart	100.0
	Bosch Mahle Turbo Systems Verwaltungs GmbH	Stuttgart	50.0
	Bosch Management Support GmbH	Leonberg	100.0
	Bosch Pensionsfonds AG	Stuttgart	100.0
	Bosch Rexroth Interlit GmbH	Joachimsthal	100.0
	Bosch Rexroth Monitoring Systems GmbH	Dresden	100.0
	Bosch SoftTec GmbH	Hildesheim	100.0
	BS Systems GmbH & Co. KG	Zusmarshausen	50.0
	CDE - Packaging GmbH	Glauburg-Stockheim	49.0
	ECP Energiecontracting GmbH	Heidelberg	81.0
	Energiespeicher Nord GmbH & Co. KG	Braderup	45.0
	Energiespeicher Nord Verwaltungs GmbH	Braderup	45.0
	escrypt GmbH Embedded Security	Bochum	100.0
	GFI Gesellschaft für Infrastrukturdienste mbH	Reutlingen	100.0
	Heliatek GmbH	Dresden	20.2
	Hubject GmbH	Berlin	16.7
	JCB Management GmbH	Hanover	20.0

	Company name	Registered office	Percentage share of capital
	Johnson Controls Autobatterie GmbH & Co. KGaA	Hanover	20.0
	Knorr-Bremse Systeme für Nutzfahrzeuge GmbH	Munich	20.0
	Koller + Schwemmer GmbH	Nuremberg	100.0
	Lithium Energy and Power GmbH & Co. KG	Stuttgart	50.0
	Makat Candy Technology GmbH	Dierdorf	100.0
	Mobility Media GmbH	Berlin	100.0
	part GmbH	Bad Urach	50.0
	Prüfzentrum Boxberg GmbH	Boxberg	100.0
	Robert Bosch Battery Solutions GmbH	Eisenach	100.0
	Robert Bosch Elektronik Thüringen GmbH	Arnstadt	100.0
	Robert Bosch Immobilien GmbH	Stuttgart	100.0
	Robert Bosch Start-Up GmbH	Stuttgart	100.0
	Robert Bosch Technical and Business Solutions GmbH	Schwieberdingen	100.0
	Service- und Betriebsgesellschaft Heidehof GmbH	Stuttgart	100.0
	SupplyOn AG	Hallbergmoos	42.1
	thermea. Energiesysteme GmbH	Freital	26.9
	Valicare GmbH	Frankfurt/Main	100.0
Europa			
Austria	Bosch General Aviation Technology GmbH	Vienna	100.0
	RobArt GmbH	Linz	22.0
Belarus	Robert Bosch OOO	Minsk	100.0
Belgium	EpiGaN NV	Leuven	22.0
Bulgaria	Robert Bosch EOOD	Sofia	100.0
Croatia	Robert Bosch d.o.o.	Zagreb	100.0
Denmark	Moeller & Devicon A/S	Sandved	100.0
	ScandiaPack ApS	Ballerup	24.2
Estonia	Robert Bosch OÜ	Tallinn	100.0
France	Bosch Packaging Technology SAS	Saint-Ouen (Paris)	100.0
	ETAS S.A.S.	Rungis	100.0
Georgia	Robert Bosch Ltd.	Tiflis	100.0

	Company name	Registered office	Percentage share of capital
Greece	Bosch Rexroth S.A.	Athens	100.0
Hungary	Bosch Electronic Service Kft.	Kecskemét	100.0
	Bosch Packaging Systems Kft.	Pécel	100.0
Italy	BARI SERVIZI INDUSTRIALI Società consortile a r.l.	Modugno	50.0
	Dana Rexroth Transmission Systems S.r.l.	Arco	50.0
	DECA SRL	Lugo	100.0
	Oleodinamica Gambini S.r.l.	Modena	20.0
Kazakhstan	TOO Robert Bosch	Almaty	100.0
Latvia	Robert Bosch SIA	Riga	100.0
Lithuania	UAB Robert Bosch	Vilnius	100.0
Netherlands	Bosch Thermotechnology Netherlands Holding B.V.	Boxtel	100.0
Poland	Loos Centrum Sp.z o.o.	Warsaw	26.0
Russian Federation	Bosch Heating Systems LLC	Engels	100.0
	Evroradiators LLC	Engels	100.0
	Robert Bosch Samara LLC	Chernovskiy	100.0
Slovakia	Robert Bosch spol. s.r.o.	Bratislava	100.0
	Valicare s.r.o.	Trencin	51.1
Slovenia	Robert Bosch d.o.o.	Ljubljana	100.0
Spain	Bosch Automotive Service Solutions S.A.	Guadalajara	100.0
Switzerland	Bosch Automotive Service Solutions AG	Kriens	100.0
	Rotzinger AG	Kaiseraugst	46.7
Ukraine	Robert Bosch Ltd.	Kiev	100.0
United Kingdom	aleo solar UK Ltd.	Denton Island, Newhaven	100.0
	Beissbarth UK Ltd.	Nottingham	100.0

	Company name	Registered office	Percentage share of capital
	ETAS Ltd.	York	100.0
	LAGTA Group Training Limited	Motherwell	100.0
	LAGTA Limited	Motherwell	100.0
	LCX Solar Limited	Shepperton	33.3
	Spore Holdings Ltd.	Daventry	100.0
	VL Churchill Ltd.	Daventry	100.0
Americas			
Brazil	Bosch Management Support Ltda.	Campinas	99.9
	Bosch Termotecnologia Ltda.	São Paulo	100.0
	Metapar Usinagem Ltda.	Curitiba-Paraná	100.0
Chile	Bosch Rexroth Chile S.p.A.	Santiago de Chile	100.0
	MD Hidráulica S.A.	Santiago de Chile	100.0
Columbia	Robert Bosch Ltda.	Bogotá	100.0
Ecuador	Robert Bosch Sociedad Anónima Ecuabosch	Guayaquil	100.0
Mexico	Bosch Automotive Service Solutions S.A. de C.V.	Mexico City	100.0
Panama	Robert Bosch Panama S.A.	Panama City	100.0
Peru	Robert Bosch S.A.C.	Lima	100.0
United States	Akustica Inc.	Pittsburgh, PA	100.0
	Bosch Energy Storage Solutions LLC	Palo Alto, CA	100.0
	Bosch Management Services Corporation	Wilmington, DE	100.0
	Bosch Software Innovations Corp.	Chicago, IL	100.0
	Escrypt Inc.	Ann Arbor, MI	100.0
	Industrial Pharmaceutical Resources, Inc.	Bartlett, IL	49.0
	North America Fuel Systems Remanufacturing LLC	Kentwood, MI	50.0
	PBR International USA Ltd.	Knoxville, TN	100.0
	Robert Bosch Asset Management I LLC	Wilmington, DE	100.0
	RoboToolz Inc.	Mountain View, CA	100.0
	SS Great Lakes LLC	Bridgeport, MI	100.0
Venezuela	Bosch Rexroth S.A.	Caracas	100.0
	Robert Bosch S.A.	Caracas	100.0

	Company name	Registered office	Percentage share of capital
Asia			
Bangladesh	Robert Bosch (Bangladesh) Ltd.	Dhaka	100.0
Cambodia	Robert Bosch (Cambodia) Co., Ltd.	Phnom Penh	100.0
China	avim solar production Co. Ltd.	Gaomi	50.0
	Bosch (Donghai) Automotive Test & Technology Center Co., Ltd.	Donghai	100.0
	Bosch (Hulunbeier) Automotive Test and Technology Centre Co., Ltd.	Yakeshi	100.0
	Bosch Automotive Technical Service (Beijing) Co., Ltd.	Beijing	100.0
	Bosch Thermotechnology (Shandong) Co., Ltd.	Zibo	100.0
	Bosch Thermotechnology (Shanghai) Co., Ltd.	Shanghai	100.0
	Bosch Thermotechnology (Wuhan) Co., Ltd.	Wuhan	100.0
	Dalian Rexroth Control Technology Ltd.	Dalian	60.0
	Freud International Trading (Shanghai) Co., Ltd.	Shanghai	100.0
	Guangzhou sia Abrasives Company Ltd.	Guangzhou	100.0
	Loos China Ltd.	Hong Kong	100.0
	Nanjing Bovon Power Tools Co.	Nanjing	50.0
	sia Abrasives Company Ltd.	Hong Kong	100.0
India	ETAS Automotive India Private Ltd.	Bangalore	100.0
	MHB Filter India Private Ltd.	Bangalore	100.0
	MIVIN Engineering Technologies Private Ltd.	Bangalore	100.0
	Precision Seals Manufacturing Ltd.	Pune	100.0
Indonesia	P.T. Bosch Rexroth	Jakarta	100.0
	P.T. Robert Bosch Automotive	Jakarta	100.0
Israel	Utilight Ltd.	Yavne	22.3
Japan	Advanced Driver Information Technology Corporation	Kariya-shi	50.0
	Bosch Engineering K.K.	Tokyo	100.0
	Daito Hydraulics Co., Ltd.	Nasu-gun	100.0
	Kanto Seiatsu Kogyo Co., Ltd.	Honjo	94.9
	Knorr-Bremse Commercial Vehicle Systems Japan, Ltd.	Tokyo	20.0
Korea	KB Wiper Systems Corporation	Sejong	100.0
	ETAS Korea Co., Ltd.	Seoul	100.0

	Company name	Registered office	Percentage share of capital
Malaysia	Pacific BBA (Malaysia) Sdn. Bhd.	Shah Alam, Selangor	100.0
	Robert Bosch (Penang) Sdn. Bhd.	Penang	100.0
Philippines	Robert Bosch Inc.	Manila	100.0
Thailand	FMP Distribution Ltd.	Rayong	50.1
	FMP Group (Thailand) Ltd.	Rayong	50.7
	Pacific BBA (Thailand) Ltd.	Bangkok	100.0
Vietnam	Robert Bosch Engineering and Business Solutions Vietnam Co. Ltd.	Ho Chi Minh City	100.0
Rest of world			
Australia	FMP Group (Australia) Pty. Ltd.	Ballarat	49.0
	Pacifica Group Pty. Ltd.	Melbourne	100.0
Egypt	Bosch Packaging Technology Ltd.	Cairo	100.0
	Robert Bosch Ltd.	Cairo	100.0
Kenya	Robert Bosch East Africa Ltd.	Nairobi	100.0
New Zealand	Bosch Rexroth Ltd.	Auckland	100.0
	Robert Bosch Ltd.	Auckland	100.0
Nigeria	Robert Bosch Limited	Lagos	100.0
South Africa	Häggiunds Drives South Africa (Pty.) Ltd.	Fourways	100.0

Stuttgart, March 10, 2015

Robert Bosch GmbH
The board of management

Auditor's report

Independent Auditor's Report
To Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart

Report on the Consolidated Financial Statements
We have audited the accompanying consolidated financial statements of Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart, and its subsidiaries, which comprise the income statement, the statement of comprehensive income, the statement of financial position, the statement of changes in equity, the statement of cash flows and the notes to the consolidated financial statements for the business year from January 1, 2014 to December 31, 2014.

Managing Directors' Responsibility for the Consolidated Financial Statements

The Managing Directors of Robert Bosch Gesellschaft mit beschränkter Haftung are responsible for the preparation of the consolidated financial statements. This responsibility includes that these consolidated financial statements are prepared in accordance with International Financial Reporting Standards, as adopted by the EU, and the additional requirements of German commercial law pursuant to § (Article) 315a Abs. (paragraph) 1 HGB ("Handelsgesetzbuch": German Commercial Code) and that these consolidated financial statements give a true and fair view of the net assets, financial position and results of operations of the group in accordance with these requirements. The Managing Directors are also responsible for the internal controls Management deems necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

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Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with § 317 HGB and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany) (IDW) and additionally observed the International Standards on Auditing (ISA) Accordingly, we are required to comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing audit procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The selection of audit procedures depends on the auditor's professional judgment. This includes the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In assessing those risks, the auditor considers the internal control system relevant to the entity's preparation of consolidated financial statements that give a true and fair view. The aim of this is to plan and perform audit procedures that are appropriate in the given circumstances, but not for the purpose of expressing an opinion on the effectiveness of the group's internal control system. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Managing Directors, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Audit Opinion

According to § 322 Abs. 3 Satz (sentence) 1 HGB, we state that our audit of the consolidated financial statements has not led to any reservations.

In our opinion based on the findings of our audit, the consolidated financial statements comply, in all material respects, with IFRSs, as adopted by the EU, and the additional requirements of German commercial law pursuant to § 315a Abs. 1 HGB and give a true and fair view of the net assets and financial position of the Group as at December 31, 2014 as well as the results of operations for the business year then ended, in accordance with these requirements.

Report on the Group Management Report

We have audited the accompanying group management report of Robert Bosch Gesellschaft mit beschränkter Haftung for the business year from January 1, 2014 to December 31, 2014. The Managing Directors of Robert Bosch Gesellschaft mit beschränkter Haftung are responsible for the preparation of the group management report in accordance with the requirements of German commercial law applicable pursuant to § 315a Abs. 1 HGB. We conducted our audit in accordance with § 317 Abs. 2 HGB and German generally accepted standards for the audit of the group management report promulgated by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany) (IDW). Accordingly we are required to plan and perform the audit of the group management report to obtain reasonable assurance about whether the group management report is consistent with the consolidated financial statements and the audit findings, as a whole provides a suitable view of the Group's position and suitably presents the opportunities and risks of future development.

According to § 322 Abs. 3 Satz 1 HGB, we state that our audit of the group management report has not led to any reservations.

In our opinion based on the findings of our audit of the consolidated financial statements and group management report, the group management report is consistent with the consolidated financial statements, as a whole provides a suitable view of the Group's position and suitably presents the opportunities and risks of future development.

Stuttgart, March 10, 2015

PricewaterhouseCoopers
Aktiengesellschaft
Wirtschaftsprüfungsgesellschaft

Harald Kayser
Wirtschaftsprüfer

Marcus Nickel
Wirtschaftsprüfer

Ten-year summary of the Bosch Group

T 02

(Rounded figures in millions of euros)

	2005	2006	2007	2008	2009	2010	2011	2012[1]	2013	2014
Sales	**41,461**	**43,684**	**46,320**	**45,127**	**38,174**	**47,259**	**51,494**	**44,703**	**46,068**	**48,951**
of which generated outside Germany (as a percentage)	73	74	75	74	76	77	77	77	77	78
Research and development cost[2]	3,073	3,348	3,583	3,889	3,603	3,810	4,190	4,442	4,543	4,959
as a percentage of sales revenue	7.4	7.7	7.7	8.6	9.4	8.1	8.1	9.9	9.9	10.1
Capital expenditure	2,923	2,670	2,634	3,276	1,892	2,379	3,226	2,714	2,539	2,585
of which in Germany	974	968	1,138	1,610	928	1,023	1,161	988	913	1,098
of which outside Germany	1,949	1,702	1,496	1,666	964	1,356	2,065	1,726	1,626	1,487
as a percentage of sales revenue	7.0	6.1	5.7	7.3	5.0	5.0	6.3	6.1	5.5	5.3
as a percentage of depreciation	156	116	108	136	80	100	142	101	126	138
Depreciation of property, plant, and equipment	1,870	2,309	2,428	2,410	2,374	2,373	2,265	2,689	2,008	1,868
Annual average number of associates (thousands)	249	258	268	283	275	276	295	273	280	286
of which in Germany	110	110	111	114	113	112	117	109	108	105
of which outside Germany	139	148	157	169	162	164	178	164	172	181
as of 12/31 of the year	251	261	271	282	271	284	303	273	281	290
Personnel expense	11,936	12,534	12,896	12,994	12,787	14,132	14,719	14,198	14,907	15,325
Total assets	**45,554**	**46,940**	**48,568**	**46,761**	**47,509**	**52,683**	**54,616**	**52,611**	**55,725**	**61,924**
Equity	20,943	22,482	24,825	23,009	23,059	26,343	26,917	26,900	27,686	29,541
as a percentage of total assets	46	48	51	49	49	50	49	51	50	48
Cash flow	4,352	4,521	5,052	4,032	1,910	5,460	4,959	4,053	3,956	4,866
as a percentage of sales revenue	10.5	10.3	10.9	8.9	5.0	11.6	9.6	9.1	8.6	9.9
Profit after tax	2,450	2,170	2,850	372	-1,214	2,489	1,820	2,304	1,251	2,637
Unappropriated earnings	63	69	72	75	67	82	88	88	88	102

[1] Figures following adjustment for changed accounting and valuation methods
[2] Including development work charged directly to customers

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Additional information about the company can be taken from the brochure **Bosch today,** as well as from the internet at **csr.bosch.com**

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Key data

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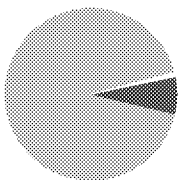
figures in millions of euros

	2014	2013
Sales revenue	**48,951**	**46,068**
percentage change from previous year	6.3	3.1
percentage share of sales generated outside Germany	78	77
Research and development cost[1]	**4,959**	**4,543**
as a percentage of sales revenue	10.1	9.9
Capital expenditure	**2,585**	**2,539**
as a percentage of depreciation	138	136
Associates		
average for the year	286,084	279,739
on December 31, 2014	290,183	281,381
Total assets	**61,924**	**55,725**
Equity	**29,541**	**27,686**
as a percentage of total assets	48	50
EBIT	**3,030**	**2,751**
as a percentage of sales revenue	6.2	6.0
Profit after tax	**2,637**	**1,251**
Unappropriated earnings (dividend of Robert Bosch GmbH)	**102**	**68**

[1] including development work charged directly to customers

Shareholders of Robert Bosch GmbH

Shareholding

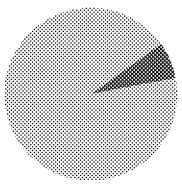


Robert Bosch GmbH
1

Bosch family
7

Robert Bosch Stiftung GmbH
92

Voting rights



Bosch family
7

Robert Bosch Industrietreuhand KG
93

Robert Bosch GmbH

Postfach 10 60 50
70049 Stuttgart
Germany
www.bosch.com

BOSCH
Invented for life

EXHIBIT 3

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Heavy-Duty Diesel Engines with Aftertreatment

Hannu Jääskeläinen, W. Addy Majewski

This is a preview of the paper, limited to some initial content. Full access requires DieselNet subscription.
Please log in to view the complete version of this paper.

Abstract: Emission aftertreatment—diesel particulate filters and SCR catalysts—was widely introduced on heavy-duty diesel engines to meet US 2007 emission standards. However, there were differences in the technology paths—some manufacturers initially attempted to meet the 0.2 g/bhp-hr NOx limit using high EGR rates, without NOx aftertreatment. In medium-duty vehicles, there has been a trend to chassis certify complete Class 2b and Class 3 trucks. In Europe, Euro VI emission standards required the addition of particulate filters to Euro V engines with SCR technology.

Introduction
North American Engines
- Manufacturers' Strategies
- Chassis Certification of Heavy Pickup Trucks and Vans
- On-Board Diagnostics (OBD)
- Aftertreatment Systems

European Engines

1. Introduction

Between 1994 and the end of 2006, emission standards for on-road heavy-duty diesel engines regulated by the US EPA focused on reducing NOx emissions. During this period, NOx emission requirements decreased from 5.0 to about 2.4 g/bhp-hr while PM emission limits remained static at 0.10 g/bhp-hr. Starting in 2007, emission limits for NOx and PM dropped considerably. A new PM limit of 0.01 g/bhp-hr (0.013 g/kWh) required an order of magnitude reduction in PM emissions for 2007 MY engines while a NOx limit of 0.2 g/bhp-hr (0.27 g/kWh) was phased-in between 2007 and 2010. For the period 2007-2009, 50% of a manufacturer's engines had to comply with the new NOx limit of 0.2 g/bhp-hr while the remaining 50% of engines could continue to comply with the 2004 NOx+HC limit of 2.5 g/bhp-hr. The averaging, banking and trading options in the regulation allowed manufacturers to produce engines with NOx emissions between these two limits. As a result, most manufacturers designed almost all of their

2007-2009 engines to meet a NOx family emissions limit of around 1.1-1.2 g/bhp-hr. Additional regulatory requirements for on-board diagnostics (OBD) also started to be phased-in starting in 2007.

To meet the 0.01 g/bhp-hr PM limit, all engine manufacturers adopted diesel particulate filters (DPF). To meet the interim NOx requirements during the phase-in period most manufacturers chose to increase the levels of EGR from their 2004 engines to bring NOx down to 1.1-1.2 g/bhp-hr. One manufacturer, Cummins, chose to implement NOx adsorber catalysts in engines destined for Dodge Ram pick-up to meet an optional heavy-duty vehicle chassis certification limit that was legally equivalent to the 0.2 g/bhp-hr engine limit. For the full implementation of the 0.2 g/bhp-hr NOx limit starting in 2010, most manufacturers opted for urea SCR. The alternative to urea SCR, further increases in EGR was attempted by Navistar but ultimately proved to be unsuccessful.

In Europe, Euro V standards for heavy-duty diesel engines came into effect starting near the end of 2008 that reduced NOx emissions to 2.0 g/kWh from the Euro IV level of 3.5 g/kWh. In 2013, Euro VI emission limits of 0.4 g/kWh NOx and 0.01 g/kWh PM came into effect. Also, a PN limit of 8.0×10^{11} particle/kWh was introduced. OBD requirements were introduced at the Euro V level and increased in stringency for Euro VI. Off-cycle emission testing was introduced at the Euro VI level.

2. North American Engines

2.1 Manufacturers' Strategies

2.1.1 Summary

Table 1 summarizes both the interim 2007-2009 and final 2010 emission control strategies for most manufacturers of heavy-duty diesel engines for the US market. Applications range from pick-up trucks rated at 8500 lb GVW (Class 2b) up to Class 8 trucks.

Table 1
Emission control strategies for meeting US 2007 emission standards

Manufacturer	2007-2009		2010 and later		Comments
	Strategy	Emission Limits (NOx+HC/PM, g/bhp-hr)	Strategy	Emission Limits, NOx/PM	
Caterpillar	LP EGR + DPF	1.3/0.01	-	-	Active regeneration with burner
Cummins	HP EGR + DOC+DPF	1.1–2.5/0.01	HP EGR + DOC + DPF + SCR	0.2-0.5/0.01 g/bhp-hr	Several engine families had NOx FELs above 0.20 g/bhp-hr from 2010-2012. After 2013, most engines certified to 0.20 g/bhp-hr, a small number of families used FELs of 0.30-0.35 g/bhp-hr. Active regeneration with DOC
			HP EGR + DOC + DPF + NAC	0.2-0.4/0.02 g/mile	Dodge Ram pick-ups 2007-2012. Legally equivalent to 0.2 g/bhp-hr NOx.
			HP EGR + DOC + DPF + SCR	0.2-0.4/0.02 g/mile	Dodge Ram pick-ups 2013 and later. Legally equivalent to 0.2 g/bhp-hr NOx.
Daimler			HP EGR + DOC + DPF + SCR	0.2-0.4/0.02 g/mile	2010 and later 2500 and 3500 series Mercedes-Benz Sprinter, Freightliner and Dodge vans SCR: Fe zeolite
DDC	HP EGR + DOC+DPF	1.3/0.01	HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	
GM	HP EGR + DOC+DPF	1.3/0.01-0.02	HP EGR + DOC + DPF + SCR	0.46/0.01 g/bhp-hr	
				0.2-0.4/0.02 g/mile	SCR: Cu zeolite
Ford	-	-	HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	
			HP EGR + DOC + SCR +DPF	0.2-0.4/0.02 g/mile	SCR: Cu zeolite
Hino	HP EGR + DOC+DPF	1.2/0.01	HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	
Isuzu	HP EGR + DOC+DPF	1.2-1.4/0.01	HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	
			HP EGR + DOC + DPF + SCR	0.2-0.4/0.02 g/mile	SCR: Fe zeolite
Iveco			HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	
Mitsubishi	HP EGR + DOC+DPF	1.2/0.01			
Navistar	HP EGR + DOC+DPF	1.1-1.9/0.01	HP EGR + DOC + DPF	0.5/0.01 g/bhp-hr	Active regeneration with DOC
Paccar	-	-	HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	
Volvo/Mack	HP EGR + DPF	1.3/0.01	HP EGR + DOC + DPF + SCR	0.2/0.01 g/bhp-hr	“Passive” regeneration

###

EXHIBIT 4

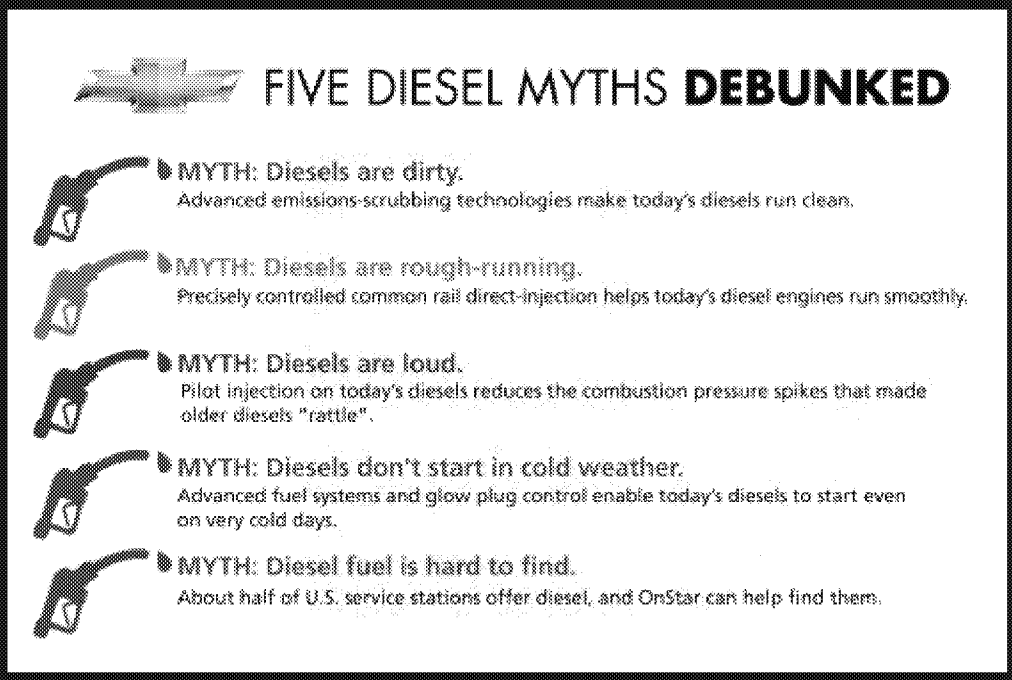

FIVE DIESEL MYTHS DEBUNKED
MYTH: Diesels are dirty.
Advanced emissions-scrubbing technologies make today's diesels run clean.
MYTH: Diesels are rough-running.
Precisely controlled common rail direct-injection helps today's diesel engines run smoothly.
MYTH: Diesels are loud.
Pilot injection on today's diesels reduces the combustion pressure spikes that made older diesels "rattle".
MYTH: Diesels don't start in cold weather.
Advanced fuel systems and glow plug control enable today's diesels to start even on very cold days.
MYTH: Diesel fuel is hard to find.
About half of U.S. service stations offer diesel, and OnStar can help find them.

EXHIBIT 5

GMC

2016 SIERRA 2500 | 2017

2016 SIERRA 2500HD

4G LTE HOTSPOT

SIERRA 2500HD HEAVY-DUTY TRUCK

STARTING MSRP

MAX TRAILERING

BUILD & PRICE

BUILD & PRICE >

FEATURES & SPECS >

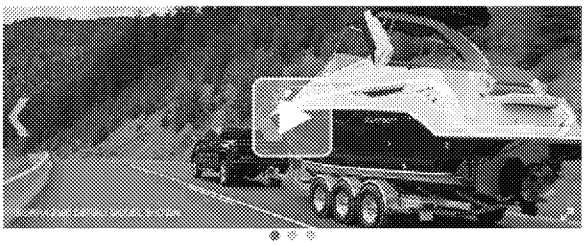
CURRENT OFFERS >

Find a GMC near you

VIEW INVENTORY >

TRAILERING AND HAULING

We engineered the Sierra 2500HD to exceed your performance expectations, pushing it to the limit to deliver the kind of power and grade capabilities you demand.



TRAILERING AND HAULING SPECS

Trailer confidently with Sierra 2500HD.

- Maximum conventional towing capacity of 14,500 lbs[1]
- Maximum fifth wheel towing capacity of 18,000 lbs[2]
- Maximum payload 3,500 lbs[3]

TRAILERING TECHNOLOGY

Sierra 2500HD puts better tools and control at your fingertips.

- Trailer Sway Control provides improved steering stability and handling when towing a trailer or hauling a load
- Hill Start Assist helps the driver maintain control of the vehicle when starting on a hill
- Standard Trailer Brake Controller provides integrated control and monitoring of your trailer brakes
- Available Rear Vision Camera System
- Available Convenience Plus and Fleet Package. Learn more on GMC.com.

BRAKING SYSTEMS

To service engage an extra measure of braking confidence on long grades, or on heavy-duty loads, Sierra 2500HD brakes utilize advanced technologies to ensure that the size of your desired stops.

- The Duralife Rotor is manufactured using a high carbon content material to provide longer rotor life
- Brake Drying automatically ensures when you return to your vehicle, and when the conditions are met, engages a Duralife Heavy Duty Rotor to dry the rotors and improve your desired stops
- Duralife™ Lining offers contact against corrosion and rust, thereby the brake pads to resist rotation rotors

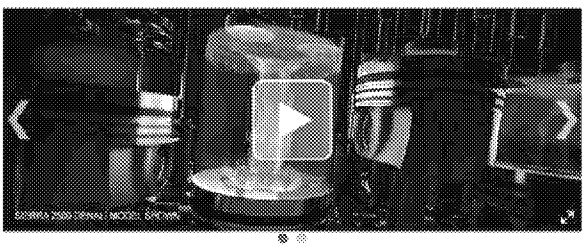
STANDARD TRAILERING EQUIPMENT

Sierra HD's available Trailering Package gives you the capability to tackle our tough towing. Standard on SLE and SLT models this package includes:

- Trailer hitch platform
- 7-pin electrical trailer connector
- Tow and flight mirror mechanism
- 4-door cabin includes rear door power locks to operate and remotely operate the tailgate
- Available power folding towing mirrors with LED rear position lamps to aid visibility when operating

PERFORMANCE

We built the Sierra 2500HD to deliver everything you expect from a heavy-duty truck—and then we exceeded those expectations with the most powerful Sierra ever.



DURAMAX DIESEL 6.6L V8 TURBO

The advanced DURAMAX Diesel is the Sierra 2500HD pickup truck's most powerful, yet quiet, fuel-efficient, towing-ready diesel engine. The DURAMAX Diesel engine has a sturdy foundation and a power stack solved with exactly 1.4 million hours of work. 2500 Sierra with the supercharged Allison® 1000 Series Transmission with overdrive, this engine generates also offers a maximum highway range of up to 980 miles on a single fill-up.[5]

DURALIFE™ BRAKE ROTORS

This Sierra manufacturing technology is a GM-exclusive patented process that hardens and strengthens Duralife™ brake rotors to resist corrosion and can double the life of the rotors compared to conventional rotors.

ALLISON 1000 SERIES TRANSMISSION

The enhanced Allison 1000 is designed to handle the higher torque capability of the 6.6L DURAMAX engine, while also helping improve fuel economy and provide maximum acceleration with the advanced towing system.

DIRECT INJECTION TECHNOLOGY

VARIABLE VALVE TIMING

Faster towing, steady power to build acceleration on the highway, the 6.6L V8 uses Variable Valve Timing (VVT) to quiet and tune up.

- Delivering power adjustments and efficiency, adjusting valves to close for
- Adjusting and opening and closing valves to reach peak levels of torque across the entire range of engine speeds

EATON AUTOMATIC LOCKING REAR DIFFERENTIAL

No other connection is as clean offers an available fully automatic locking rear differential for on-as offered use.

- Delivers added traction in towing and wheel-slip situations
- Provides a difference in torque between left and right rear wheels and then locks to both both wheels in unison

DRIVER CONTROL TECHNOLOGY

- Your confidence in control is at your touch, and a driver can make its feelings to towing. Available HD Electronic Limited allows for a condition necessary to work without use of the trailer brake

For fast starts in cold weather, quiet operation and maximum efficiency, the direct injection system helps Sierra HD with the available 6.6 Duramax diesel engine starts at little as 3 seconds at 10°C and operates at nearly 20,000 parts, with nearly several feet more a day and, delivering low emissions and great power.

SUSPENSION

Sierra 2500HD delivers a smooth ride with a fully independent coil-over-shock front suspension and 3 units monitoring rear-leaf springs, which engage [illegible], all the solid in the bed or the hitch [illegible].

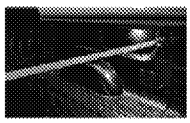
- [illegible] emergency [illegible] to help you stay on the [illegible] path
- Automatic Locking Rear Differential [illegible]
- Driver Shift Control [illegible] up of the shift selector
- Digital filtering [illegible] and improved [illegible]

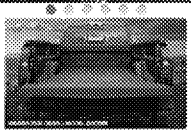
CONSULT PERFORMANCE FEATURES

EXTERIOR

[illegible]

Nearly two-thirds of the Sierra cab structure is made from high-strength steel. It's a fortress of strength that continues to the Sierra's quiet cabin. We also use high-strength steel in our fully-boxed frame rails and major frame cross-members, the 2016 Sierra 2500HD is clearly a respected leader in the heavy duty truck market. Joy example.





CARGO BOX INNOVATION

The 2016 GMC Sierra 2500HD pickup truck allows new conveniences to stay approach to engineering can transform working home into working process. The Sierra's high-strength steel bed includes innovative, intuitive features such as:

- Cornerstep rear bumper with integrated handheld [illegible] to the bed when the bed rail is [illegible]
- Available spray on bedliner
- New [illegible] tailgate
- Available LED bed lighting to help you see inside when a tonneau cover is installed
- Eight LED [illegible] tracks including four [illegible] tracks

AVAILABLE SPRAY-ON BEDLINER

Our high performance bedliner helps to protect your bed bed from [illegible] and [illegible] by providing it with a durable, [illegible] wear [illegible].

- Visibles a [illegible], [illegible] and [illegible]
- Covers bed surfaces below the bed rails
- Features a prominent GMC logo on the [illegible] of the [illegible]
- Helps to [illegible] your equipment and your [illegible]

ATTENTION TO DETAIL

It's the little things that [illegible] the Sierra 2500HD to an unparalleled level of [illegible]. Sierra 2500HD [illegible] design details such as:

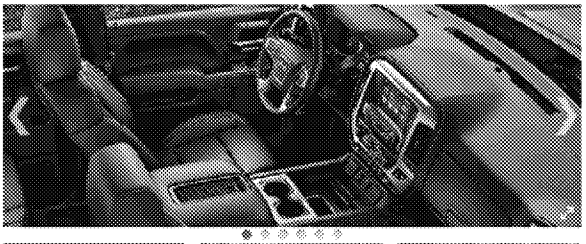
- Projector headlamps with new LED [illegible]
- LED signature [illegible] lighting [illegible]
- Bright chrome [illegible]
- Bright chrome [illegible]
- Available 20" [illegible] wheels
- Wheel arch moldings
- Available chrome bed moldings

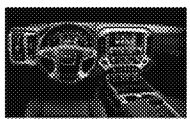
MOTION & VISION

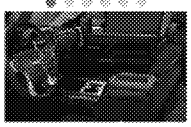
INTERIOR

[illegible]

Take one look inside the 2016 GMC Sierra 2500HD heavy-duty pickup truck and you'll see we've elevated the standard to truck interiors. With premium available materials like the cab touch instrument panel with real aluminum film, available technologies like 4G Wi-Fi Hotspot,[1] superior comfort and advanced safety features, the Sierra's crafted interior is the complete package.







EXCEPTIONALLY QUIET CABIN

Sierra 2500HD's cabin is engineered to [illegible] and your passengers with a [illegible] Features [illegible] to cabin [illegible] include:

- Triple door [illegible]
- Wheel and hydraulic body mounts with hydraulic engine mounts to reduce [illegible]
- [illegible] that reduce [illegible]

PREMIUM MATERIALS

Attention to detail, interior craftsmanship and quality appointments make the 2016 Sierra 2500HD heavy duty pickup truck [illegible] other truck with available:

- Leather-upgrade [illegible] and leather-wrapped [illegible]
- Cable-[illegible] instrument panel and door [illegible]
- Aluminum film [illegible] on instrument panel, [illegible], and center [illegible]
- [illegible] throughout the cabin

COMFORT & CONVENIENCE

Your needs [illegible] inside the 2016 Sierra 2500HD truck. From the [illegible] storage [illegible] to [illegible] Sierra [illegible] Fortress include:

- Available heated and ventilated seats
- Available heated leather-wrapped [illegible]
- Comfortable, [illegible]
- Available [illegible] charging pad
- A center console big enough to store hanging [illegible] and much more is included with [illegible]
- USB[2] [illegible] and 12V charging [illegible]
- Available [illegible] power [illegible]
- Locking [illegible] on SLE and SLT models with [illegible]

MOTION & VISION

TECHNOLOGY

[illegible]

The 2016 Sierra 2500HD pickup truck sets a higher standard with personal technology — to help you stay connected and in control.

INTELLIGENT

[illegible]

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

4G WI-FI HOTSPOT

[illegible]

MYGMC MOBILE APP

[illegible]

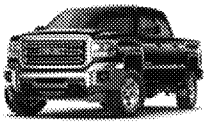
REAR VISION CAMERA

[illegible]

SAFETY ALERT TECHNOLOGIES

[illegible]

TRIMS



STANDARD ON THE 2016 SIERRA 2500

6.6L V8 CAB ENGINE	●
STABILITRAK WITH TRACTION CONTROL	●
HEAVY DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL	●
CORNERSTEP REAR BUMPER	●
HYDRAULIC BODY MOUNTS AND TRIPLE DOOR SEALS	●

KEY:
● STANDARD A AVAILABLE -- N/A

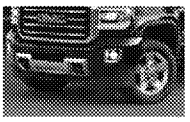
FEATURES	SIERRA	SLE	SLT	DENALI
HID Projector Beam Headlamps with LED Signature Lighting	●	●	●	●
Digital Steering Assist	--	A	A	●
6.6L V8 DURAMAX Diesel	A	A	A	A
Allison Select 1000 Transmission	A	A	A	A
Heavy Duty Automatic Locking Rear Differential	●	●	●	●
Black Scalloping Mirrors	A	A	--	--
Chrome Tradering Mirrors	--	--	A	A
Fog Lamps	--	A	●	●
LED Cargo Box Lighting	A	●	●	●
Tradering Equipment Package	A	●	●	●
Rear Vision Camera	A	●	●	●
EASLR and Lower Tailgate	--	●	●	●
Leather-Appointed Seating	--	A	●	●
Spray-on Bed Liner	A	A	A	●
Remote Vehicle Starter System	--	A	●	●
Integrated Trailer Brake Controller	A	●	●	●
Front and Rear Park Assist	--	--	A	●
Heated and Ventilated Front Leather-Appointed Seats	--	--	A	●
Bose Sound System	--	--	A	●
4.2-inch Diagonal Driver Information Center	--	●	●	--
8-inch Customizable Driver Display	--	--	--	●
Signature Denali Grille	--	--	--	●
STARTING MSRP[1]	$33,535	$40,330	$47,445	$54,590
BUILD & PRICE	SIERRA	SLE	SLT	DENALI

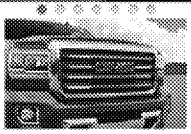
[illegible]

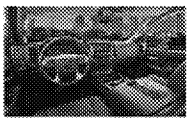
[illegible]

ALL TERRAIN PACKAGE

The 2016 GMC Sierra HD All Terrain Package lets you trailer and haul your payload wherever you need to, whether that takes you on a paved road – or off one. Front and rear body color bumpers, a more aggressive grille and distinct badging lets you do it with style and presence.







OFF-ROAD CAPABILITY

- All-Terrain tires
- Skid Plate Protection (stand alone)
- Underbody Shield
- Off-Road Power Intermediate Center differential

EXTERIOR

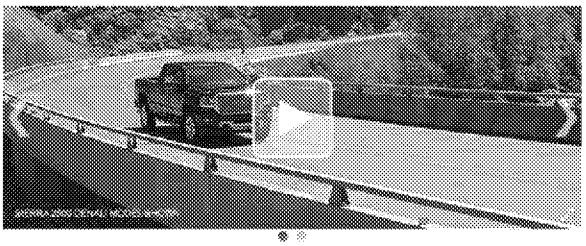
- Front and Rear Bodyside Sculpting
- All Terrain Grille Insert with Chrome Grille Surround
- All Terrain badging on front doors and tailgate

INTERIOR

- Heated Steering Wheel
- Skid Plates
- Carpeted Floor Mats

SAFETY

The 2015 Sierra 2500HD's state-of-the-art safety and driver aid technologies provide peace of mind and help prepare you for the unexpected.



DRIVER ALERT TECHNOLOGIES

Sierra 2500HD's advanced technologies can manage engineering with driver-centric safety using cameras or ultrasonic sensors to provide others you might not be hauling. Sierra is the first pickup to offer this technology, which lets you know when you are approaching another vehicle too quickly or when you are backing out.

These available technologies include:

- Forward Collision Alert
- Lane Departure Warning
- Safety Alert Seat

SYNC[1]

- Standard Sirius® XM Satellite Radio[2]
- Services include Automatic Crash Response, Turning Point Navigation, Roadside Assistance, Office Hours, a call to emergency services, and Remote Door Unlock
- The Driver Alert Pack, which is available for one year, includes Vehicle Health Report, includes Online Vehicle Diagnostics, Dealer Maintenance Notification and Recall Notification, and services

Safety features are no substitute for the driver's responsibility to operate the vehicle in a safe manner. The driver should remain attentive to traffic, surroundings, and road conditions at all times. Read the vehicle owner's manual for important driving conditions and information.

SYNC SAFETY MESSAGE

Your safety is very important to us. If you want to talk about what that or that there is mean or your current vehicle or on a vehicle you are considering, visit gmc.com or call (888) 327-4236.

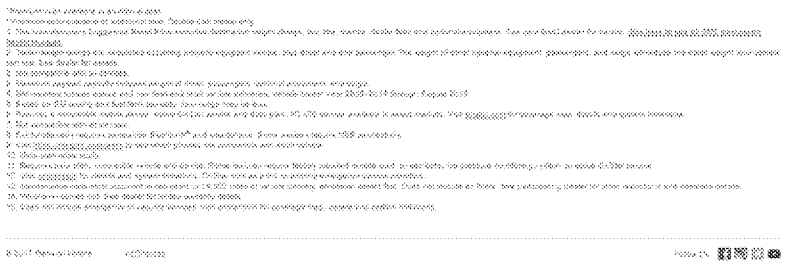
PRO GRADE PROTECTION

Standard on every 2015 GMC Sierra 2500HD, GMC Pro Grade Protection has you fully protected with features and services including:

- Two maintenance visits (including 10[1] oil changes)[3]
- Bumper-to-Bumper Limited Warranty[4]
- Powertrain Limited Warranty[5]
- Powertrain Limited Warranty[6]
- Roadside Assistance & Courtesy Transportation[7]
- Roadside Assistance & Courtesy Transportation[8]
- Benefits Not at Online[9] Performance Plan with a suite of emergency, security, and diagnostic services
- Super Cruise Back Plan[10]

[illegible]

[illegible]

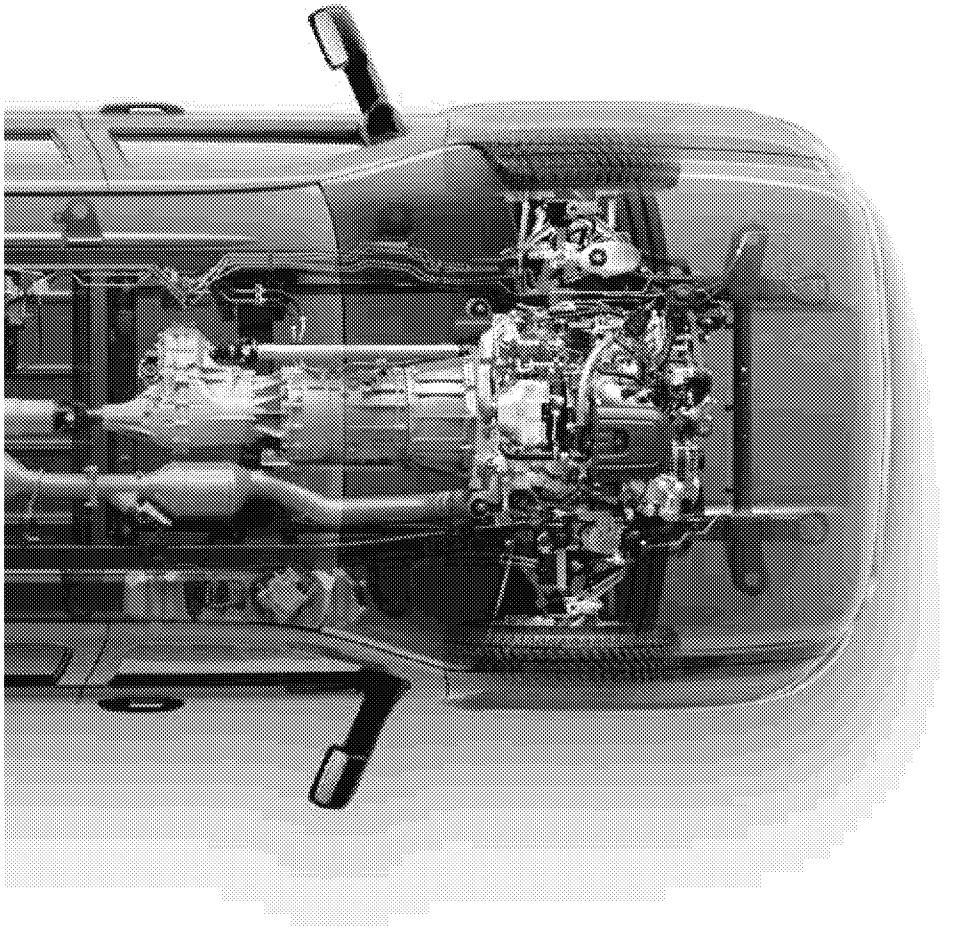


chrome-extension://mcbpblocgmgfnpjjppndjkmgjaogfceg/fsCaptured.html 5/5

EXHIBIT 6

USING DIESEL EXHAUST FLUID WITH THE DURAMAX 6.6L TURBO-DIESEL

NEW SILVERADO HD



THE MOST POWERFUL DURAMAX DIESEL EVER NOW RUNS CLEANER TOO!

NEW SILVERADO HD

USING DIESEL EXHAUST FLUID

NEW SYSTEM REDUCES TAILPIPE NOx EMISSIONS

The enhanced, legendary Duramax 6.6L Turbo-Diesel is the most powerful Duramax ever built—generating more horsepower and torque than any competitor. This proven powerplant gets the job done while being friendlier to the environment.

The improved Duramax uses the latest emission control technology, reducing Nitrogen Oxide (NOx) emissions by a whopping 63%, when compared to the 2010 model. GM engineers determined the best way to accomplish this remarkable reduction of diesel emissions was to employ a Selective Catalytic Reduction (SCR) system that uses Diesel Exhaust Fluid (DEF).

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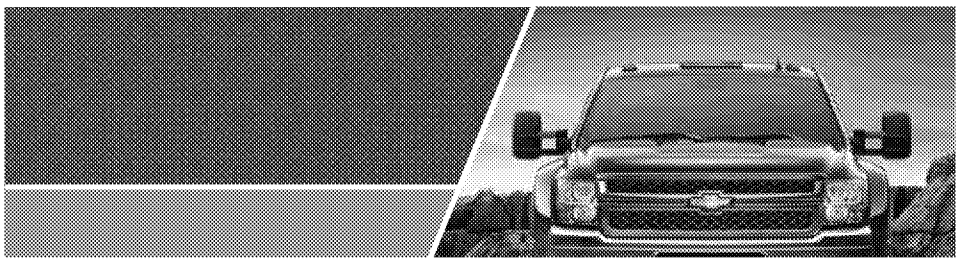
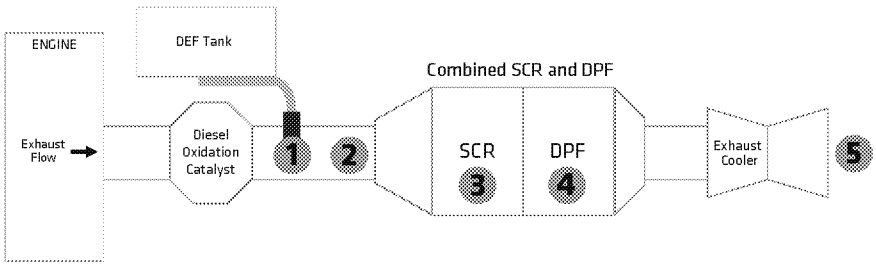


SELECTIVE CATALYTIC REDUCTION (SCR)

The SCR system is an after-treatment system, since it treats the vehicle's exhaust after combustion.

Here's how it works:

1. A fine mist of DEF is injected into the exhaust while the engine is running.
2. The heat from the exhaust converts the DEF into ammonia.
3. When the ammonia, mixed with exhaust gases, reaches the SCR catalyst, the NOx emissions are broken down.
4. The Diesel Particulate Filter (DPF) then captures soot to incinerate it during regeneration cycles.
5. Water vapor, nitrogen and reduced emissions exit the exhaust system.



NEW SILVERADO HD

USING DIESEL EXHAUST FLUID

DIESEL EXHAUST FLUID (DEF)

Diesel Exhaust Fluid (DEF) is a non-flammable fluid comprised of 33% ammonia-based urea and 67% purified water. DEF is used with diesel engine exhaust systems to reduce the amount of emissions produced by turning Nitrogen Oxide (NOx) into nitrogen and water vapor. DEF technology has a proven track record since it has been used in Europe for years.

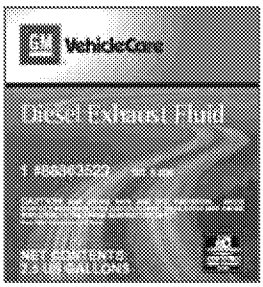
Driving Range between DEF Tank Refills

The SCR system uses DEF at a rate of about 1 to 1.25% of the vehicle's diesel fuel usage. A full tank of DEF provides a driving range of about 5,000 miles (8,000 kilometers). Since DEF usage is directly related to fuel consumption, range will vary depending on driving conditions.

Purchasing DEF

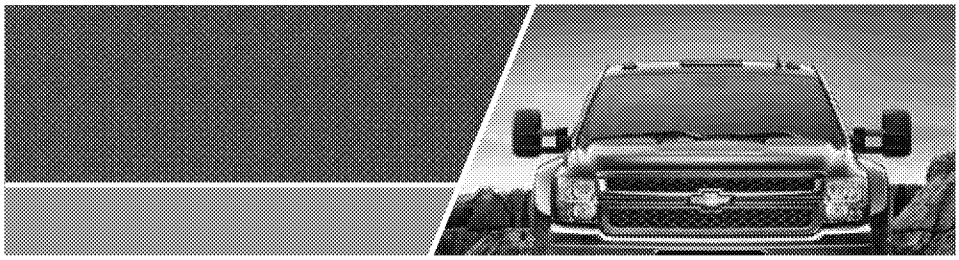
DEF is available at GM dealerships and most major truck stop chains. GM DEF is available in a variety of package sizes to service both individual consumers and fleets, including: 1- and 2.5-gallon jugs, 55-gallon drums and 330-gallon totes. For your convenience, listed below are the GM part numbers for the 1- and 2.5-gallon sizes.

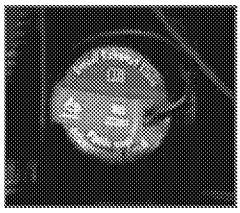
- 1-gallon part number is 88862659
- 2.5-gallon part number is 88863523

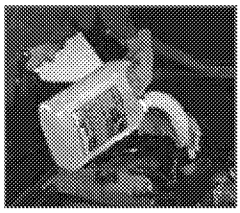


If purchasing DEF outside of a dealership, you must use API-certified or ISO 22241 labeled DEF.

If you need assistance locating DEF, the U.S. Department of Energy has a DEF locator on its website that is regularly updated. You can visit the website at: afdc.energy.gov/afdc/locator/def/







Refilling Your DEF Tank

DEF is stored in a 5.3-gallon tank located under the passenger side of the cab. The DEF tank fill point is conveniently located under the hood, along with other fluids that require periodic maintenance. It's easily identified with a blue cap. Do not over fill the DEF tank.

Storing DEF

DEF shelf life is typically at least one year, depending on the storage temperature. It is best stored out of direct sunlight between 12°F and 86°F. Small DEF spills can be cleaned up by absorbing it with dry earth, sand or other non-combustible material and scooping it into a container for disposal.

While DEF is not listed as a hazardous waste by the federal government, please use proper disposal methods. Do not empty into drains; dispose of this material and its container in accordance with all applicable local and national regulations.

NEW SILVERADO HD

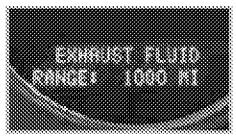
USING DIESEL EXHAUST FLUID

ELECTRONIC ONBOARD WARNING SYSTEM

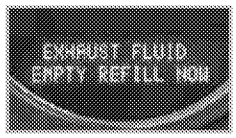
There is no guessing involved when it comes to maintaining a correct DEF level with this system. An electronic onboard warning system provides you with numerous warnings in the Driver Information Center (DIC) to help you maintain adequate DEF levels, alert you if the DEF quality is poor or if there are concerns with the system. See your Duramax owner's manual supplement for a complete description of the electronic onboard warning system and its warning messages.

Maintaining DEF Fluid Levels

The electronic onboard warning system will provide a message alerting the driver when the DEF level is around 1000-miles remaining range.

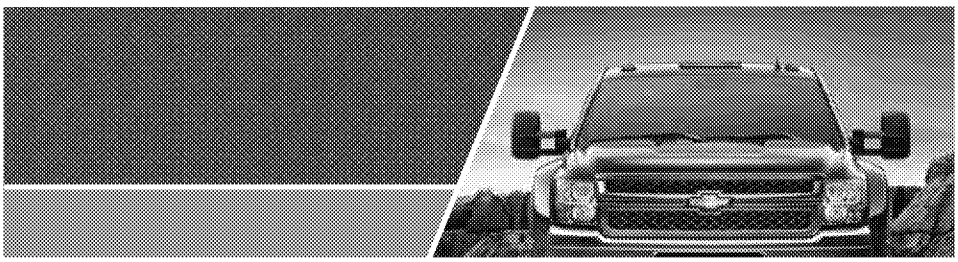


Additional messages that must be acknowledged alert the driver at the 300-mile, LOW and 0-mile fluid ranges as the DEF tank gradually empties. The fluid level in the DEF tank must be maintained for the vehicle to run correctly. If the DEF tank is allowed to run empty, the system will alert the driver. If fluid is not added at the next vehicle start, the vehicle speed will be limited to 55 mph and ultimately to 4 mph in accordance with federal and state requirements.



Adding DEF to an Empty or Low Tank

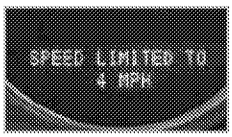
Always add at least one gallon (3.78 liters) to release the vehicle from any speed limitation. Once the system is refilled, the system resets itself and a service visit is not required. It may take up to 30 seconds in park or several miles of driving to update the DEF level warning.



Maintaining DEF Quality

The quality of DEF in the tank must be maintained for the vehicle to run correctly. Care should be taken to prevent any contaminants from getting into the fluid. Only GM-approved DEF, or DEF fluid containing the API certified or ISO 22241 label, should be used.

To meet federal and state requirements, the electronic onboard warning system is designed to automatically monitor DEF quality. If poor-quality fluid is detected, the system will alert the driver. If poor-quality fluid is not replaced within 200 miles, the vehicle speed will be limited to 55 mph at the next vehicle start. If the system's warnings continue to be ignored, vehicle speed will ultimately be limited to 4 mph in accordance with federal and state requirements.



Warranty Concerns

System damage caused by using incorrect fluid is not eligible for warranty reimbursement. Care should be taken to avoid introducing any contaminants into the DEF tank or fluid.

Tampering with the Exhaust System

No modifications should be made to the exhaust system in the area between the engine and the Diesel Particulate Filter (DPF). Modifications to the exhaust routing after the DPF are allowed within guidelines published on gmupfitter.com

NEW SILVERADO HD

FREQUENTLY ASKED QUESTIONS (FAQS)

Q. What is the warranty coverage for the SCR system?

A. The SCR system is covered under the emissions limited warranty just like any other emissions component. However, system damage caused by using incorrect fluid is not eligible for warranty reimbursement. See dealer for details.

Q. Where can you purchase DEF?

A. API-certified DEF is available at GM dealerships and most major truck stop chains. GM DEF is available in a variety of package sizes to service both individual consumers and fleets, including: 1- and 2.5-gallon jugs, 55-gallon drums and 330-gallon totes. For your convenience, listed below are the GM part numbers for the 1- and 2.5-gallon sizes.

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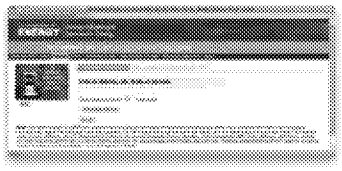
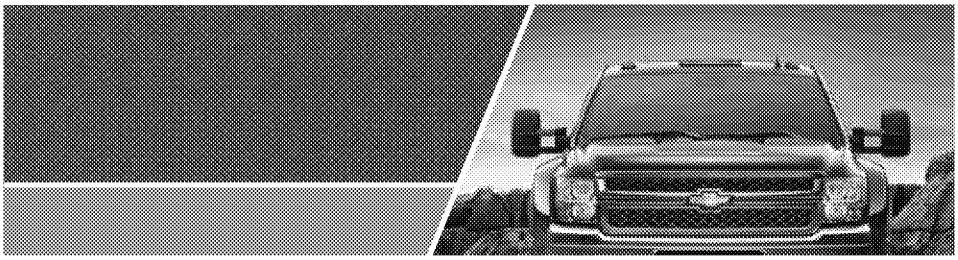


Q. Where is the DEF fill point on a vehicle?

A. The DEF fill is conveniently located under the hood, on the passenger side of the engine compartment. The DEF fill location is easily identifiable by its blue cap.

Q. Where is the DEF tank located on the vehicle?

A. The 5.3-gallon DEF tank is located under the cab near the passenger side door.



Q. Do trucks equipped with SCR have a Diesel Particulate Filter (DPF)?

A. Yes they do. The DPF serves a different function than the SCR; it helps remove soot from the exhaust. For 2011, the range between Duramax DPF regeneration cycles has been lengthened by 75% and is now up to 700-miles. This improves fuel economy performance since less diesel fuel is required to clean the DPF. (Based on GM testing.)

Q. Will DEF freeze?

A. Yes, DEF will freeze—at approximately 12°F. If DEF is frozen, the vehicle will start as it always has. As soon as the vehicle is started, the DEF tank and lines are electrically heated to ensure adequate DEF delivery in cold weather. The DEF thaws with no degradation. Remember, since this system was designed to operate in cold weather, there is no impact on cold-weather engine operation.

Q. Does DEF expand when it freezes and if so, how does it impact the tank?

A. Yes, DEF expands when it freezes. The vehicle's DEF tank and all DEF packaging is designed to accommodate any expansion that may result from being frozen.

Q. Can a freeze-point improver be added to the DEF to keep it from freezing?

A. No, doing so would alter the DEF mixture balance potentially triggering an "EXHAUST FLUID QUALITY POOR" DIC message.

Q. What effect does high-temperature driving have on the vehicle?

A. High ambient temperatures do not affect the operation of the vehicle.

Q. Is DEF flammable?

A: No.

NEW SILVERADO HD

FREQUENTLY ASKED QUESTIONS (FAQS)

Q. Will DEF containers have a date stamp?

A. Yes, each container should be dated.

Q. How do you monitor a truck's DEF level?

A. Very easily. A DIC message will alert the driver whenever a vehicle's DEF level begins to run low (see DEF levels explanation earlier in this brochure).

Q. Is there a DEF level gauge?

A. No. Since the DIC displays DEF level messages, there's no need for a dedicated DEF level gauge.

Q. Is there ever a situation where the truck will not start or drive due to lack of DEF?

A. No. You'll never run into a situation where the truck will not start and drive. However, your speed may be limited (see DEF levels portion of this brochure).

Q. Can you mix fresh DEF with older DEF?

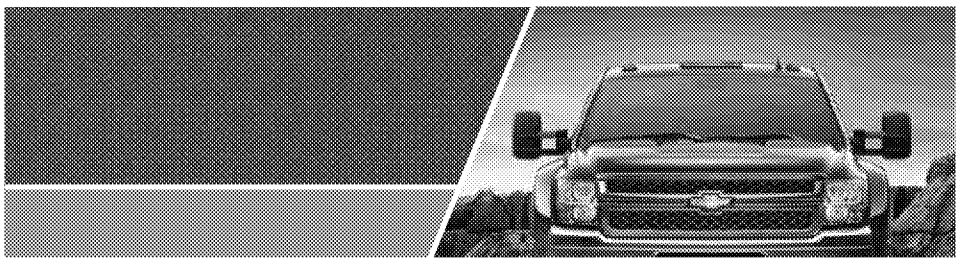
A. Yes, since adding new DEF does not change the mixture ratio you can mix the two together.

Q. What will happen if some other type of liquid is poured into the DEF system?

A. DEF is the only fluid approved and recommended by General Motors. Using a product not recommended by GM will trigger a DIC warning message and may damage the SCR system and void the warranty coverage (see DEF quality portion of this brochure).

Q. Is there a drain plug on the DEF tank?

A. No, there is no drain plug on the DEF tank. However, the tank is designed to be easily removed.



Q. Is there a way to bypass a system-imposed, low-speed restriction?
A. No. Government regulations mandate the system be tamper proof.

Q. Will chassis cab upfitters be affected by the location of the DEF tank?
A. Since the tank is located under the cab, it does not impact the installation of any bodies.

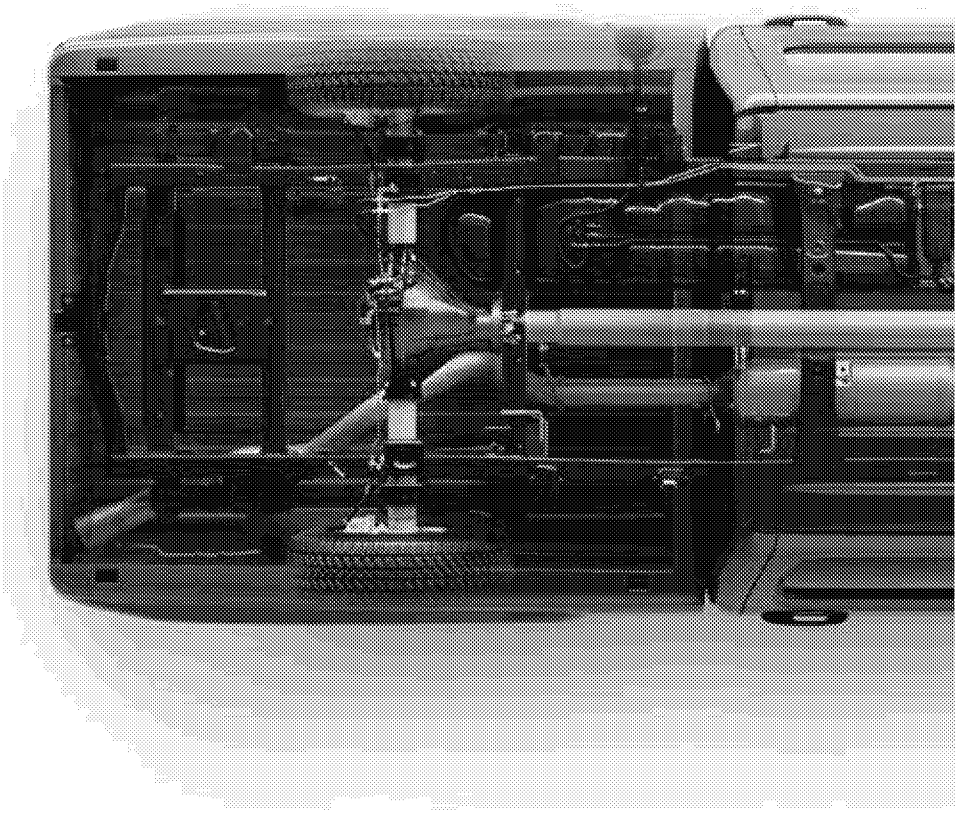
Q. How can I determine if DEF quality is good?
A. If you have no warning messages, the DEF quality in the tank is good. For stored DEF, your GM Dealership has a special tool to check DEF quality.

Q. How do you clean up DEF spilled on a vehicle?
A. If you spill DEF on the vehicle while filling the tank, wipe the surface with a damp cloth.

Q. What should you do if DEF makes contact with your skin?
A. Try to avoid prolonged or repeated contact with skin. After handling DEF, always wash your hands thoroughly with soap and water. If irritation occurs, flush exposed area with plenty of water for at least 15 minutes followed by washing area thoroughly with soap and water. If irritation or pain persists, seek medical assistance.

Q. What should you do if DEF makes contact with your eyes?
A. Flush eyes with large amounts of water for at least 15 minutes. If irritation or pain persists, seek medical assistance.

NEW SILVERADO



Information contained herein is designed to be as comprehensive and factual as possible. General Motors reserves the right, however, to make changes at any time, without notice, in materials, equipment, specifications, models and availability. Since some information may have been updated since the time of printing, please check with your Chevrolet dealer for complete details.

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EXHIBIT 7

6.6L DURAMAX LML

DURAMAX LML SPECS & INFO

The LML Duramax was released for 2011 model General Motors & Chevrolet HD trucks. The latest version of the 6.6L Duramax requires advanced emissions equipment, including the use of diesel exhaust fluid injection, to reduce nitrogen oxide emission levels by 63 percent over LMM powered trucks. This allows the LML to exceed currently mandated federal emissions requirements and potentially meet future requirements as well. The LML was replaced for the 2017 model year by the next generation Duramax L5P.

Duramax Maintenance Schedule & Service Information
6.6L Duramax L5P Specs
Duramax LML Emissions System
Common Duramax Problems
6.6L Duramax LGH
Allison 1000 Ratios & Specs

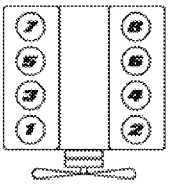
DURAMAX RECEIVES SCR SYSTEM, DEF

The Duramax LML introduced the "9th injector" system in order to supply fuel to the DPF during regeneration. This is opposed to the previous generation's (LML) late/post injection technique. The result eliminated cylinder washing concerns and permitted the use of up to B20 biodiesel. The implementation of the SCR system, which requires a constant supply of diesel exhaust fluid (DEF), was met with heavy scrutiny. However, this technology actually allows for an advantageous engine calibration to be executed, reducing the duty cycle of DPF regenerations and providing significant improvements in fuel economy. DEF is not particularly costly and owners incur noticeable fuel savings even while factoring in the cost of exhaust fluid. GM's official statement is that fuel mileage increased 11% over the previous generation LMM engine.

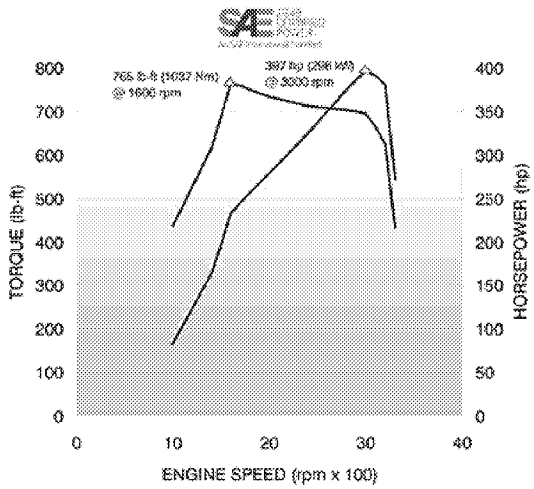
The LML is said to have been engineered using 60% newly designed components not carried over from a previous generation Duramax. This includes an upgraded engine block casting, oil pump, high strength pistons and connecting rods, main bearing design, and re-routed oil passage circuit. Rated at 397 horsepower and 765 lb-ft of torque, the engine is significantly more powerful than any prior Duramax. General Motors blindsided Ford with the release of these figures, which were revealed shortly after Ford's 390 hp/735 lb-ft 6.7L Power Stroke became available. A concerned Ford quickly acted to increase the Power Stroke's available horsepower and torque rating, issuing a free performance upgrade to owners which would re-calibrate the engine to the tune of 400 horsepower and 800 lb-ft.

6.6L DURAMAX LML SPECS

Engine:	6.6L Duramax LML, 90 degree V8 diesel
Assembly Location:	DMAX assembly plant in Moraine, Ohio
Years Produced:	2011 - 2016 model years
VIN Code:	8 (8th digit of VIN)
Displacement:	403 cubic inches, 6.6 liters
Assembly Site:	DMAX engine plant, Moraine, Ohio
Head/Block Material:	Aluminum cylinder heads, cast iron engine block
Compression Ratio:	16.0 : 1
Firing Order:	1-2-7-8-4-5-6-3

			
Bore:	4.055" (103 mm)		
Stroke:	3.897" (99 mm)		
Aspiration:	Turbocharged & intercooled - Garrett variable vane (VVT), variable geometry turbocharger (VGT) with air-to-air intercooler		
Injection:	Direct injection, 2000 bar (~30,000 psi) Bosch high pressure common rail w/ CP4 injection pump and Piezo injectors		
Valvetrain:	OHV (overhead valve), 4 valves per cylinder, mechanical roller lifters		
Oil Capacity:	10 quarts w/ filter (9.5 liters)		
Fuel Compatibility:	Ultra low sulfur diesel (ULSD) or max B20 biodiesel blend		
Max Shift RPM:	3,000 rpm		
Peak Horsepower:	397 hp @ 3,000 rpm		
Peak Torque:	765 lb-ft @ 1,600 rpm		
Engine Dimensions:	Length	Width	Height
	Approx 30"	Approx 30"	Approx 32"

DURAMAX LML HORSEPOWER & TORQUE GRAPH



6.6L Duramax LML horsepower & torque (Silverado, Sierra)
Source: GM Powertrain Division, www.gmpowertrain.com

LML DURAMAX EMISSIONS SYSTEM

• Diesel particulate filter (DPF) nearly eliminates emissions of diesel soot. Active regeneration programming cleans the DPF periodically (estimated regen period every 700 miles, 300 miles less then previous systems, under normal operating conditions) by injecting diesel fuel into the exhaust stream via a "downstream injector", completely burning off soot captured in the DPF.

• Exhaust gas recirculation (EGR) with EGR cooler.
• Selective catalyst reduction (SCR) utilizing diesel exhaust fluid injection (DEF). DEF is a urea based fluid injected into the SCR to further reduce nitrogen oxide emissions. A DEF tank will need to be filled approx. every 5,000 miles (under normal operating conditions). Engine will enter into a limp-mode if DEF tank is empty.
• EGR cooler bypass to help eliminate soot deposits in the EGR cooler/system, which could potentially cause engine problems.

LML DURAMAX DEF

The LML Duramax is equipped with a SCR system that requires the use of DEF (diesel exhaust fluid). DEF is injected into the exhaust stream where a chemical reaction occurs that reduces NOx emissions. The DEF tank is approximately 5 gallons (18.9 liters). On pickup trucks, the DEF tank fill nozzle is located on the passenger side, under the hood and is sealed by a blue cap. On vans, the DEF tank fill nozzle is located in the fuel fill door, and is also sealed by a blue cap. The DEF system will illuminate a warning indicator in the instrument panel when the DEF fluid levels range is estimated to be 1,000 miles. Subsequent warnings will follow.

• If the DEF fluid level is depleted, an "EXHAUST FLUID EMPTY" notification will be displayed on the instrument panel. Upon restart, the truck will be speed limited to 55 mph. If the tank remains empty, speed will be limited to 4 mph after the second refueling. Performance may also suffer when the truck enters this mode.

• If the DEF fluid quality is detected to be low, an "EXHAUST FLUID QUALITY POOR" notification will be displayed on the instrument panel. After 200 miles of driving with poor quality DEF, the truck will be speed limited to 55 mph. If the system continues to detect low quality DEF, speed will be limited to 4 mph upon the next refueling.

• If the DEF system detects that it requires service, a "SERVICE EXHAUST FLUID SYSTEM" notification will be displayed on the instrument panel. Failure to have the system serviced within 200 miles will result in speed limited to 55 mph upon the next startup, and 4 mph on the next refuel.

One of the biggest gripes regarding the Duramax LML is the location of the DEF tank and DEF fill spout. The DEF tank is located roughly beneath the front passenger with several inches of the tank vulnerably exposed beneath the level of the body. In order to add DEF to the tank, the driver must access the fill spout located against the passenger side firewall (under the hood). The height required to access the under-hood mounted DEF fill as well as the corrosive nature of DEF have been the source of concerns - a full-size, one ton, four wheel drive pickup is relatively tall and ease-of-access is more or less dependent on a person's height. Nonetheless, Duramax owners won't have to worry about accidentally putting DEF in their fuel tank, as the two fill locations are side-by-side in competitor's trucks.

NOX SENSOR FAILURES & SCR/DEF RELATED PROBLEMS

Many 2011 model year Duramax LMLs endured ongoing reliability problems with the SCR and DEF systems, which included DEF sensor, NOx sensor, and DEF pump failures in addition to problems with exhaust fluid freezing in cold weather. By far, the predominant re-occurring problem was failure of the NOx sensors (commonly P20EE/P207F trouble diagnostic codes). Repeated NOx sensor prompted GM to make changes to the sensors and issue a 10 year, 110,000 mile warranty on the updated sensor. Owners of what GM considers to be affected VIN numbers were issued correspondences regarding the warranty information, however not all 2011 MY Duramax owners are covered by this change. It is unknown how many trucks are affected and what the cut-off is for those protected by the updated warranty - if you are experiencing issues, we suggest pressing the issue with your local dealership. We've received reports of similar problems with some 2012 MY pickups (all of which were repaired under warranty), but with nowhere near the frequency of 2011 MY engines. The concern seems to have been addressed appropriately and 2012+ MY Duramax LMLs should not experience repeated issues

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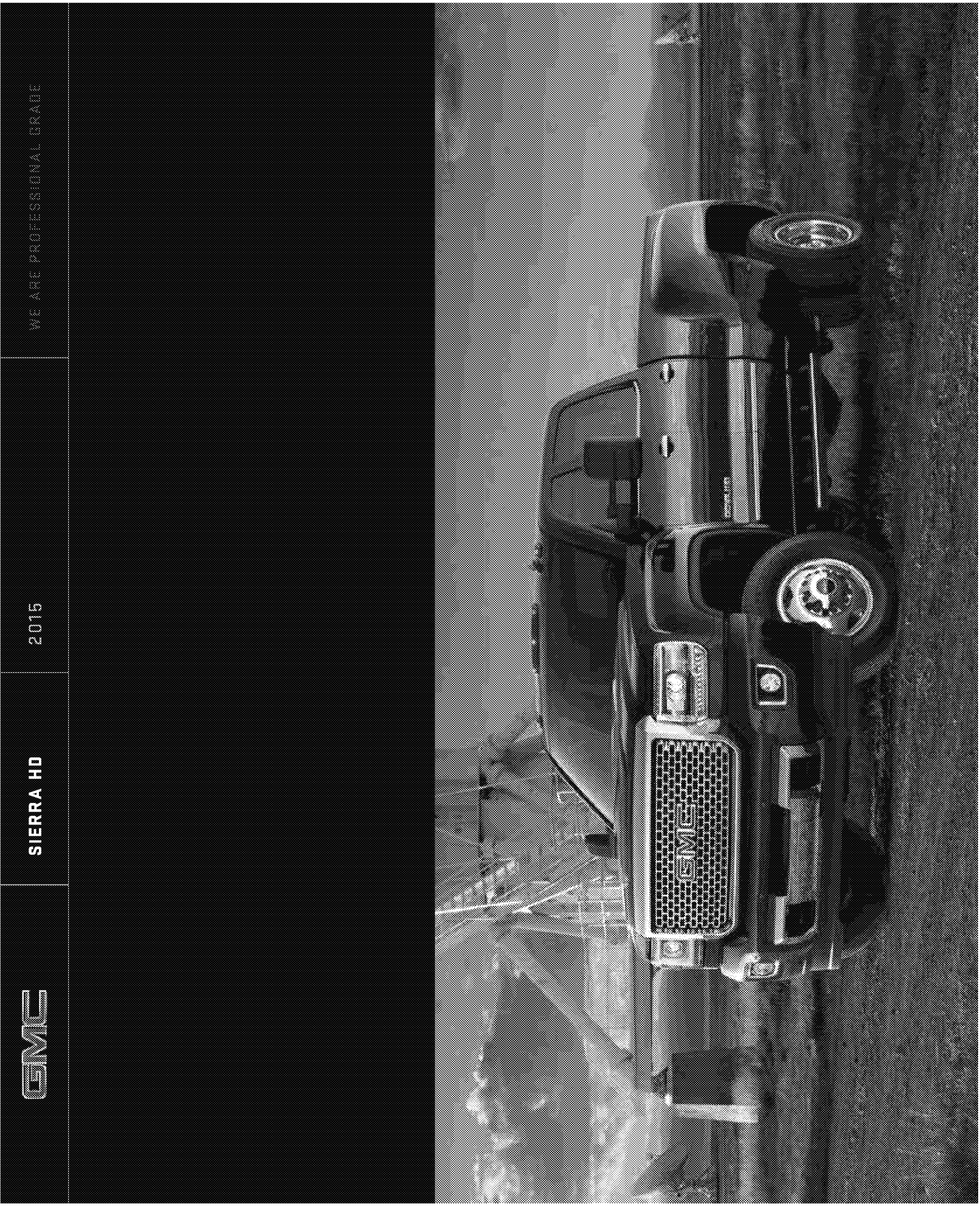
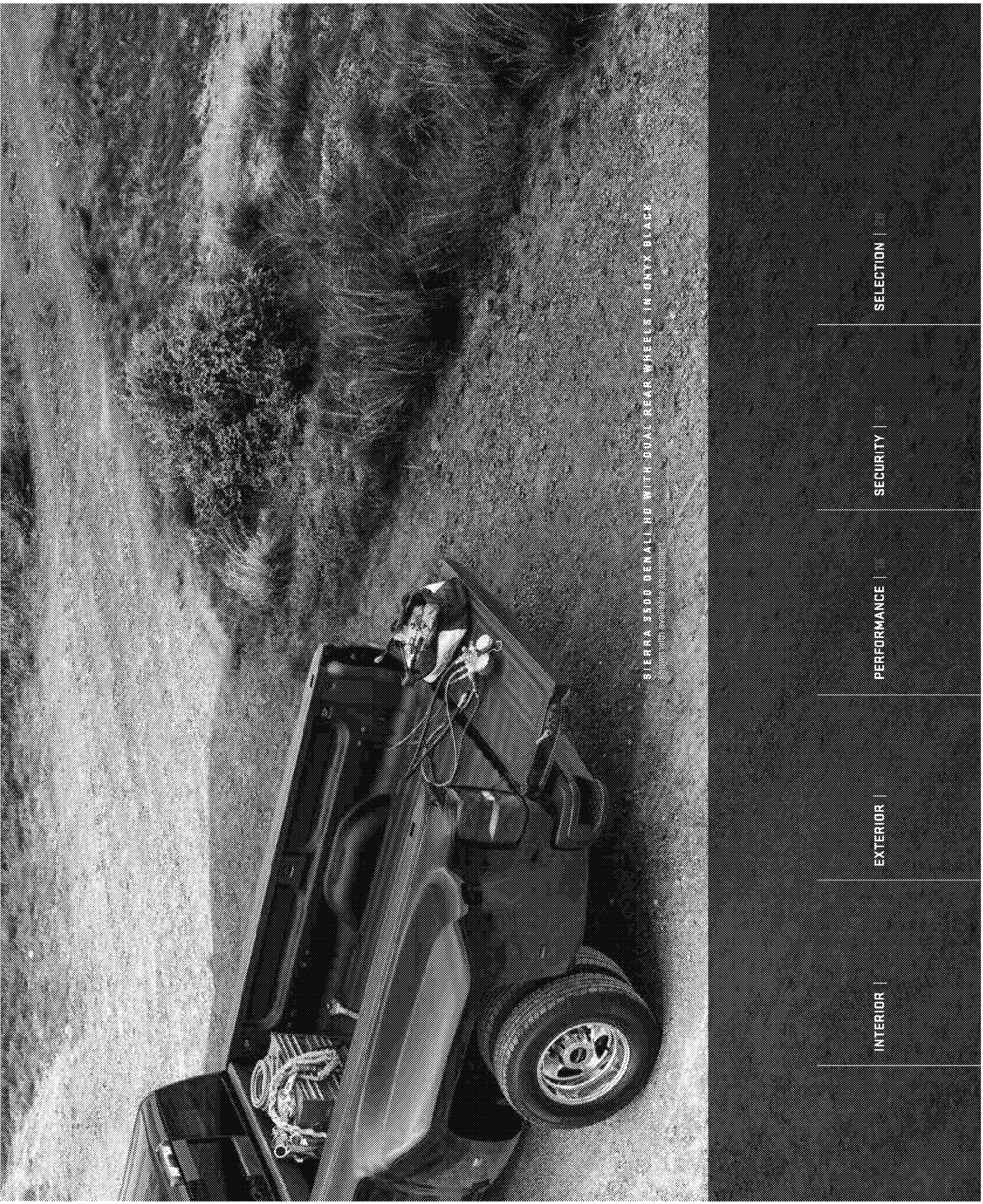
EXHIBIT 8


GMC
SIERRA HD
2015
WE ARE PROFESSIONAL GRADE

2015 GMC SIERRA HD. At GMC, our engineers are never satisfied. That's precisely why they took the strongest, most powerful Sierra Heavy Duty pickups ever and used them as a starting point. The new 2015 Sierra 2500HD and 3500HD take proven powertrains and the new standard in quiet, comfortable truck interiors, pickup-first technologies and cargo box innovations to produce a premium-duty breed of Professional Grade trucks. It's just another example of what incredible thinking can help you achieve.


SIERRA 3500 DENALI HD WITH DUAL REAR WHEELS IN ONYX BLACK
SELECTION
SECURITY
PERFORMANCE
EXTERIOR
INTERIOR

A NEW STANDARD HAS QUIETLY BEEN ACHIEVED.

The redesigned cabin in the 2015 Sierra HD combines triple door seals, inlaid doors and other refinements throughout the truck to create our quietest HD pickups ever. Add premium materials, supportive seats and generous storage and you've set the new standard in heavy-duty truck interiors. Denali HD takes it a step further with heated and cooled Denali-embossed leather-trimmed front bucket seats, a heated leather-wrapped steering wheel, new soft-touch instrument panel with burnished aluminum trim and contrasting stitching.

POWER-ADJUSTABLE PEDALS ALLOW YOU TO PERSONALIZE YOUR DRIVING POSITION.

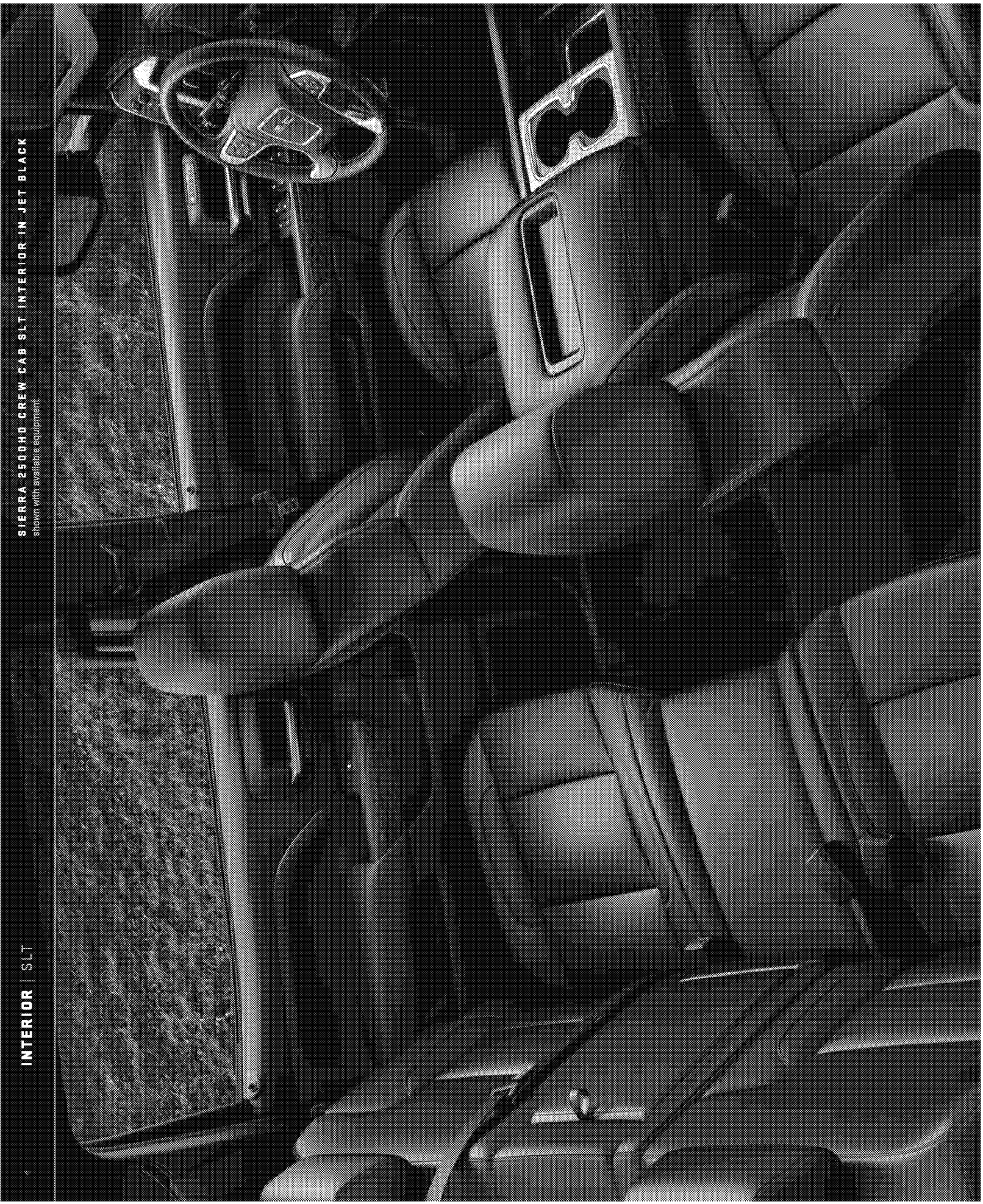
GAIN QUICK FINGERTIP ACCESS TO VEHICLE INFORMATION WITH DENALI'S EXCLUSIVE CUSTOMIZABLE DRIVER DISPLAY.

ENJOY THE BOSE™ PREMIUM 7-SPEAKER AUDIO SYSTEM AND VOICE-ACTIVATED NAVIGATION.[1]

STAY CHARGED WITH A NEW 110-VOLT OUTLET, A 12-VOLT OUTLET AND NOW UP TO SIX USB PORTS.[2]

[1]Map coverage available in the United States, U.S. Virgin Islands, Puerto Rico and Canada. [2]Not compatible with all devices.

SIERRA 2500 DENALI HD INTERIOR IN JET BLACK
shown with available equipment.


SIERRA 2500HD CREW CAB SLT INTERIOR IN JET BLACK
shown with available equipment.
INTERIOR | SLT

EASE OF ACCESS DOESN'T TAKE A BACK SEAT.

Setting a design standard for truck interiors means SLE and SLT models surround you with premium, durable materials. It also means that Crew Cabs now offer nearly 2" of additional rear leg room, while new Double Cabs make getting into and out of the rear seat easier in tight places thanks to new forward-hinged rear doors.

HARD WORK ISN'T WITHOUT ITS PLEASURES THANKS TO DAY-LONG COMFORT SEATS.

FOR MAXIMUM FLEXIBILITY AND CONVENIENCE, SIERRA HD OFFERS MOVABLE CUPHOLDERS, A SMARTPHONE HOLDER AND DUAL GLOVE BOXES.

NEW AVAILABLE CENTER FLOOR CONSOLE OFFERS PLENTY OF MOBILE OFFICE SPACE.

REFINED DOOR TRIM PANELS ARE REINFORCED FOR PREMIUM DURABILITY TO STAND UP TO EVERYDAY WEAR AND TEAR.

UP CLOSE AND PERSONAL.

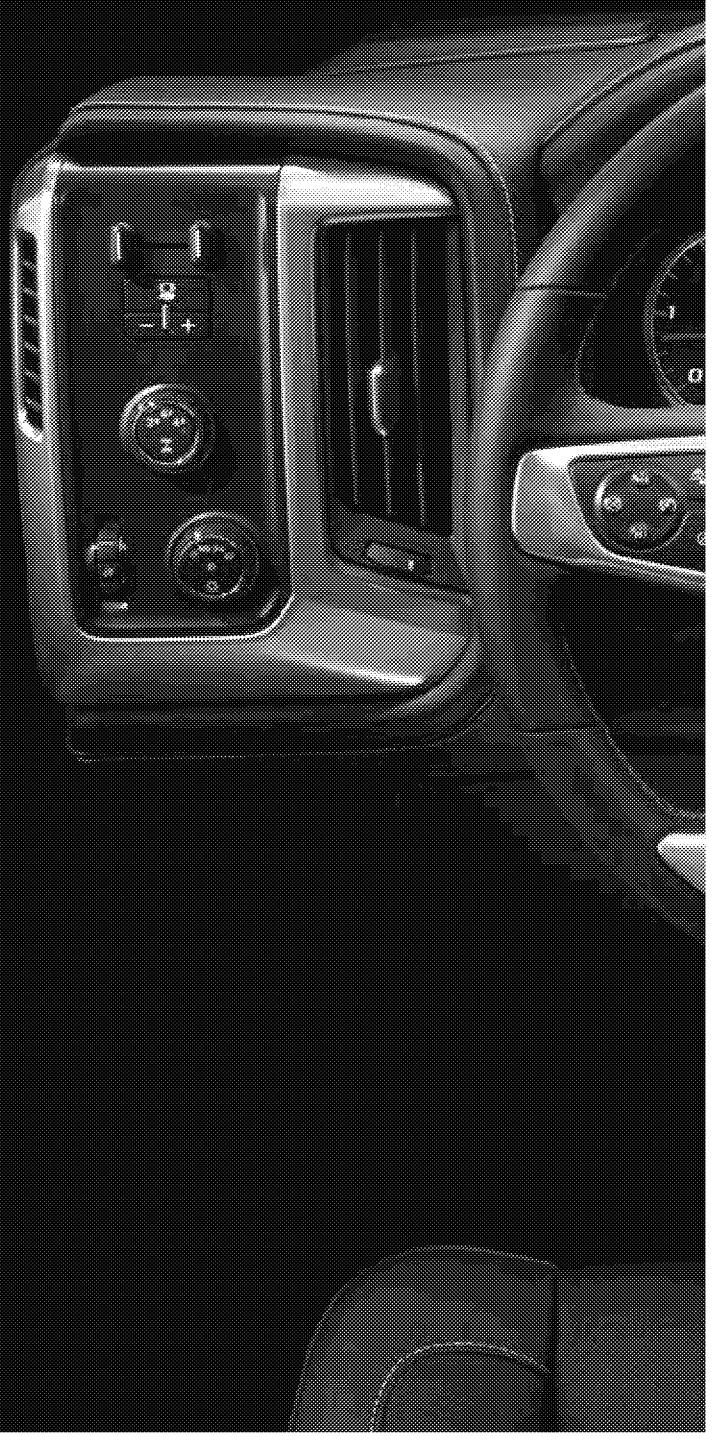
The 2015 Sierra HD's all-new instrument panel puts controls where they're most visible—at your fingertips—and information at the sound of your voice, thanks to a new available 8" diagonal Color Touch Radio with IntelliLink[1] (a navigation system[2] is available as well) that responds to natural-speech voice commands. Sierra HD provides the latest technologies to help you work smarter and more efficiently. From available driver alert safety technologies to Denali's personalized driver display, you're surrounded by everything you need to perform your best.

SIERRA HD IS THE FIRST HEAVY-DUTY PICKUP TO OFFER FORWARD COLLISION ALERT AND LANE DEPARTURE WARNING.

HANDS ON THE AVAILABLE ALUMINUM-TRIMMED WHEEL WITH STEERING-WHEEL-MOUNTED CONTROLS.

KNOBS AND BUTTONS ARE LARGER TO ACCOMMODATE GLOVED HANDS, AND GAUGES ARE LED BACK-LIT.

CENTER-MOUNTED SWITCH BANK POSITIONS FUNCTIONAL CONTROLS WITHIN EASY REACH.



[1]Full functionality requires compatible Bluetooth® and smartphone. Some devices require USB connectivity. [2]Map coverage available in the United States, U.S. Virgin Islands, Puerto Rico and Canada.

SIERRA 2500HD SLT INTERIOR IN JET BLACK
shown with available equipment.

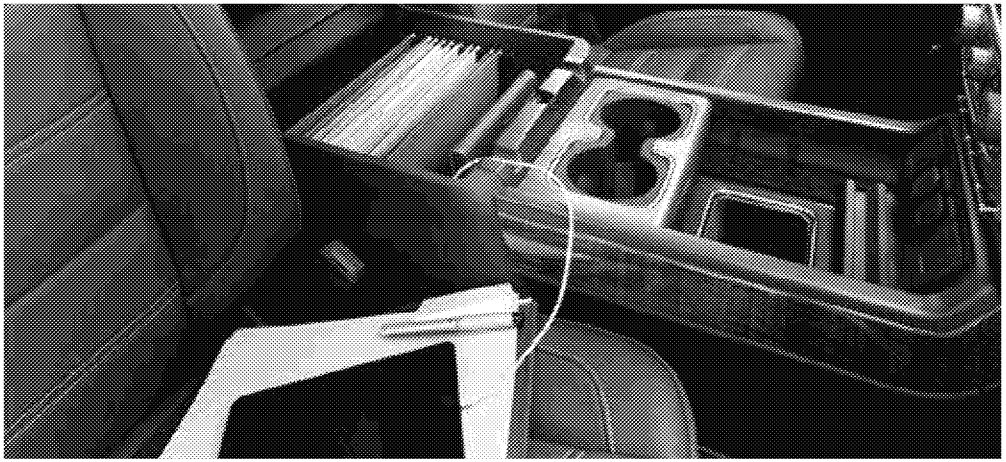
MIXES PLEASURE WITH BUSINESS.

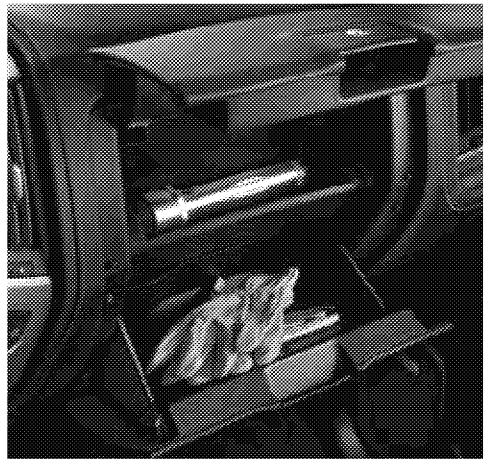
Climb into Sierra HD and you'll find no shortage of supportive comfort, premium and durable materials, some of the industry's most advanced and personalized technologies and, of course, ample storage for all of your personal gear.

CUSTOMIZABLE DRIVER DISPLAY Sierra Denali's new 8" diagonal color Driver Information Center (DIC) lets you choose from a menu of display themes to select the information you see and how you see it. Steering-wheel-mounted controls provide fingertip access to vehicle functions.

WELL CONNECTED Available intelliLink[1] is your seamless touch- and voice-activated connection to digital content. From the contacts and music playlists stored in your smartphone to a selection of on-screen apps like Pandora,® the screen provides instant access to the information and entertainment you want. It's also available with a voice-activated Navigation System.[2]

SAFEGUARDS The 2015 Sierra HD is the first heavy-duty full-size pickup to offer all three of these advanced safety features: Forward Collision Alert, Lane Departure Warning and the Safety Alert Driver Seat. Together, they help alert you to potential hazards on the road.





ENERGIZED Depending on the model you choose, a convenient power supply—up to six USB ports,[3] four auxiliary power outlets and a new available 110-volt outlet—keeps first- and second-row passengers connected and powered up.

COMMAND CENTRAL Access to controls and power sources is centrally located and within easy reach of the driver's seat. This array of switches and auxiliary controls puts important functions at your fingertips.

CLEAR VISION The available power-sliding rear window now offers a new defrost feature to improve visibility.

CENTER CONSOLE STORAGE An available center console storage compartment is designed to double as a file cabinet, so you'll have a place to keep hanging files, a laptop and other mobile devices.

HANDS-ON Keep your eyes on the road while activating available Bluetooth[4] phone functions. Available steering-wheel-mounted controls also allow you to play audio, change songs, set the cruise control and activate the available heated steering wheel.

UPPER AND LOWER GLOVE BOXES New twin glove boxes provide you and your passengers with personal storage areas.

EASY ACCESS Sierra HD now features improved rear-seat comfort and access by adding nearly 2" of leg room on Crew Cabs. Getting to the rear seat of the Double Cab is also easier in tight places, with new forward-hinged rear doors. On both models, the rear doors are bigger for easy entry to and exit from the second row.

[1]Full functionality requires compatible Bluetooth and smartphone. Some devices require USB connectivity. Data plan rates apply. [2]Map coverage available in the United States, U.S. Virgin Islands, Puerto Rico and Canada. [3]Not compatible with all devices. [4]Go to gmatsiconnect.com to find out which phones are compatible with the vehicle.

PREMIUM DETAILS. PREMIUM DUTY.

The Sierra 3500 Denali HD is the height of Professional Grade engineering, design and capability. For 2015, it adds a new purposeful design to help reduce wind noise for its quiet cabin, while offering the most innovative cargo box in its class thanks to smart features that let you customize the way you secure cargo. It also offers a maximum payload of over 6000 lbs[1] or maximum trailering of up to 22,900 lbs[2] with the available Duramax 6.6L V-8 Turbo Diesel.

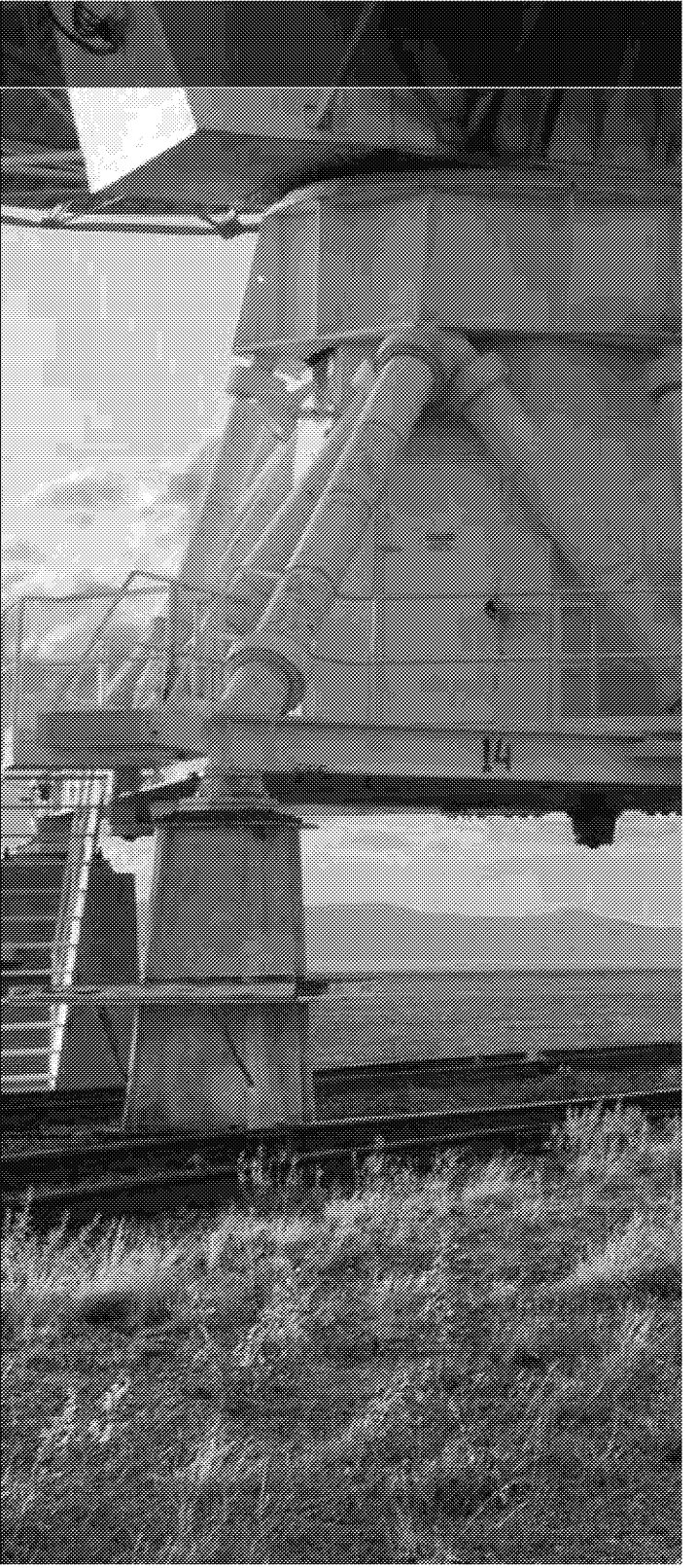
A COMMANDING PRESENCE IS ACHIEVED WITH THE ICONIC DENALI GRILLE.

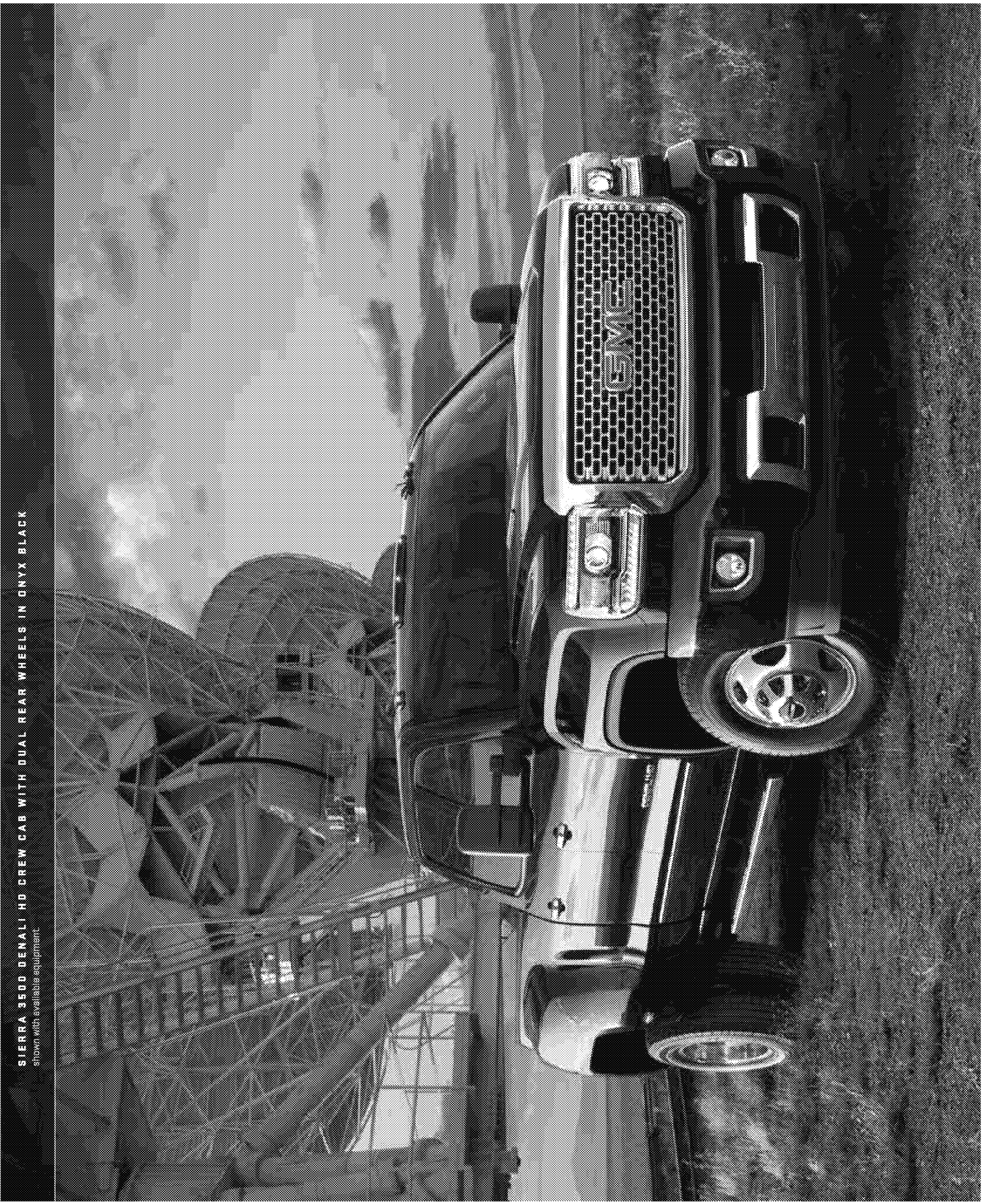
VERTICAL CAMPER-STYLE MIRRORS HELP WHEN TRAILERING A WIDE LOAD.

NEW DENALI 9" CHROME ASSIST STEPS SERVE AESTHETIC AND PRACTICAL FUNCTIONS.

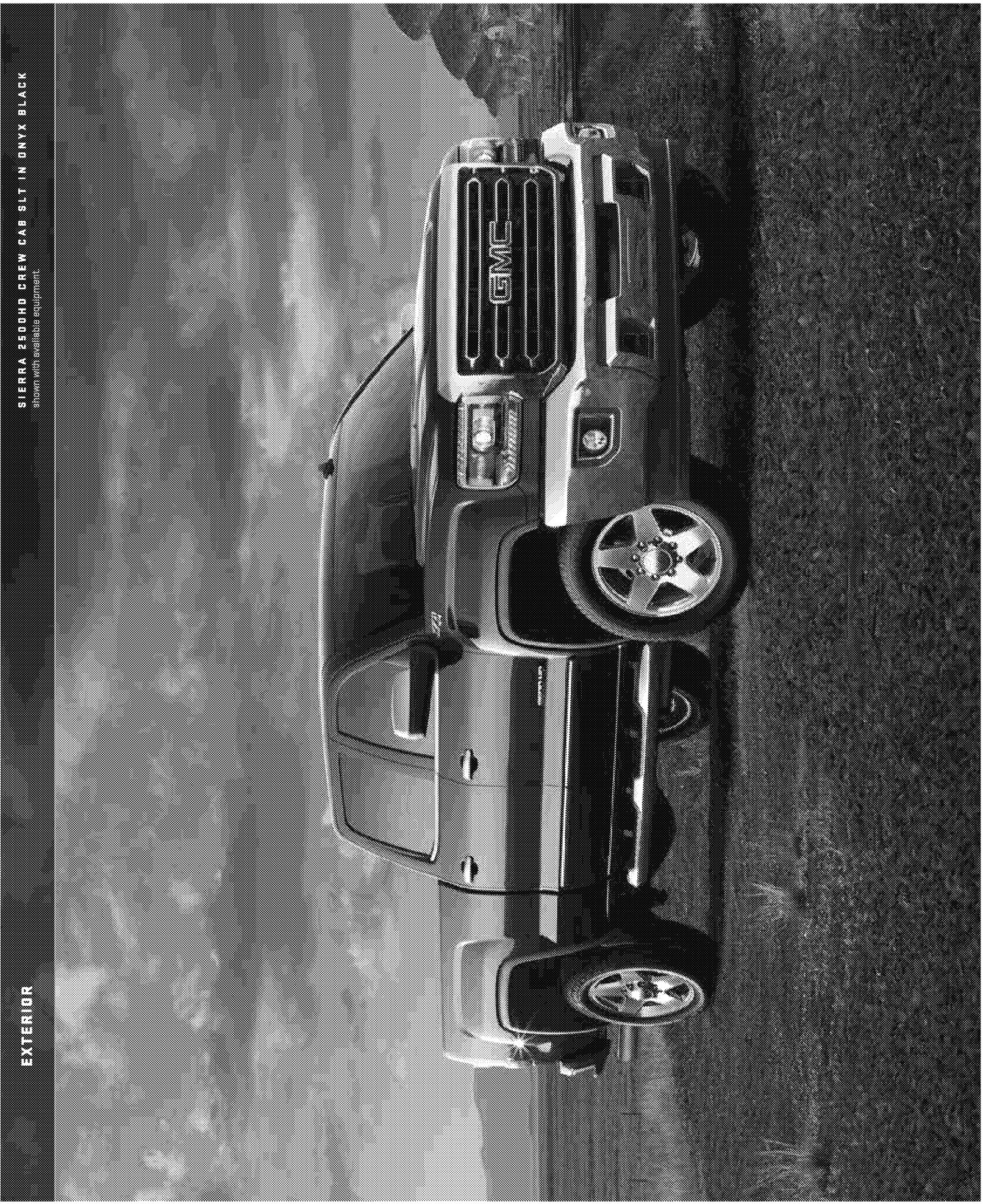
SIERRA OFFERS THE MOST INNOVATIVE CARGO BOX IN ITS CLASS TO HELP TAKE SOME OF THE WORK OUT OF WORK.

[1]Requires 3500HD Crew Cab DRW 2WD with 6.0L V-8 engine. Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [2]Requires 3500HD Crew Cab DRW 2WD with Duramax 6.6L V-8 Turbo Diesel. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.





SIERRA 3500 DENALI HD CREW CAB WITH DUAL REAR WHEELS IN ONYX BLACK
shown with available equipment.



SIERRA 2500HD CREW CAB SLT IN ONYX BLACK
shown with available equipment.

EXTERIOR

WORKS HARD.
HARDLY BREAKS A SWEAT.

The first thing you notice about the Sierra 2500HD SLT is its new bold, sculpted design that looks smart and works efficiently. The new three-dimensional grille captures air to help cool the engine, while the rest flows smoothly around the truck. It also works hard with a maximum payload of over 3500 lbs[1] or, with the available Duramax 6.6L V-8 Turbo Diesel, a maximum trailering capacity of up to 14,500 lbs[2] with a conventional ball hitch, or up to 17,600 lbs[3] with a fifth-wheel or gooseneck hitch.

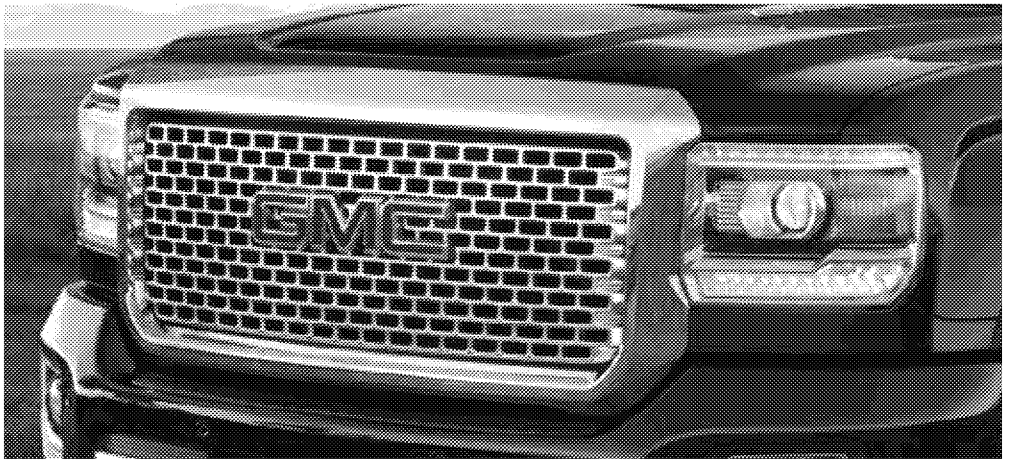
NEW INLAID DOORS IMPROVE AERODYNAMICS AND REDUCE WIND NOISE.

A NEW FRONT CHROME BUMPER PRODUCES A UNIQUE HD APPEARANCE.

TO HELP PREVENT DAMAGE, NEW RAIL PROTECTORS ARE BUILT INTO THE TOP OF THE BOX.

SIERRA HD FEATURES NEW PROJECTOR-BEAM HEADLAMPS.

[1]Requires 2500HD Double Cab Standard Box 2WD with 6.0L V-8 engine. Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [2]Requires 2500HD Crew Cab Long Box 4WD with available Duramax 6.6L V-8 Turbo Diesel engine. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [3]Requires 2500HD Double Cab Standard Box 2WD with available Duramax 6.6L V-8 Turbo Diesel engine. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.



FORMED FOR FUNCTION The wheel arch moldings are tightly integrated into the fenders to help protect the finish against chipping from stones and debris.

ENGINEERED AIRFLOW In addition to triple door seals and thicker windshield glass, Sierra's sculpted styling helps reduce wind noise to create a quieter cabin.

SIGNATURE LIGHTING In a GMC pickup first, Sierra introduces new projector-beam headlamps fully integrated into the grille surround. The lamps are further enhanced by available LED signature lighting (standard on SLT and Denali).

THINKING INSIDE AND OUTSIDE THE BOX.

Let's get to work. To help you do just that, the new Sierra HD offers aerodynamic styling to deliver a quiet cabin as well as offering the most innovative cargo box in its class. The highlight of these Professional Grade innovations is the widely acclaimed CornerStep rear bumper.

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CORNERSTEP REAR BUMPER Integrated into the corners, these new bumper steps—which no other competitor offers—make it easy to access the cargo box. The deep tread of the step is designed to accommodate large boots. On single-rear-wheel models, new hand assists built into the top of the side rails help give you a boost into the bed.

LED UNDER-RAIL LIGHTS Available LED lights are positioned under each side rail to make it easier to load or unload the box at night, or when it is enclosed by a tonneau cover.

EZ-LIFT AND LOWER TAILGATE Accessing the cargo box is now easier with the new available EZ-Lift and Lower Tailgate.

UPPER TIE-DOWNS Four new load-bearing upper tie-down hooks are standard. Rated at 250 lbs[1] each, they can be repositioned in several places around the box depending on the cargo being secured.

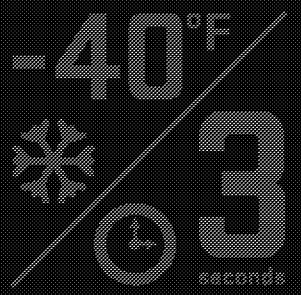
ROLLED, NOT STAMPED Unlike the stamped-steel approach of the other guys, we use a roll-formed process for Sierra HD's cargo bed for the same reason it's used on submarine hulls: it allows us to use higher-grade steel that's stronger, lighter and more durable.

SPRAY-ON BEDLINER To provide a permanent, non-skid surface, the available (standard on 2500 Denali HD) black liner covers the entire bed below the side rails, including the tailgate, front box top rail and lower tie-down hooks.

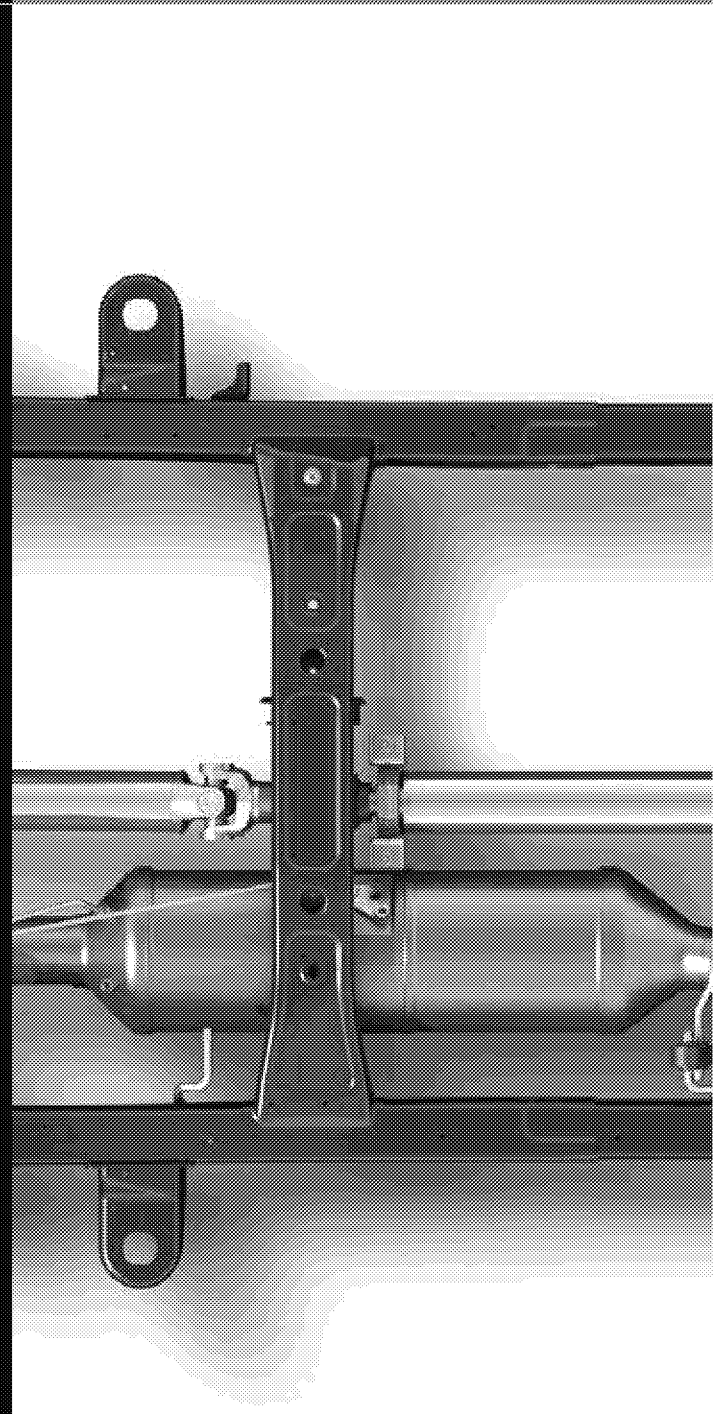
[1]Cargo and load capacity limited by weight and distribution.

DURAMAX: POWER. DEPENDABILITY. PROVEN A MILLION TIMES OVER.

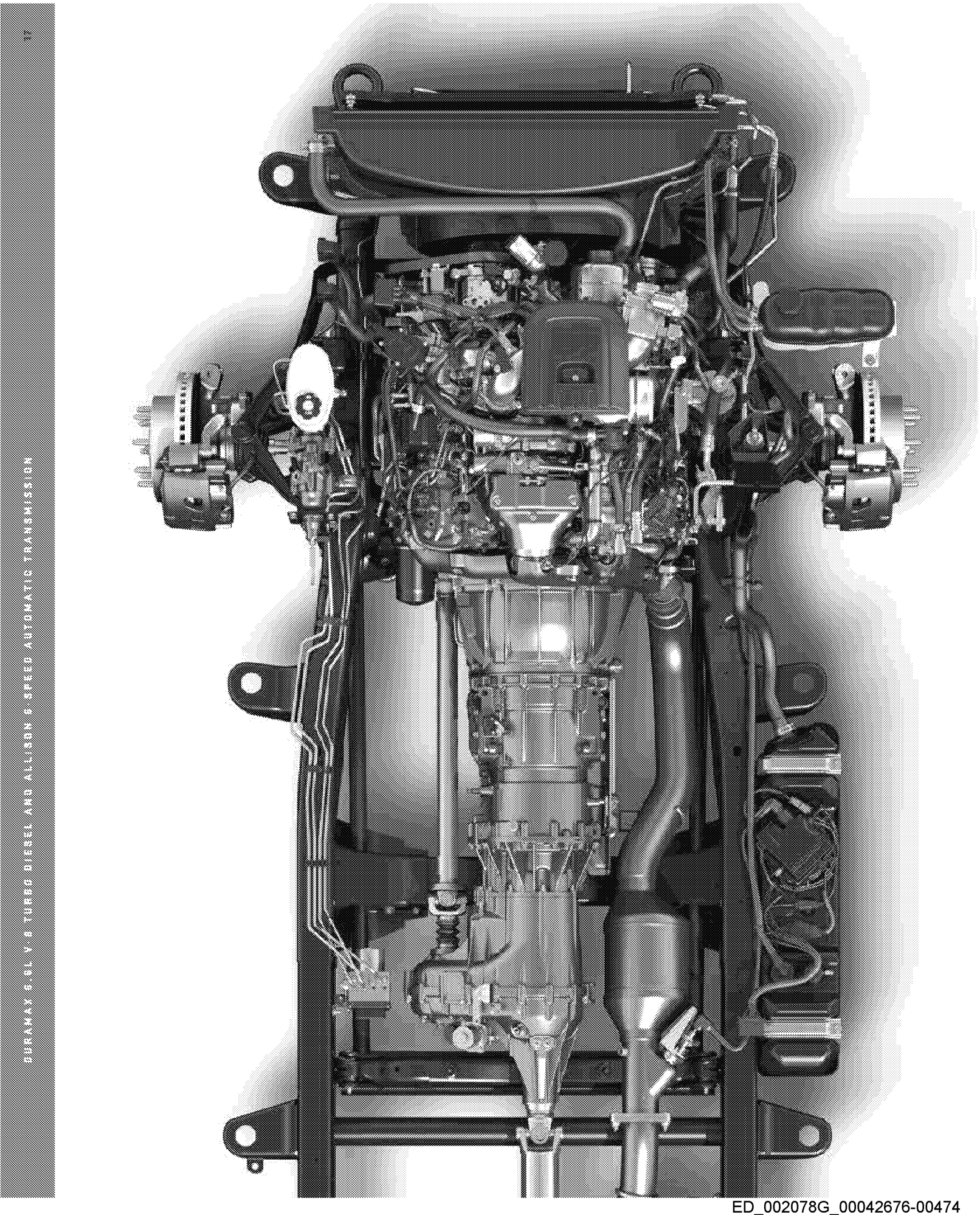
The new Sierra HD gets its heavy-duty power from proven sources, including the available Duramax 6.6L V-8 Turbo Diesel mated to the Allison® 6-speed automatic transmission. You'll find over 1 million Duramax diesels with Allison transmissions on the road today with over 100 billion real-world miles of experience. With 765 lb-ft of torque under your right foot, it delivers Professional Grade performance and a maximum highway range of up to 650 miles on a single fill-up.[1] If you prefer your power gasoline-fueled, Sierra HD comes standard with the force and efficiency of our 360-hp Vortec 6.0L V-8.

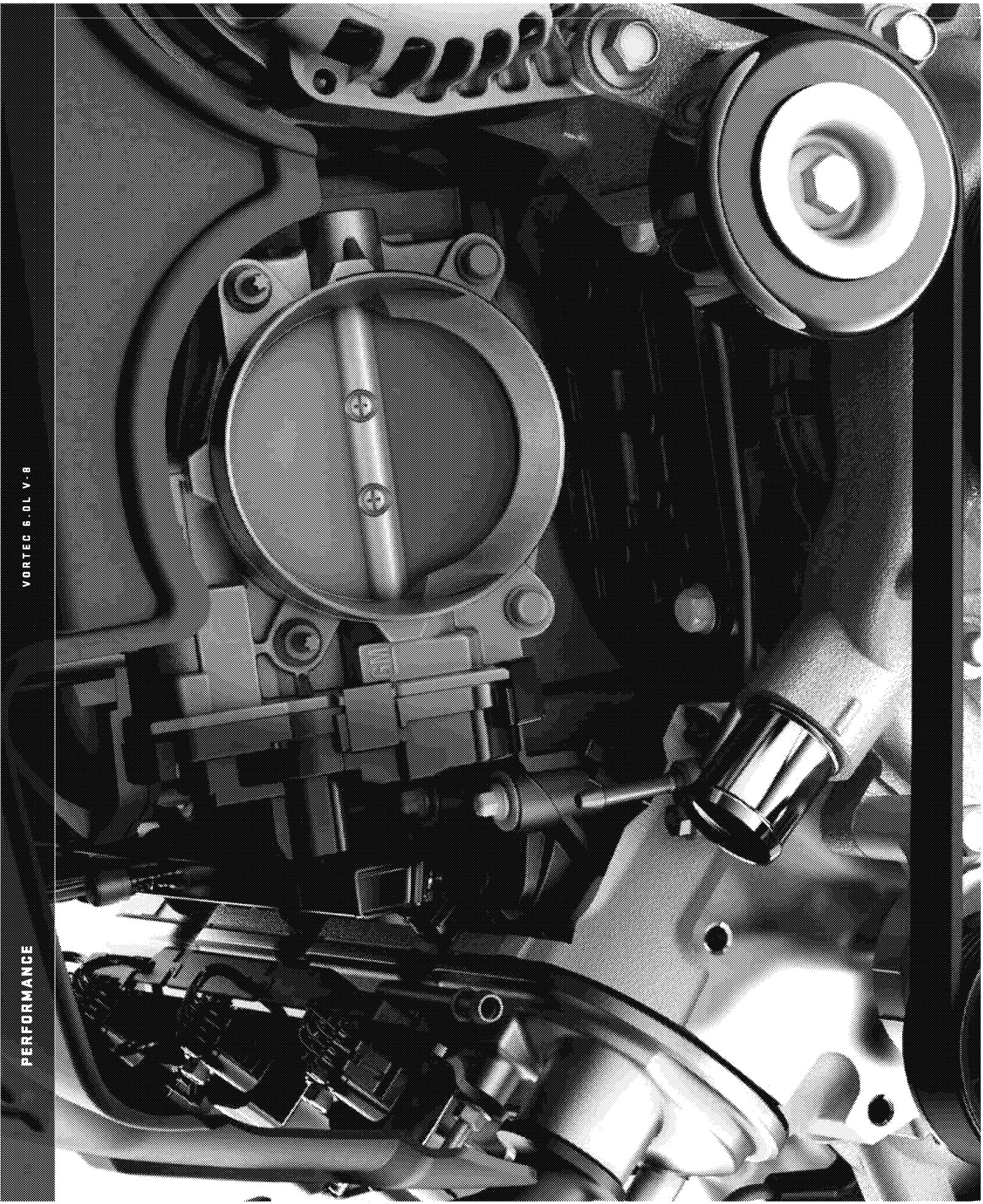


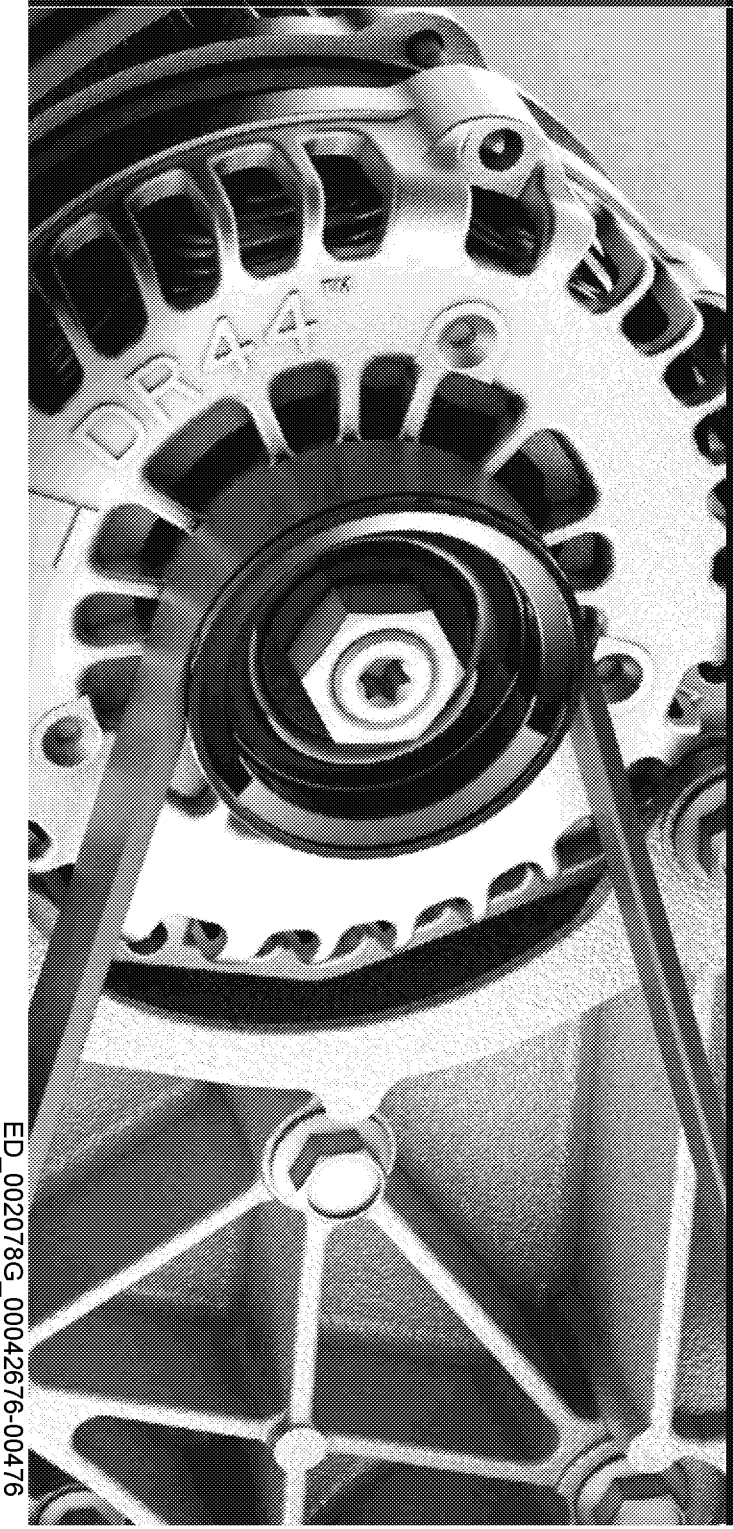
FOR FASTER STARTS IN COLD WEATHER, QUIETER OPERATION AND MAXIMUM EFFICIENCY, DIRECT INJECTION HELPS THE AVAILABLE DURAMAX DIESEL START IN AS LITTLE AS 3.0 SECONDS AT -40°F AND OPERATE AT NEARLY 30,000 PSI TO TURN HEAVY DIESEL FUEL INTO A FINE MIST, BURNING CLEANER AND FASTER WITH LOWER EMISSIONS AND GREATER POWER THAN THE PREVIOUS MODEL.



[1]Based on GM testing and fuel tank capacity. Your range may be less.


DURAMAX 6.6L V-8 TURBO DIESEL AND ALLISON 6-SPEED AUTOMATIC TRANSMISSION


VORTEC 6.0L V-8
PERFORMANCE



VORTEC: GASOLINE OR NATURAL GAS? YES, PLEASE.

The new 2015 Sierra HD comes standard with the Vortec 6.0L V-8, an uncompromised source of power. Developed for heavy-duty performance, it's paired with a 6-speed heavy-duty automatic transmission to deliver a maximum fifth-wheel towing capacity of up to 14,800 lbs.[1] A bi-fuel version of the Vortec 6.0L that seamlessly switches between gasoline and Compressed Natural Gas (CNG) is available on single-rear-wheel HD models and can provide a driving range of up to 650 miles.[2] See your dealer for details and model availability.

VARIABLE VALVE TIMING DELIVERS LOW-SPEED RESPONSIVENESS AND HIGH-SPEED POWER FOR PASSING OR TRAILERING.

ELECTRONIC THROTTLE CONTROL DELIVERS INSTANTANEOUS ACCELERATION.

MOVE THROUGH THE GEARS LIKE A MANUAL WITH THE CONVENIENCE OF AN AUTOMATIC, THANKS TO DRIVER SHIFT CONTROL.

THE GASOLINE VORTEC 6.0L V-8 IS ALSO CAPABLE OF RUNNING ON E85 ETHANOL.[3]

[1]Requires 2500HD Regular Cab DRW 2WD with Vortec 6.0L V-8 gasoline engine and 4.10 rear axle ratio. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the ratings, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [2]Estimated range based on GM testing and maximum fuel-tank capacity. Your range may be less. [3]E85 FlexFuel capability is not available in AZ, CA, CT, DE, MA, MD, ME, NJ, NY, OR, PA, RI, VT and WA. E85 is a combination of 85% ethanol and 15% gasoline. Go to afdc.energy.gov/afdc/fuels to see if there is an E85 station near you.

SIERRA 2500HD CREW CAB SLT IN ONYX BLACK
shown with available equipment

MORE MUSCLE. LESS FAT.

Weight robs a truck of its power and efficiency. In Sierra HD, the strategic use of high-strength steels and other premium materials enabled engineers to create a new HD that is stronger and more capable than previous models.

FULLY BOXED FRAME The HD frame is engineered using high-strength steel for the fully boxed frame rails. The front frame segments are hydroformed to minimize weight without sacrificing strength, so Sierra HD has the strength and stiffness to tackle the toughest heavy-duty demands.

EATON™ HEAVY-DUTY DIFFERENTIAL No other competitor in its class offers a fully automatic locking rear differential for on- and off-road use.

HIGH-STRENGTH STEEL To create a quiet cab, nearly two-thirds of the HD's cab structure is made from high-strength steels, including the pillars, roof rails and rocker panels. It's a fortress of strength that rests on hydraulic body mounts that enhance the smooth, comfortable ride.

INDEPENDENT FRONT SUSPENSION For ride comfort without sacrificing strength, Sierra HD has an independent front suspension designed specifically for the constant punishment of heavy-duty use. With the available Snow Plow Prep Package, Sierra HD achieves a Gross Front Axle Weight Rating of up to 6000 lbs.[1] This torsion-bar suspension design allows you to make seasonal ride-height adjustments in minutes with a single wrench.

MULTILEAF REAR SPRINGS Mounted to the rear frame are 3"-wide leaf springs that help achieve a best-in-class maximum payload rating of up to 7374 lbs.[2]

POWERFUL BRAKING Four-wheel, four-channel, antilock disc brakes (ABS) on all Sierra HD models help provide straight, more controlled stops by preventing wheel lock-up in most road conditions.

HILL DESCENT CONTROL Activated by pushing a button within easy reach on the instrument panel, Hill Descent Control is included on models with the Z71 Off-Road Suspension Package. It uses antilock braking to provide a smooth and controlled descent in rough terrain without having to touch the brake pedal.

[1]Capabilities and weight ratings are dependent upon model, engine, transmission and GVWR combinations. See your GMC dealer for details. [2]Requires 3500HD Regular Cab DRW 2WD with 6.0L V-8 engine. Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo.

A PULLING FORCE.

GMC Sierra HD is engineered to provide Professional Grade trailering capability as well as truck/trailer features to keep you comfortably in control. Whether you're headed out for work or recreation, Sierra HD offers a wide range of trailering capacities to meet your demands. Complete trailering ratings to help you make an informed purchase decision are listed on page 33.

TRAILERING SUPREMACY Select models offer an available class-leading 19,600 lbs[1] of conventional towing. And depending on model and equipment, 3500HD can tow a maximum of 23,200 lbs[1] with a fifth-wheel hitch.

[1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.

SIERRA 3500 DENALI HD CREW CAB WITH DUAL REAR WHEELS IN ONYX BLACK
shown with available equipment.

DIESEL EXHAUST BRAKE SYSTEM The available Exhaust Brake System works with the Allison transmission's Tow/Haul mode and Automatic Grade Braking features to reduce the amount of conventional braking needed while towing or traveling downhill.

TRAILER SWAY CONTROL Keep both Sierra HD and your trailer heading in the same direction, automatically. Sensors help detect a swaying trailer, and the system helps bring it back in line by applying both the truck's and the trailer's brakes (when properly equipped).

TRAILER BRAKE CONTROLLER For control and easy monitoring of your trailer brakes, Sierra HD offers an available integrated trailer brake controller. It's located high and in easy reach of the steering wheel for quick adjustments and is included on Denali and 3500 models.

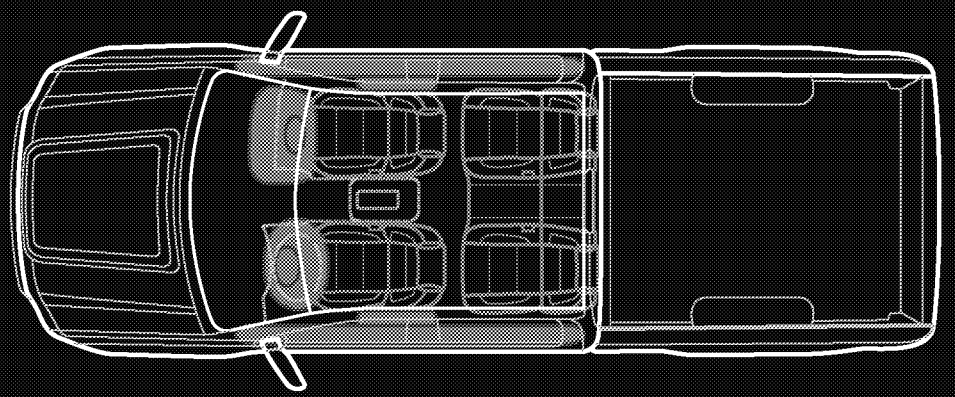
REAR VISION CAMERA SYSTEM The center screen serves as your monitor for the available Rear Vision Camera System. Its dynamic grid lines help when backing up or hitching a trailer.

TOW/HAUL MODE To accelerate when trailering or hauling heavy loads, Tow/Haul mode raises transmission upshift points. It also raises downshift points using engine compression to help slow your Sierra HD instead of merely braking.

HILL START ASSIST To give you extra time to switch from the brake pedal to the accelerator without rolling back when on an incline, Hill Start Assist holds the brakes momentarily or until you press the accelerator.

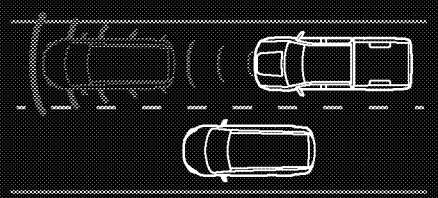
WE'VE PLACED YOU AND THE COMPETITION ON ALERT.

The new Sierra HD raises the bar for pickup truck safety. Unlike its competitors, Sierra offers the new Driver Alert Package. It includes Forward Collision Alert, Lane Departure Warning and the Safety Alert Driver Seat. They provide a visual alert in the gauge cluster and allow you to choose from additional audible warnings or the Safety Alert Driver Seat, which uses vibrations to warn you.



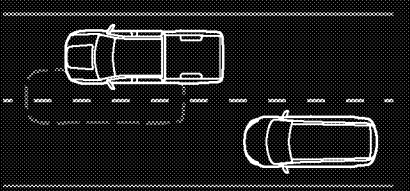
SIX AVAILABLE AIR BAGS Sierra HD offers up to six air bags[1] (standard on 2500 and select 3500 models) including single-stage frontal air bags, head-curtain side-impact air bags with rollover protection and seat-mounted side-impact air bags.

FORWARD COLLISION ALERT To help prevent frontal crashes, this available technology alerts drivers when they are closing in on a vehicle ahead too quickly. The warning gives the driver critical additional time to react and potentially avoid a crash.



SAFETY ALERT DRIVER SEAT The available Safety Alert Driver Seat helps warn the driver of potential traffic danger using directional vibration pulses from the seat cushion. Works with Forward Collision Alert, Lane Departure Warning and Front and Rear Park Assist.

LANE DEPARTURE WARNING This available technology alerts the driver when Sierra HD drifts over a lane line without signaling while traveling at least 35 mph.



[1]A NOTE ON CHILD SAFETY: Always use safety belts and the correct child restraint for the child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information.

GMC PRO GRADE PROTECTION.

THE INDUSTRY'S BEST PICKUP COVERAGE.

Pro Grade Protection is standard on every 2015 Sierra HD. From scheduled maintenance to protecting your entire vehicle, you can drive with the knowledge that your operating costs have been reduced.

2-YEAR/24,000-MILE RECOMMENDED SCHEDULED MAINTENANCE,[1] INCLUDING DIESEL EXHAUST FLUID

3-YEAR/36,000-MILE BUMPER-TO-BUMPER LIMITED WARRANTY[2]

5-YEAR/100,000-MILE POWERTRAIN LIMITED WARRANTY[2]

THERE WHEN YOU NEED US.

Standard for 6 months on most models, the OnStar Directions & Connections Plan[3] lets you speak to a live OnStar Advisor just by pressing the blue OnStar button in your vehicle.

AUTOMATIC CRASH RESPONSE[4] In many crashes, built-in sensors can automatically alert an OnStar Advisor who is immediately connected into your vehicle to see if you need help—even if you can't respond.

CRISIS ASSIST During severe weather or other crisis situations, OnStar can provide a quick, central point of contact when you need emergency assistance, navigation help or information.

EMERGENCY SERVICES One push of the red emergency button gives you a priority connection to an Advisor who can direct emergency service providers to your exact location.

ROADSIDE ASSISTANCE[5] If you need an emergency tow, lockout service or help with a flat tire, just push the blue OnStar button and an Advisor can direct help to your exact location—it's all a part of your OnStar subscription.

SECURITY FEATURES[6] Remote Door Unlock, Remote Horn and Lights and Stolen Vehicle Assistance provide help when you need it.

HANDS-FREE CALLING[7] WITH VOICE COMMAND Available OnStar Hands-Free Calling is a built-in service in case your cell phone is unavailable, out of range or has a low battery. Just push a button and say the number to make a call.

TURN-BY-TURN NAVIGATION Push your blue OnStar button and tell the Advisor where you want to go, and directions will be downloaded to your Sierra HD.

ONSTAR eNAV WITH MAPQUEST.COM™ Get a head start on a trip by checking out your destination on mapquest.com and then clicking the "Send" link. Directions will be sent to your Sierra HD.

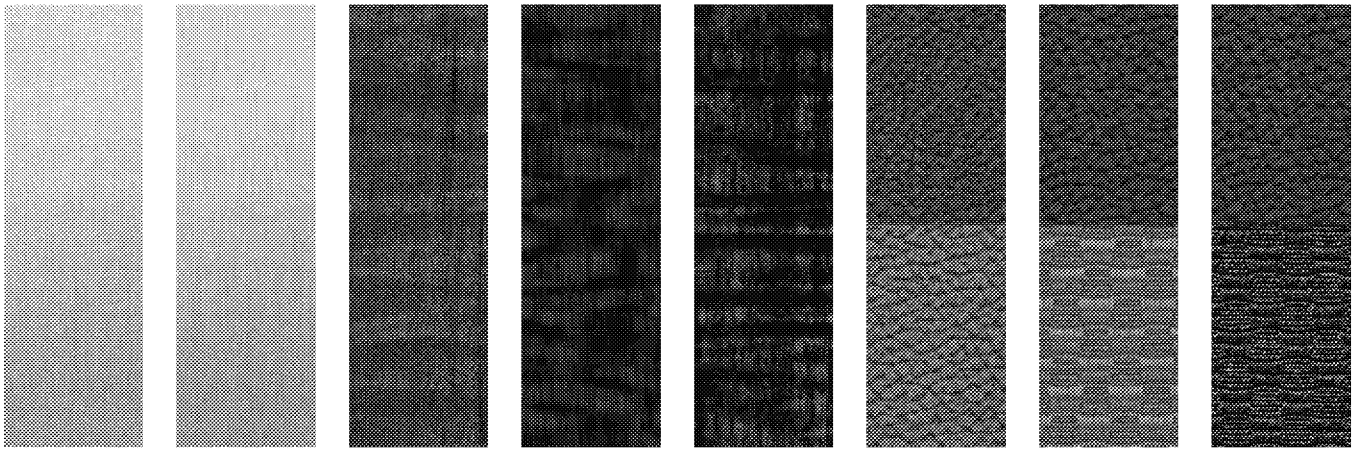
DESTINATION DOWNLOAD With the optional Navigation System, an Advisor can download directions to your Sierra HD's navigation screen.

ONSTAR REMOTELINK[8] KEY FOB SERVICES[9] OnStar RemoteLink Key Fob Services are included for 5 years on OnStar-equipped 2014 and newer vehicles. Download the app and use RemoteLink services during the 6-month trial period and any consecutive periods with an OnStar plan. Includes remote door unlock and lock, remote start and stop[10] and remote horn and lights.

*Covers only scheduled oil changes with filter, four-wheel or single rear-wheel tire rotations and 27-point inspections, according to your new vehicle's recommended maintenance schedule, for up to 5 years or 24,000 miles, whichever comes first. Does not include air filters. Maximum of four service events. See participating dealer for other restrictions and complete details. †Whichever comes first. See dealer for limited warranty details. ‡Visit onstar.com for coverage map, details and system limitations. OnStar acts as a link to existing emergency service providers. Services vary by model and conditions. §Visit onstar.com for vehicle availability, details and system limitations. OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data. ‖Roadside service provided by Allstate Roadside Services. ¶Services vary by model and conditions. #OnStar Hands-Free Calling requires existing OnStar service contract and prepaid minutes. Not available in certain markets. Calls can be made in U.S. and Canada only. Visit onstar.com for coverage map, details and system limitations. **Available on select Apple,® Android,™ BlackBerry® and Windows® devices. Services vary by device, vehicle and conditions. Requires an active OnStar subscription, standard for 6 months. ††Access is available for 5 years from the date of vehicle delivery and is transferable. Does not include any emergency services or other OnStar services. To cancel RemoteLink Key Fob Services, or if your vehicle is sold, it is important to contact an OnStar Advisor. See onstar.com/mobile for full details. ‡‡Requires factory-installed and enabled remote start.

ACCENTS

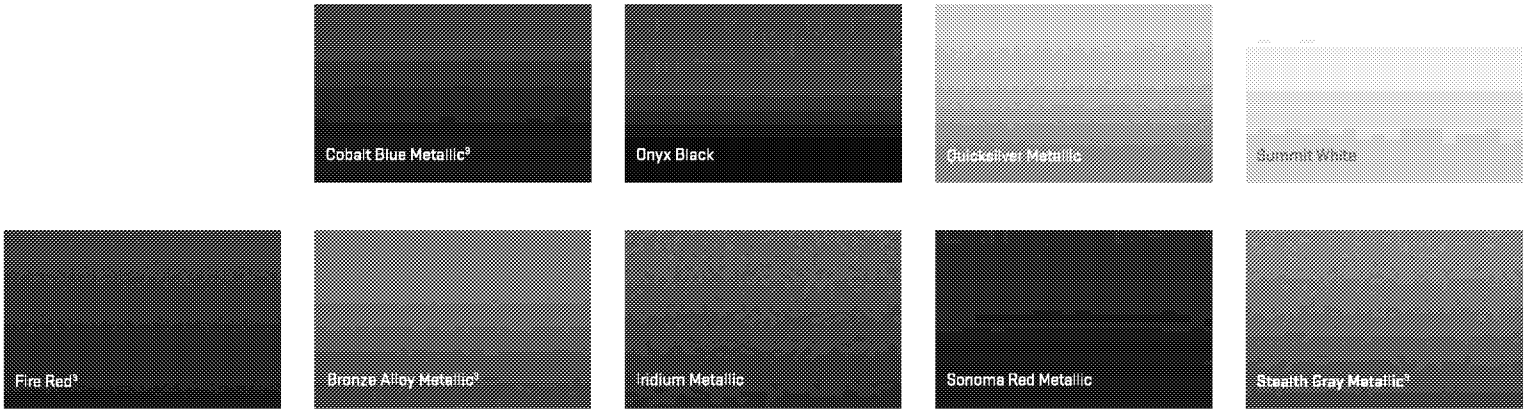
INTERIOR COLORS AND SEATING SURFACES



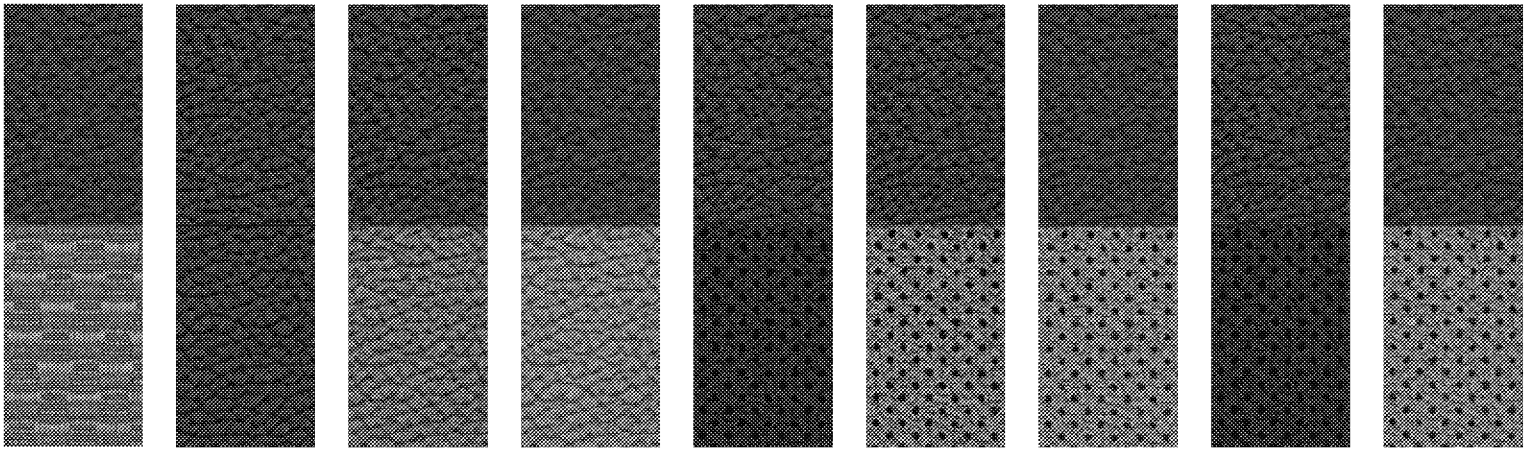
	Axiom Aluminum	Burnish Aluminum	Mineral Caster Wood Tone	Grand Lace Wood Tone	Curly Wood Tone	Jet Black/ Dark Ash Vinyl	Jet Black/ Dark Ash Cloth	Jet Black/ Jet Black Cloth
SIERRA	–	–	–	–	–	○	●	–
SLE	●	–	●[1]	●[2]	–	–	●	●
SLT	●	–	●[1]	●[2]	–	–	–	–
DENALI	–	●	–	–	●	–	–	–

KEY ● STANDARD ○ AVAILABLE – NOT AVAILABLE [1]With Cocoa/Dune interior color only. [2]With Jet Black and Jet Black/Dark Ash interior color only.

EXTERIOR COLORS



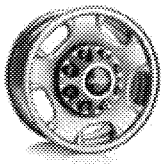
[3]Not available on Denali. See your GMC dealer for more exterior color details and availability.



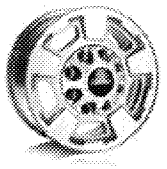
Cocoa/Dune Cloth	Jet Black/Jet Black Leather-Appointed	Jet Black/Dark Ash Leather-Appointed	Cocoa/Dune Leather-Appointed	Jet Black/Jet Black Perforated Leather-Appointed	Jet Black/Dark Ash Perforated Leather-Appointed	Cocoa/Dune Perforated Leather-Appointed	Jet Black/Jet Black Perforated Leather-Appointed with Unique Denali Accents	Cocoa/Dune Perforated Leather-Appointed with Unique Denali Accents
–	–	–	–	–	–	–	–	–
●	○	–	–	–	–	–	–	–
–	●	●	●	○	○	○	–	–
–	–	–	–	–	–	–	○	○

WHEELS

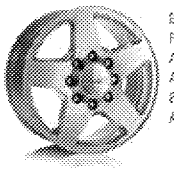
2500HD



17" PAINTED STEEL (PYN) STANDARD ON 2500HD SIERRA

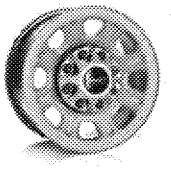


17" MACHINED ALUMINUM (PYQ) STANDARD ON 2500HD SLE. AVAILABLE ON 2500HD SIERRA

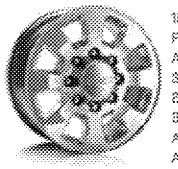


20" POLISHED FORGED ALUMINUM (PYG) AVAILABLE ON 2500HD SLE AND SLT

2500HD/3500HD SRW

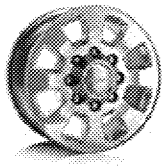


18" PAINTED STEEL (PYT) STANDARD ON 3500HD SRW SIERRA. AVAILABLE ON 2500HD SIERRA

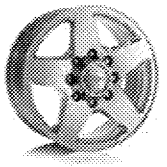


18" POLISHED FORGED ALUMINUM (PYR) STANDARD ON 2500HD SLT AND 3500HD SRW SLE AND SLT. AVAILABLE ON 2500HD SLE

DENALI HD SRW

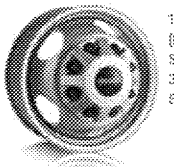


18" POLISHED FORGED ALUMINUM (PYR) STANDARD ON 2500 AND 3500 DENALI HD SRW

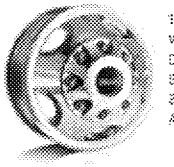


20" POLISHED FORGED ALUMINUM (PYS) AVAILABLE ON 2500 DENALI HD

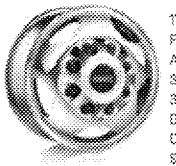
3500HD DRW



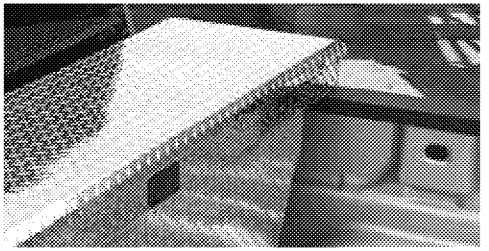
17" PAINTED STEEL (PYW) STANDARD ON 3500HD DRW SIERRA



17" PAINTED STEEL WITH CHROME OVERLAY (PDS) STANDARD ON 3500HD DRW SLE AND SLT



17" POLISHED FORGED ALUMINUM (RS7) STANDARD ON 3500 DENALI HD DRW. AVAILABLE ON 3500HD DRW SLE AND SLT, CREW CAB ONLY



TAKE YOUR HD PERSONALLY.

Engineered to the same standards as your Sierra HD, GMC Accessories range from functional enhancements like assist steps and bed protection to a stylish array of accents. Go ahead, equip your Sierra HD exactly the way you want.

20" WHEELS To lend a personal style to your Sierra HD, choose from these distinctive-looking aluminum or polished aluminum wheels.

ASSIST STEPS Make it easier to get in and out of your truck with stylish assist steps. Crafted from rust-resistant stainless steel, they are available in either chrome or black powder coat and in 6" oval or 3" round styles.

TONNEAU COVERS The soft cover shields cargo and easily rolls up to allow full access to the bed and is constructed with integrated crossbows. The hard cover is tri-folding and adds strong content protection and easy access to the cargo box.

STATIONARY TOOLBOX Diamond-patterned toolbox features a cover with dual gas shocks for smooth opening and closing, and it features the GMC logo.

POLISHED EXHAUST TIPS These chrome exhaust tips add a bold appearance and feature the GMC logo.

CHROME RECOVERY HOOKS Add functionality and enhance the appearance of your Sierra HD with chrome recovery hooks. These front hooks are for vehicle recovery only and cannot be used for towing. For more information, see your GMC Owner's Manual.

BED LINERS These molded plastic liners add a layer of durable protection and are custom designed for your specific bed size.

BED PROTECTION PACKAGE Shield the finish of the bed with a bed mat, tailgate liner and soft folding tonneau cover.

CHROME PACKAGE Add flare to your Sierra HD with 4" round chrome tubular assist steps, a polished exhaust tip and chrome recovery hooks.

INTERIOR PROTECTION PACKAGE Protect the cabin and the bed of your Sierra HD with all-weather floor mats and a rubber bed mat.

SIERRA HD SPECIFICATIONS

CARGO DIMENSIONS			
DIMENSIONS	STANDARD BOX	LONG BOX SRW	LONG BOX DRW
Cargo Volume	51.0 cu. ft.	78.3 cu. ft.	78.3 cu. ft.
Inside Width at Floor (in.)	51.0	51.0	51.0
Box Length at Floor (in.)	78.9	97.8	97.8
Inside Box Height (in.)	21.2	21.2	21.3
EXTERIOR DIMENSIONS	REGULAR CAB	DOUBLE CAB	CREW CAB
Height (in.)	77.3-77.9[2]	77.6-78.1[2]	77.6-78.3[2]
Overall Length (in.)			
Standard Box	--	230.0	239.5
Long Box	224.4	248.9	258.4
INTERIOR DIMENSIONS (in.)	REGULAR CAB	DOUBLE CAB	CREW CAB
Head Room (front/rear)	42.8/--	42.8/39.6	42.6/40.5
Leg Room (front/rear)	45.2/--	45.2/34.8	45.2/40.9
Shoulder Room (front/rear)	56.0/--	64.8/64.3	64.8/64.3
Hip Room (front/rear)	60.7/--	60.7/60.2	60.7/60.2
WHEELBASE (in.)	REGULAR CAB	DOUBLE CAB	CREW CAB
Standard Box	--	144.2	153.7
Long Box	133.6	158.1	167.7

STANDARD TECHNICAL DATA			
Series / Drive Type	2WD	4WD	
BRAKES All models: Power 4-wheel antilock braking system	14" diameter 4-wheel disc	14" diameter 4-wheel disc	
STEERING	Power recirculating ball	Power recirculating ball	
FUEL TANK CAPACITY (Approx. gals.)	36.0	36.0	
ALTERNATOR (amps)	150	150	
MAXIMUM GVWR[2] (Gross Vehicle Weight Rating, lbs)	VORTEC 6.0L V-8/DURAMAX 6.6L V-8 TURBO DIESEL		
	REGULAR CAB	DOUBLE CAB	CREW CAB
2500HD			
Standard Box	--/--	9500/10,000	9500/10,000
Long Box	9500/9900	9500/10,000	9900/10,000
3500HD			
SRW	10,700/11,400	11,000/11,600	11,000/11,600
DRW	12,500/13,025	13,025/13,025	13,025/13,025

[1]Cargo and load capacity limited by weight and distribution. [2]Depending on model and tire size selected. [3]When properly equipped; includes weight of vehicle, passengers, cargo and equipment.

SIERRA HD SPECIFICATIONS (CONTINUED)

SIERRA HD SPECIFICATIONS

ENGINES

	VORTEC 8.0L V-8 VVT (L96)	6.0L V-8 VVT (LC9) Bi-Fuel Compressed Natural Gas (CNG)	DURAMAX 6.6L V-8 TURBO DIESEL (LML)
FUEL TYPE	Gasoline (FlexFuel)	Gasoline/CNG	Diesel (B20 Biodiesel capable)
CAPACITY	5.3 liters (324 cu. in.)	6.0 liters (364 cu. in.)	6.6 liters (402 cu. in.)
SAE NET HORSEPOWER @ RPM	360@5400	360@5400 (Gas) 301@5000 (CNG)	397@3000
SAE NET TORQUE (LB-FT) @ RPM	380@4200	380@4200 (Gas) 333@4200 (CNG)	765@1800
ENGINE/MODEL AVAILABILITY			
Regular Cab	●	○[1]	○
Double Cab	●	○	○
Crew Cab	●	○	○

SIERRA HD SUSPENSIONS

FRONT SUSPENSIONS[2]
INDEPENDENT TORSION BAR–2500HD/3500HD

STANDARD FRONT AXLE/ SPRING CAPACITY (lbs)	2WD	4WD
Regular Cab	4400/4400	4400/4400
Double Cab	4400/4400	4400/4600
Crew Cab	4400/4400	4600/4600

REAR SUSPENSIONS[2]
SEMI-ELLIPTICAL MULTILEAF–2500HD/3500HD-SRW/3500HD-DRW

REAR AXLE/SPRING CAPACITY (lbs)	2WD	4WD
Regular Cab	6200/7050/9625	6200/7050/9625
Double Cab	6200/7050/9375	6200/7050/9375
Crew Cab	6200/7050/9375	6200/7050/9375

KEY ● STANDARD ○ AVAILABLE -- NOT AVAILABLE

[1]Available fall 2014. See your dealer for more details and model availability. [2]Capacities and weight ratings are dependent on model, engine, transmission and GVWR combinations. See your GMC dealer for details.

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CONVENTIONAL TRAILER WEIGHT RATINGS[1]

Model	Engine	Axle Ratio	GCWR[2]	2500HD Standard Box 2WD SRW	2500HD Long Box 2WD SRW	3500HD Standard Box 2WD SRW	3500HD Long Box 2WD SRW	3500HD Long Box 2WD DRW	2500HD Standard Box 4WD SRW	2500HD Long Box 4WD SRW	3500HD Standard Box 4WD SRW	3500HD Long Box 4WD SRW	3500HD Long Box 4WD DRW
Regular Cab	Vortec 6.0L V-8	4.10	23,500	–	13,000	–	13,000	14,200	–	13,000	–	13,000	13,800
	Duramax 6.6L V-8 Turbo Diesel	3.73	24,500	–	13,000	–	–	–	–	13,000	–	13,000	–
		3.73	30,500	–	–	–	–	–	–	–	–	–	16,000
Double Cab	Vortec 6.0L V-8	4.10	23,500	13,000	13,000	–	13,000	13,900	13,000	13,000	–	13,000	13,600
	Duramax 6.6L V-8 Turbo Diesel	3.73	24,500	13,000	13,000	–	13,000	–	13,000	13,000	–	13,000	–
		3.73	30,500	–	–	–	–	16,500	–	–	–	–	16,000
Crew Cab	Vortec 6.0L V-8	4.10	23,500	13,000	13,000	13,000	13,000	13,700	13,000	13,000	13,000	13,000	13,300
	Duramax 6.6L V-8 Turbo Diesel	3.73	24,500	13,000	13,000	13,000	13,000	–	13,000	14,500	13,000	16,000	–
		3.73	30,500	–	–	–	–	16,500	–	–	–	–	16,000

SRW-Single Rear Wheel DRW-Dual Rear Wheel

FIFTH WHEEL/GOOSENECK TRAILER WEIGHT RATINGS[1]

Model	Engine	Axle Ratio	GCWR[2]	2500HD Standard Box 2WD SRW	2500HD Long Box 2WD SRW	3500HD Standard Box 2WD SRW	3500HD Long Box 2WD SRW	3500HD Long Box 2WD DRW	2500HD Standard Box 4WD SRW	2500HD Long Box 4WD SRW	3500HD Standard Box 4WD SRW	3500HD Long Box 4WD SRW	3500HD Long Box 4WD DRW
Regular Cab	Vortec 6.0L V-8	4.10	23,500	–	14,000	–	14,800	14,200	–	14,500	–	14,300	13,500
	Duramax 6.6L V-8 Turbo Diesel	3.73	24,500	–	17,800	–	–	–	–	17,600	–	17,500	–
		3.73	30,500	–	–	–	–	–	–	–	–	–	23,200
Double Cab	Vortec 6.0L V-8	4.10	23,500	14,500	14,400	–	14,200	13,800	14,200	14,100	–	13,800	13,500
	Duramax 6.6L V-8 Turbo Diesel	3.73	24,500	17,500	17,500	–	17,500	–	17,500	17,200	–	17,500	–
		3.73	30,500	–	–	–	–	23,000	–	–	–	–	22,800
Crew Cab	Vortec 6.0L V-8	4.10	23,500	14,300	14,200	14,100	14,000	13,700	14,000	13,800	13,800	13,700	13,800
	Duramax 6.6L V-8 Turbo Diesel	3.73	24,500	17,400	17,300	17,400	17,300	–	17,100	16,400	17,000	16,900	–
		3.73	30,500	–	–	–	–	22,800	–	–	–	–	22,600

SRW-Single Rear Wheel DRW-Dual Rear Wheel [1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [2]Gross Combined Weight Rating: When properly equipped, includes weight of the vehicle and trailer combination, including the weight of driver, passengers, fuel, optional equipment and cargo in the vehicle and trailer.

AXLE RATINGS AND PLOW WEIGHTS

FRONT GROSS AXLE WEIGHT RATING (FGAWR) WITH SNOW PLOW PREP PACKAGE (4WD MODELS ONLY)
NOTE: All models are capable of up to 100 lbs maximum of permanently attached snow plow mounting hardware.

Model	Engine RPO	Engine Type	2500HD SRW	3500HD SRW	3500HD DRW
Regular Cab	L96	Gas	5000	5000	5000
	LML	Diesel	5000	5000	5000
Double Cab Standard Box/ Long Box	L96	Gas	5200/5000	–/5800	–/5800
	LML	Diesel	6000/6000	–/6000	–/6000
Crew Cab Standard Box/ Long Box	L96	Gas	5200/5000	5800/5500	–/5800
	LML	Diesel	6000/6000	6000/6000	–/6000

MAXIMUM PLOW WEIGHTS[1] (4WD MODELS ONLY)

Model	Engine RPO	Engine Type	2500HD SRW	3500HD SRW	3500HD DRW
Regular Cab	L96	Gas	900	1000	1000
	LML	Diesel	975	975	925
Double Cab Standard Box/ Long Box	L96	Gas	775/1000	–/1000	–/1000
	LML	Diesel	825/775	–/800	–/775
Crew Cab Standard Box/ Long Box	L96	Gas	725/950	1000/950	–/925
	LML	Diesel	775/700	800/725	–/700

SRW-Single Rear Wheel DRW-Dual Rear Wheel [1]Maximum weight (lbs) of removable snow plow blade and blade hardware. Maximum plow weights based on a vehicle with average manufacturer option content and 150 lbs each for driver and one additional front-seat occupant. Additional equipment and occupants will reduce maximum plow weight. Rear compensating weight may be required to maintain front axle weight below 55% of total vehicle weight when equipped with snow plow. Consult your snow plow manufacturer for specific compensating weight recommendation.

SIERRA HD SPECIFICATIONS (CONTINUED)

MAXIMUM PAYLOAD[1]

Model	Engine	GVWR[2]	2500HD Standard Box 2WD SRW	2500HD Long Box 2WD SRW	3500HD Standard Box 2WD SRW	3500HD Long Box 2WD SRW	3500HD Long Box 2WD DRW	2500HD Standard Box 4WD SRW	2500HD Long Box 4WD SRW	3500HD Standard Box 4WD SRW	3500HD Long Box 4WD SRW	3500HD Long Box 4WD DRW
Regular Cab	Vortec 6.0L V-8	9500	–	3760/3105[3]	–	–	–	–	–	–	–	–
		9500	–	–	–	–	–	–	3833/2959[3]	–	–	–
		10,400	–	–	–	4682/4019[3]	–	–	–	–	–	–
		10,700	–	–	–	–	–	–	–	–	4000/4005[3]	–
		13,400	–	–	–	–	–	–	–	–	–	6352
		13,600	–	–	–	–	7374	–	–	–	–	–
	Duramax 6.6L V-8 Turbo Diesel	9500	–	3501	–	–	–	–	3174	–	–	–
		11,400	–	–	–	–	–	–	–	–	4600	–
		13,025	–	–	–	–	–	–	–	–	–	5817
Double Cab	Vortec 6.0L V-8	9500	3671/3015[3]	3559/2905[3]	–	–	–	3379/2724[3]	3274/2620[3]	–	–	–
		10,700	–	–	–	4693/3930[3]	–	–	–	–	–	–
		11,000	–	–	–	–	–	–	–	–	4617/3983[3]	–
		13,025	–	–	–	–	6450	–	–	–	–	6170
	Duramax 6.6L V-8 Turbo Diesel	10,000	3912	3200	–	–	–	3020	2916	–	–	–
		11,200	–	–	–	4333	–	–	–	–	–	–
		11,600	–	–	–	–	–	–	–	–	4467	–
		13,025	–	–	–	–	5000	–	–	–	–	5410
Crew Cab	Vortec 6.0L V-8	9500	3441/2789[3]	3340/2885[3]	–	–	–	3152/2483[3]	–	–	–	–
		9600	–	–	–	–	–	–	3588/2733[3]	–	–	–
		10,500	–	–	4316/3664[3]	–	–	–	–	–	–	–
		10,700	–	–	–	4397/3792[3]	–	–	–	–	–	–
		10,800	–	–	–	–	–	–	–	4324/3669[3]	–	–
		11,000	–	–	–	–	–	–	–	–	4346/3634[3]	–
		13,025	–	–	–	–	6308	–	–	–	–	5995
	Duramax 6.6L V-8 Turbo Diesel	10,000	3082	2981	–	–	–	2793	2629	–	–	–
		11,100	–	–	4169	–	–	–	–	–	–	–
		11,400	–	–	–	4327	–	–	–	–	–	–
		11,600	–	–	–	–	–	–	–	4264	–	–
		11,800	–	–	–	–	–	–	–	–	4188	–
		13,025	–	–	–	–	5640	–	–	–	–	5205

[1]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [2]Gross Vehicle Weight Rating (GVWR). When properly equipped; includes weight of vehicle, passengers, cargo and equipment. [3]Maximum payload capacity when equipped with the available Vortec 6.0L V-8 CNG engine (LC8). Regular Cab, Denali HD and all 3500HD models available fall 2014. See your dealer for more details and model availability

TRIM LEVELS	SIERRA	SLE	SLT	DENALI
CONFIGURATIONS				
REGULAR CAB	○	○	--	--
DOUBLE CAB	○	○	○	--
CREW CAB	○	○	○	○
2WD	○	○	○	○
4WD	○	○	○	○
MECHANICAL				
AIR CLEANER High capacity	●	●	●	●
ALTERNATOR 150 amps	●	●	●	●
220 amps. Included with the Snow Plow Prep Package when Vortec 6.0L V-8 VVT SFI is ordered. Requires Vortec 6.0L VVT SFI V-8 or 6.0L V-8 Bi-Fuel Compressed Natural Gas (CNG) engine.	○	○	○	○
Dual, 150 amps each, included with the Snow Plow Prep Package when Duramax 6.6L V-8 Turbo Diesel is ordered. Requires Duramax 6.6L V-8 Turbo Diesel engine.	○	○	○	○
AUXILIARY EXTERNAL TRANSMISSION OIL COOLER	●	●	●	●
AUXILIARY EXTERNAL ENGINE OIL COOLER	●	●	●	●
BATTERY Heavy-duty maintenance-free with rundown protection and retained accessory power	●	●	●	●
AUXILIARY BATTERY 730 Cold Cranking Amps (CCA). Requires Vortec 6.0L VVT SFI V-8 engine.	○	○	○	○
BRAKES 4-wheel disc with 4-wheel anti-lock	●	●	●	●
COLD-WEATHER PROVISIONS Includes front radiator grille and front bumper openings cover. Requires Duramax 6.6L V-8 Turbo Diesel engine.	○	○	○	○
EATON® HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL Included and only available with Trailering Equipment Package on 3500HD models with Sierra trim. Standard on 3500HD pickup models.	○	●	●	●
FRAME Fully boxed with hydroformed front section	●	●	●	●
ENGINE Vortec 6.0L V-8 VVT FlexFuel with SFI	●	●	●	●
6.0L V-8 VVT Bi-Fuel CNG. Restrictions apply. Regular Cab, Denali HD and all 3500HD models available fall 2014. See your dealer for more details and model availability.	○	○	○	○
Duramax 6.6L V-8 Turbo Diesel with direct injection and B20 biodiesel capability	○	○	○	○
ENGINE BLOCK HEATER Required with Duramax 6.6L V-8 Turbo Diesel	○	○	○	○
EXHAUST Aluminized stainless steel muffler and tailpipe	●	●	●	●
EXHAUST BRAKE Switch activated. Included and only available with Duramax 6.6L V-8 Turbo Diesel.	○	○	○	○
HIGH IDLE SWITCH	○	○	○	○
INTEGRATED TRAILER BRAKE CONTROLLER Included on all 3500HD models	○	●	●	●
STABILITRAK STABILITY CONTROL SYSTEM Includes Proactive Roll Avoidance, traction control, electronic trailer sway control and Hill Start Assist	●	●	●	●
STEERING Power, recirculating ball	●	●	●	●
SUSPENSION Front independent with torsion bars. Includes 61-mm twin-tube shock absorbers and 33-mm front stabilizer bar.	●	●	●	●
Rear multi-leaf springs, semi-elliptical with urethane jounce bumpers	●	●	●	●
TRANSMISSION 6L90: 6-speed automatic. Includes Tow/Haul mode, Cruise Grade Braking and Powertrain Grade Braking	●	●	●	●
Allison® 1000 Series 6-speed automatic. Includes Tow/Haul mode and electronic Powertrain Grade Braking. Requires Duramax 6.6L V-8 Turbo Diesel.	○	○	○	○
TRANSFER CASE 2-speed with 2.72-to-1 low-range, floor-mounted shifter (4WD models only)	●	--	--	--
Electronic shift rotary dial controls 2-speed and 2.72-to-1 low-range (4WD models only)	--	●	●	●
TRAILER WIRING PROVISIONS For camper, fifth-wheel and gooseneck trailer. Includes additional 7-way wiring harness routed to front of pickup box. Not available with 6.0L V-8 Bi-Fuel CNG engine.	○	○	○	○
REAR AXLE 4.10 ratio. Standard and only available on Vortec 6.0L V-8 or 6.0L V-8 Bi-Fuel CNG engine.	●	●	●	●
3.73 ratio. Requires Duramax 6.6L V-8 Turbo Diesel.	○	○	○	○
INSTRUMENTATION AND CONTROLS				
DRIVER INFORMATION CENTER With 3.5" diagonal monochromatic display. Provides warning messages, odometer, trip odometer and basic vehicle information.	●	--	--	--
With 4.2" diagonal color display. Includes driver personalization, warning messages, odometer, trip odometer and vehicle information.	--	●	●	--
8" color customizable display	--	--	--	●
POWER-ADJUSTABLE PEDALS On SLE models. Included and only available with SLE Convenience Package. Not available on Regular Cab.	--	○	●	●
110-VOLT POWER OUTLET In-cabin, 3-prong, household-style outlet. Included and only available with Convenience Package on Sierra trim. On SLE, included and only available with the SLE Preferred Package.	○	○	●	●

KEY ● STANDARD ○ AVAILABLE -- NOT AVAILABLE

TRIM LEVELS	SIERRA	SLE	SLT	DENALI
STEERING WHEEL Polyurethane with cruise controls	●	--	--	--
Leather-wrapped with audio and cruise controls	--	●	●	--
Heated and leather-wrapped with audio and cruise controls	--	--	○	●
STEERING COLUMN Tilt-Wheel, manual operation	●	●	●	--
Tilt-Wheel and telescopic manual operation	--	○	○	●
SEATING				
SEATS Front 3-passenger cloth 40/20/40 split bench with driver and front-passenger manual recline, manual driver lumbar control and outboard head restraints. Includes center fold-down armrest with storage.	●	--	--	--
Front 3-passenger vinyl 40/20/40 split bench with driver and front-passenger manual recline and outboard head restraints. Includes center fold-down armrest with storage.	○	--	--	--
Front 3-passenger cloth 40/20/40 split bench with driver and front-passenger manual recline and outboard head restraints. Includes center fold-down armrest and lockable storage compartment in lower seat cushion.	--	●	--	--
Front 3-passenger leather-appointed 40/20/40 split bench with heated seat cushions and seatbacks. Not available on Regular Cab models. Requires Jet Black interior trim.	--	○	--	--
Front 3-passenger leather-appointed 40/20/40 split bench with 10-way power seat adjusters. Includes power lumbar control, heated seat cushions and seatbacks, 2-position driver memory (does not apply to lumbar adjuster) and adjustable head restraints.	--	--	●	--
Front cloth bucket seats with 10-way driver-seat power adjuster, 6-way passenger-seat power adjuster, heated seat cushions and seatbacks, adjustable head restraints, floor console and storage pockets	--	○	--	--
Front leather-appointed bucket seats with 10-way power seat adjusters including power lumbar control, heated seat cushions and seatbacks, 2-position driver memory (does not apply to lumbar adjuster), adjustable head restraints and floor console and storage pockets	--	--	○	--
Seat adjuster driver 10-way power. Requires bench seat. Included and only available with SLE Preferred Package	--	○	--	--
Heated driver and front-passenger cloth seating. Requires SLE Preferred Package and cloth 40/20/40 split bench seat.	--	○	--	--
Heated and cooled perforated leather-appointed front bucket seats. Included with Driver Alert Package. On Denali, includes embossed Denali on front seats and 12-way driver and front-passenger power adjuster, including power lumbar control.	--	--	○	●
Folding rear 3-passenger bench. Double Cab models only. Includes child seat top tether anchor	●	--	--	--
Folding rear 60/40 split 3-passenger bench. Includes child seat top tether anchor. Double and Crew Cab models only	--	●	●	●
INTERIOR DETAILS				
AUXILIARY SWITCH BANK Includes 4 upfitter switches	○	--	--	--
CLIMATE CONTROL Single-zone manual air conditioning	●	●	--	--
Dual-zone automatic climate control. On SLE, included and only available with SLE Preferred Package. Not available on Regular Cab models	--	○	●	●
CRUISE CONTROL	●	●	●	●
DEFROSTER Rear-window electric. On SLE, included and only available with SLE Preferred Package or SLE Convenience Package	○	○	●	●
DOOR LOCKS Power	●	●	●	●
FLOOR COVERING Color-keyed carpeting with rubberized vinyl floor mats. (Double Cab and Crew Cab models include second-row floor mats.)	○	●	●	●
Graphite-colored rubberized vinyl	●	○	--	--
REAR PARK ASSIST Ultrasonic. On Double Cab and Crew Cab models, included and only available with SLE Convenience Package.	--	○	--	--
FRONT AND REAR PARK ASSIST Ultrasonic. On SLE, requires Regular Cab and Driver Alert Package.	--	○	○	●
REAR VISION CAMERA SYSTEM WITH DYNAMIC GRID LINES	--	●	●	●
REMOTE START On SLE, included and only available with SLE Preferred Package	--	○	●	●
REMOTE KEYLESS ENTRY Included and only available with Convenience Package on Sierra trim	○	●	●	●
REARVIEW MIRROR With manual day/night adjustment	●	●	--	--
With inside rearview auto-dimming feature. Included and only available with outside heated, power-adjustable vertical camper mirrors on 2500HD SLE and 3500HD with Sierra trim.	○	○	●	●
SILL PLATES Bright accent	--	--	--	●
SUNROOF Power sliding with express-open. Crew Cab models only. Not available with provisions for roof-mounted lamps or Snow Plow Prep Package.	--	--	○	○
UNIVERSAL HOME REMOTE On SLE, included and only available with SLE Convenience Package. Not available on Regular Cab models, provisions for roof-mounted lamps or Snow Plow Prep Package.	--	○	●	●
WINDOWS Manual. Standard on Regular Cab with Sierra trim only.	●	--	--	--
Power with driver express-up and -down and express-down on all other windows.	●	●	●	●
Power rear sliding with rear defroster. Not available on Regular Cab models, provisions for roof-mounted lamps or Snow Plow Prep Package.	--	○	○	●

TRIM LEVELS	SIERRA	SLE	SLT	DENALI
OPTION PACKAGES				
SIERRA CONVENIENCE PACKAGE Includes outside heated power-adjustable mirrors, Remote Keyless Entry, 110-volt AC power outlet, LED cargo box lighting, deep-tinted glass and power windows on Regular Cab models	○	--	--	--
SLE CONVENIENCE PACKAGE Includes power-adjustable pedals, Rear Park Assist and rear-window defogger. When provisions for cab roof-mounted lamps/beacon or Snow Plow Prep Package are ordered, the Universal Home Remote will not be included. Not available on Regular Cab models.	–	○	–	–
SLE PREFERRED PACKAGE Includes driver 10-way power seat adjuster with front 40/20/40 split-bench seat only. Also includes Remote Vehicle Starter System, front fog lamps, rear-window defogger and 110-volt power outlet. When provisions for cab roof-mounted lamps/beacon or Snow Plow Prep Package are ordered, the Universal Home Remote will not be included. Also includes Universal Home Remote and dual-zone automatic climate control on Double Cab and Crew Cab models.	--	○	--	--
DRIVER ALERT PACKAGE Includes Lane Departure Warning, Forward Collision Alert and Safety Alert Driver Seat. Also includes Front and Rear Park Assist. On SLT trim, requires heated and cooled driver and front-passenger seating, full-feature leather-appointed bucket seats and manual tilt and telescoping steering column. On SLE trim, requires Regular Cab with Jet Black Cloth interior, SLE Preferred Package and Tilt and Telescopic Steering Column. On 3500HD models, requires front-seat-mounted side-impact and front and rear head curtain side-impact air bags.[1]	--	○	○	○
Z71 OFF-ROAD SUSPENSION PACKAGE Includes Hill Descent Control, underbody skid-plate, monotube Rancho® shocks and Z71 front fender emblems. 5500 models only.	--	○	○	○
TRAILERING EQUIPMENT PACKAGE Includes trailer hitch platform 2.5" with a 2.0" insert, 7-wire harness with independent fused trailering circuits mated to a 7-way sealed connector to hook up parking lamps, back-up lamps, turn signals, an electric brake feed, battery and a ground. Connector also includes the 4-way blade-style connector. 2500HD models include automatic locking rear differential and trailer brake controller. Included on 3500HD models. Not available with rear bumper delete.	○	●	●	●
SNOW PLOW PREP PACKAGE Includes power feed for back-up and roof emergency light, 220-amp alternator with Vortec 6.0L V-8 (dual 160-amp included with Duramax 6.6L V-8 Turbo Diesel), forward lamp wiring harness, provisions for cab roof-mounted lamps/beacon, Underbody Shield Package and increased Front Gross Axle Weight Rating (FGAWR). 4WD models only. See your dealer for details.	○	○	○	○
UNDERBODY SHIELD PACKAGE Includes frame-mounted shields, front underbody shield starting behind front bumper and running to first cross member, protecting front underbody, oil pan, differential case and transfer case. Included and only available with Snow Plow Prep Package or Z71 Off-Road Suspension Package	○	○	○	●
PROVISIONS FOR CAB-MOUNTED LAMPS/BEACON Includes instrument panel-mounted switch and electrical wiring tucked beneath the headliner for body upfitter to connect a body-mounted warning or emergency lamp. Included with Snow Plow Prep Package. Not available with Universal Home Remote, power sliding rear window or power sunroof.	○	○	○	○
ENTERTAINMENT/COMMUNICATION/NAVIGATION				
4.2" DIAGONAL COLOR RADIO Includes AM/FM, USB ports,[2] auxiliary jack and SD card slot	●	--	--	--
4.2" DIAGONAL COLOR RADIO WITH INTELLILINK® Includes AM/FM/CD, USB ports,[2] SD card slot, auxiliary jack, Bluetooth® streaming audio for music and select phones, hands-free smartphone integration, Pandora® internet radio and voice-activated technology for radio and phone	○	●	--	--
8" DIAGONAL COLOR TOUCH RADIO WITH INTELLILINK® Includes AM/FM/SiriusXM® (standard for 3 months), USB ports,[2] SD card slot, auxiliary jack, Bluetooth® streaming audio for music and select phones, hands-free smartphone integration, Pandora® internet radio and voice-activated technology for radio, phone and customizable themes. Not available on Regular Cab models.	--	●	●	--
8" DIAGONAL COLOR TOUCH RADIO WITH NAVIGATION® Includes all features of 8" diagonal Color Touch Radio with IntelliLink® plus Navigation feature. Not available on Regular Cab models	--	○	○	●
Single-slot CD/MP3 player. On Regular Cab models, requires 4.2" diagonal Color Touch Radio with IntelliLink.[3]	○	●	●	●
6-SPEAKER AUDIO SYSTEM 4-speaker on Regular Cab Sierra model	●	●	●	--
Bose® premium audio system with 8 speakers (7-speaker system including subwoofer when ordered with bucket seats)	--	--	○	●
BLUETOOTH® FOR PHONE Personal cell phone connectivity to vehicle audio system. On Sierra trim, included and only available with 4.2" diagonal Color Touch Radio with IntelliLink.[3]	○	●	●	●
ONSTAR® Directions & Connections Plan, 6-month subscription	○	●	●	●
SIRIUSXM® SATELLITE RADIO Including 3 trial months of service. On Sierra trim, requires 4.2" diagonal Color Touch Radio with IntelliLink® and OnStar.[7]	○	●	●	●

KEY ● STANDARD ○ AVAILABLE -- NOT AVAILABLE

TRIM LEVELS	SIERRA	SLE	SLT	DENALI
EXTERIOR STYLING AND FUNCTIONALITY				
ASSIST STEPS Chromed tubular with 8" rectangular design. Included on 3500HD SLT trim with dual rear wheels only.	○	○	○	●
BUMPER Front, chrome	●	●	●	--
Rear, chrome with CornerStep bumper	●	●	●	--
Front, body-color	--	--	--	●
Rear, body-color with CornerStep bumper	--	--	--	●
ROOF MARKER LAMPS Included with Dual Rear Wheel models. Optional on Single Rear Wheels models.	○	○	○	○
CARGO BOX Movable tie-downs, high-mounted (4)	●	●	●	●
Box rail caps	●	●	●	●
DOOR HANDLES Black	●	--	--	--
Body-color	--	●	--	--
Chrome	--	--	●	●
FOG LAMPS Front, halogen. On SLE, included and only available with SLE Preferred Package.	--	○	●	●
GRILLE SURROUND Chrome	●	●	●	●
Chrome-accented center	--	●	●	--
Chrome with unique Denali accents	--	--	--	●
GLASS Solar-Ray tinted	●	--	--	--
Solar-Ray deep tinted. Included and only available with Convenience Package on Sierra trim.	○	●	●	●
LIGHTS Halogen projector beam. Includes LED signature lighting on SLT and Denali.	●	●	●	●
Under-rail LED lighting, cargo box. Included and only available with Convenience Package on Sierra trim.	○	●	●	●
MOLDINGS Bodyside, body-color	--	●	●	--
Bodyside, chrome	--	--	●	●
RECOVERY HOOKS Front frame-mounted (black)	●	●	●	●
SPRAY-ON BEDLINER On Denali, standard on 2500 and available on 3500 models	○	○	○	●
TAILGATE Locking	●	--	--	--
Locking with EZ-Lift and Lower Tailgate feature	--	●	●	●
TIRE CARRIER Outside spare, winch-type. Includes lock.	●	●	●	●
WHEELHOUSE LINERS Rear. Single Rear Wheel Double Cab and Crew Cab models only.	--	●	●	●
WIPERS Front intermittent	●	●	●	●
OUTSIDE MIRRORS				
Manual-folding, black (2500HD models only)	●	--	--	--
Heated, power-adjustable, manual-folding, black (2500HD models only). On Sierra trim, included and only available with Sierra Convenience Package.	○	●	--	--
Heated, power-adjustable/power-folding. With integrated turn signal indicators, security approach lamps, driver-side auto-dimming and puddle lamps; chrome caps. Not available on 3500HD models	--	--	●	●
VERTICAL CAMPER Manual-folding with lower convex spotter glass. Standard on 3500HD models. Available on 2500HD models.	○	--	--	--
Heated, power-adjustable with integrated turn signal indicators, manual-folding/extension, black (convex glass is not heated or power-adjustable). On Sierra trim, requires Convenience Package. Standard on 3500HD SLE, SLT and Denali models.	○	○	○	○
SAFETY AND SECURITY				
AIR BAG® Single-stage frontal for driver and front passenger	●	●	●	●
Front-seat-mounted side-impact driver and right front-passenger air bags for thorax and pelvis protection. Included on all 2500HD and select 3500HD models. See your dealer for more details and availability.	○	○	○	●
Front and rear head curtain side-impact air bags for all outboard seating positions. Included on all 2500HD models	○	○	○	●
DAYTIME RUNNING LAMPS With automatic lamp control	●	●	●	●
LANE DEPARTURE WARNING AND FORWARD COLLISION ALERT Included and only available with Driver Alert Package. On SLE, requires Regular Cab.	--	○	○	○
SAFETY ALERT DRIVER SEAT Included and only available with Driver Alert Package. On SLE, requires Regular Cab.	--	○	○	○
THEFT DETERRENT SYSTEM Unauthorized entry. Included and only available with remote vehicle starter system on SLE.	--	○	●	●
TIRE PRESSURE MONITORING SYSTEM Does not monitor spare tire. Included on 2500HD models only.	●	●	●	●

[1] A NOTE ON CHILD SAFETY: Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner Manual and child safety seat instructions for more safety information. [2] Not compatible with all devices. [3] Full functionality requires compatible Bluetooth and smartphone. Some devices require USB connectivity. Data plan rates apply. [4] Go to gmbluetoothconnect.com to find out which phones are compatible with the vehicle. [5] If you subscribe after your trial period, subscriptions are continuous until you call SiriusXM to cancel. See SiriusXM Customer Agreement for complete terms at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change. For more information about NavTraffic, visit siriusxm.com/navtraffic. For more information about TrafficLink, visit siriusxm.com/trafficlink. XM satellite service is available only to those in the 48 contiguous USA and DC. SiriusXM and all related marks and logos are trademarks of SiriusXM Radio, Inc. [6] Map coverage available in the United States, Puerto Rico and Canada. [7] OnStar services require vehicle electrical system (including battery), wireless service and GPS satellite signals to be available and connecting for features to function properly. OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data. Subscription Service Agreement required. Call 1-888-4ONSTAR (466-7827) or visit onstar.com for OnStar's Terms and Conditions, Privacy Policy, details and system limitations.

THE INDUSTRY'S BEST PICKUP COVERAGE

For 2015, Sierra HD comes with the Pro Grade Protection Plan, which includes 2-year/24,000-mile recommended scheduled maintenance,[1] including diesel exhaust fluid, 3-year/36,000-mile bumper-to-bumper limited warranty[2] and 5-year/100,000-mile powertrain limited warranty.[2] Roadside Assistance and Courtesy Transportation.

Starting with the owner orientation—and full tank of gas—you receive when you take possession of your Sierra HD to the **24-Hour Roadside Assistance, Courtesy Transportation** and **Travel Benefits**, you receive a portfolio of owner privileges that lasts throughout your warranty. For expert product information, Roadside Assistance or other services, call 1-800-GMC-6762.

TRAVEL BENEFITS AND ROADSIDE ASSISTANCE Available around the clock: trip routing service, a program for reimbursement for trip interruption due to necessary warranty repairs, towing, flat tire change, jump-starts and more for 5 years or 100,000 miles (whichever comes first).

COURTESY TRANSPORTATION Available at participating dealers: shuttle service, reimbursement of certain public transportation or fuel expenses for overnight warranty repairs and courtesy rental for overnight work repairs. See your dealer for details.

GMC OWNER CENTER A complimentary, one-stop resource to enhance your GMC ownership experience. It's easy to sign up. Just go to gmc.com/gmcownercenter/gmc.

ONSTAR

OnStar is a core asset of your Sierra HD. Benefiting from more than a decade of innovative development, it is both a highly advanced technology—fully integrated within the vehicle—and a warm human service. Standard on most Sierra HD models are 6 months of the OnStar Directions & Connections Plan, including the convenience of available Hands-Free Calling.[3] It also offers Automatic Crash Response, Stolen Vehicle Assistance, link to Emergency Services, Roadside Assistance, Remote Door Unlock, OnStar Vehicle Diagnostics, Crisis Assist and Remote Horn and Lights. OnStar services require vehicle electrical system (including battery), wireless service and GPS satellite signals to be available and operating for features to function properly. OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data. Visit onstar.com for coverage maps, details and system limitations. Services vary with conditions.

SIRIUSXM SATELLITE RADIO

SiriusXM Satellite Radio[4] is standard on most Sierra HD models. It includes 3 trial months of service. SiriusXM Satellite Radio makes your drive come alive with commercial-free music channels from virtually every genre, artist-dedicated channels, live performances and more. Tune in to live play-by-play from the biggest sports, exclusive entertainment from top personalities, compelling talk, hilarious comedy, world-class news, local traffic and weather and family-friendly programming. Welcome to the world of satellite radio. Visit siriusxm.com for details.

GMC CERTIFIED SERVICE

Certified Service

To help your Sierra HD live up to its performance promise, GMC Certified Service—found exclusively at your GMC dealer—is there. With all the engineering excellence in Sierra HD, GM-trained technicians have the expertise to care for all of it.

ADDITIONAL NOTES

A NOTE ON CHILD SAFETY Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information.

TRAILERING AND OFF-ROAD INFORMATION Please carefully review the Owner's Manual for important safety information about trailering or off-road driving in your vehicle.

IMPORTANT WORDS ABOUT THIS CATALOG We have tried to make this catalog comprehensive and factual. We reserve the right, however, to make changes at any time, without notice, in prices, colors, materials, equipment, specifications, models and availability. Specifications, dimensions, measurements, ratings and other numbers in this catalog and other printed materials provided at the dealership or affixed to vehicles are approximates based upon design and engineering drawings and prototypes and laboratory tests. Your vehicle may differ due to variations in manufacture and equipment. Since some information may have been updated since the time of printing, please check with your GMC dealer for complete details. GMC reserves the right to lengthen or shorten the model year for any product for any reason, or to start and end model years at different times. All competitive claims are based on the latest information available at the time of printing and GM Large Pickup segment.

FLEET ORDERS Some standard content may be deleted with fleet orders. See dealer for details.

ENGINES GMC products are equipped with engines produced by GM Powertrain or other suppliers to GM worldwide. The engines in GMC products may also be used in other GM makes and models.

GMC.COM See more of Sierra HD on our Web site: gmc.com. More photos and information; hot links to related subjects; convenient dealer locator; pricing guide; spec out your own vehicle. Or call 1-800-GMC-6762.

AN IMPORTANT NOTE ABOUT ALTERATIONS AND WARRANTIES Installations or alterations to the original equipment vehicle (or chassis) as distributed by General Motors are not covered by the General Motors New-Vehicle Limited Warranty. The special body company, assembler, equipment installer or upfitter is solely responsible for warranties on the body or equipment and any alterations (or any effect of the alterations) to any of the parts, components, systems or assemblies installed by GM. General Motors is not responsible for the safety or quality of design features, materials or workmanship of any alterations by such suppliers.

NEW-VEHICLE LIMITED WARRANTY All GMC Sierra HD models come with a fully transferable, no-deductible 5-year/100,000-mile (whichever comes first) Powertrain Limited Warranty. GM vehicles registered in the USA are also covered for 3 years or 36,000 miles (whichever comes first). Coverage includes tires and towing to your nearest GMC dealership. Repairs will be made to correct any vehicle defect and most warranty repairs will be made at no charge. In addition, rust-through corrosion will be covered for 6 years or 100,000 miles (whichever comes first). Sierra HD also comes with a 2-year/24,000-mile (whichever comes first) recommended maintenance schedule plan.[1] See dealer for details.

ASSEMBLY GMC vehicles and their components are assembled or produced by different operating units of General Motors, its subsidiaries or suppliers to GM worldwide. We sometimes find it necessary to produce GMC vehicles with different or differently sourced components than originally scheduled. Since some options may be unavailable when your vehicle is assembled, we suggest that you verify that your vehicle includes the equipment you ordered or, if there are changes, that they are acceptable to you.

GMMOBILITY.COM (1-800-323-9935) GM Mobility offers financial assistance for eligible adaptive equipment to make automotive travel easier for persons with disabilities or special transportation needs. To learn more about special GM Mobility offers, visit gmmobility.com.

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[1]Covers only scheduled oil changes with 6 qts. four wheel or single rear wheel tire rotations and 27 point inspections, according to your new vehicle's recommended maintenance schedule for up to 2 years or 24,000 miles, whichever comes first. Does not include air filters. Maximum of four service events. See participating dealer for other restrictions and complete details. [2]Whichever comes first. See dealer for limited warranty details. [3]Visit onstar.com for coverage map, details and system limitations. OnStar Hands-Free Calling requires existing OnStar service contract and prepaid minutes. Not available in certain markets. Calls can be made in U.S. and Canada only. [4]If you subscribe after your trial period, subscriptions are continuous until you call SiriusXM to cancel. See SiriusXM Customer Agreement for complete terms at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change. For more information about NavTraffic, visit siriusxm.com/navtraffic. XM satellite service is available only to those in the 48 contiguous USA and DC.

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EXHIBIT 9

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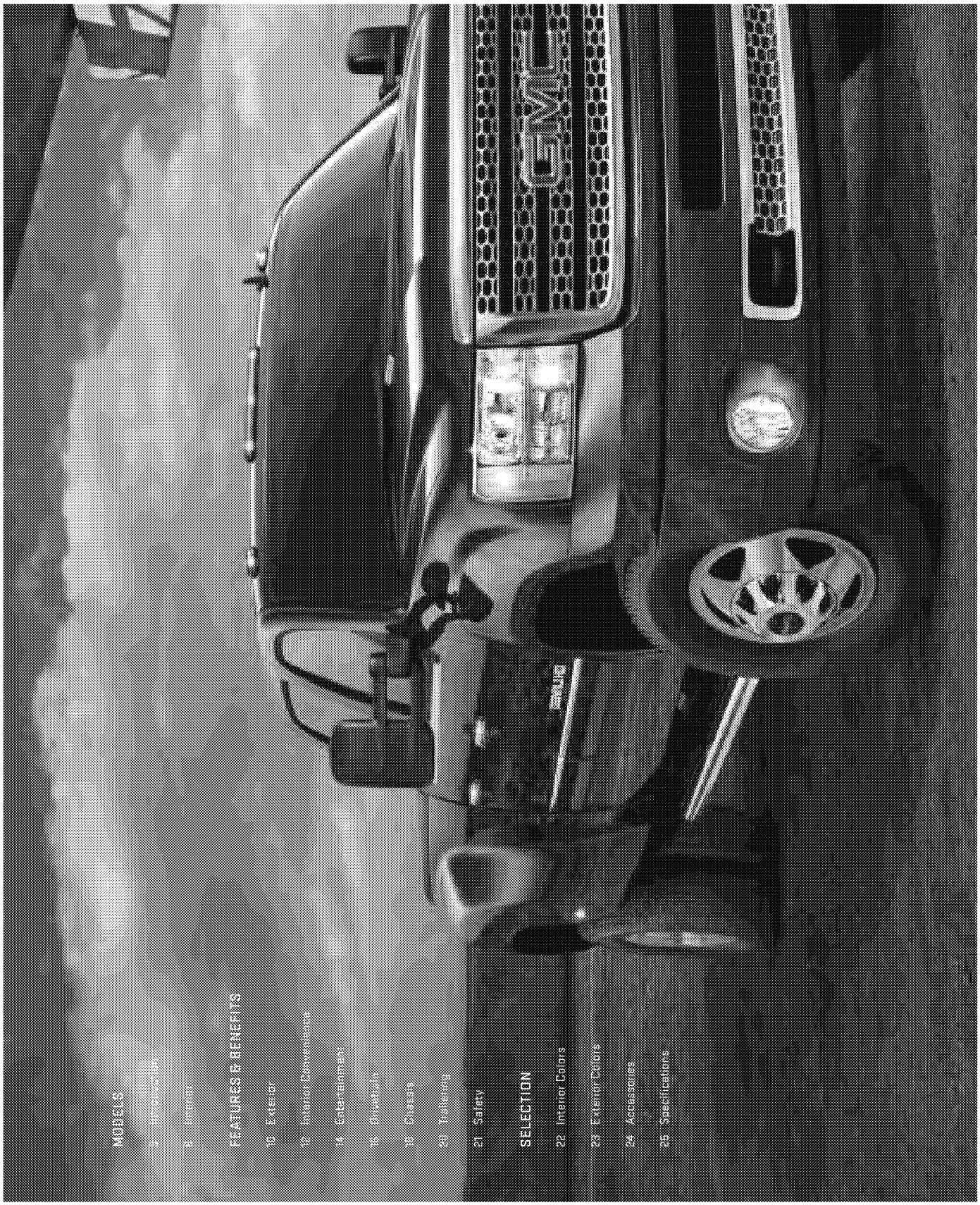
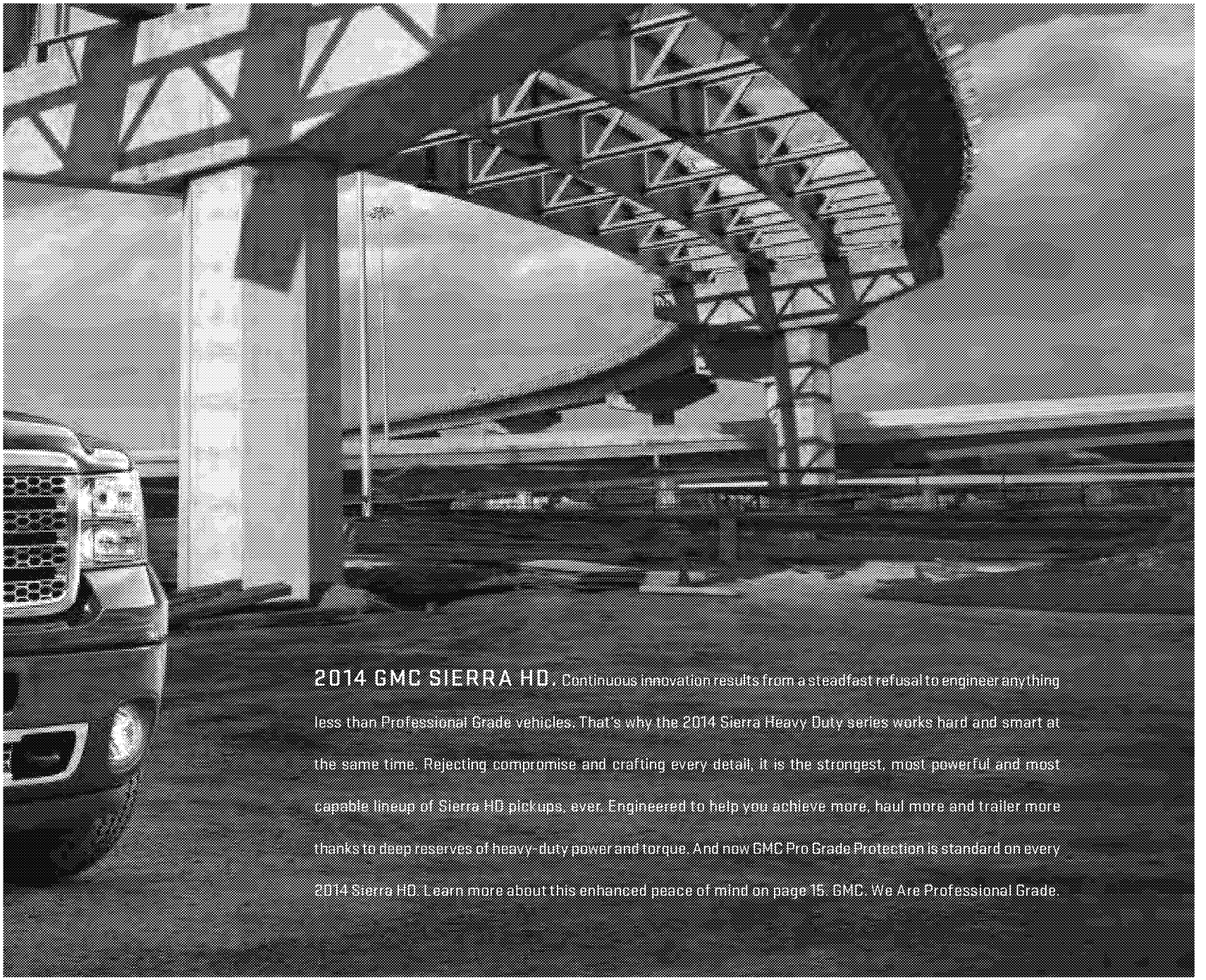
SIERRA HD

2014


MODELS
11 Interior
FEATURES & BENEFITS
10 Exterior
12 Interior Convenience
14 Entertainment
16 Durability
18 Powertrain
20 Technology
21 Safety
SELECTION
22 Interior Colors
23 Exterior Colors
24 Accessories
25 Specifications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SIERRA 2500HD CREW CAB SLT IN QUICKSILVER METALLIC
Shown with available equipment.

Overpower obstacles with a choice of powertrains. pg 16.

Put the high-strength, fully boxed steel HD frame to work. pg. 18.

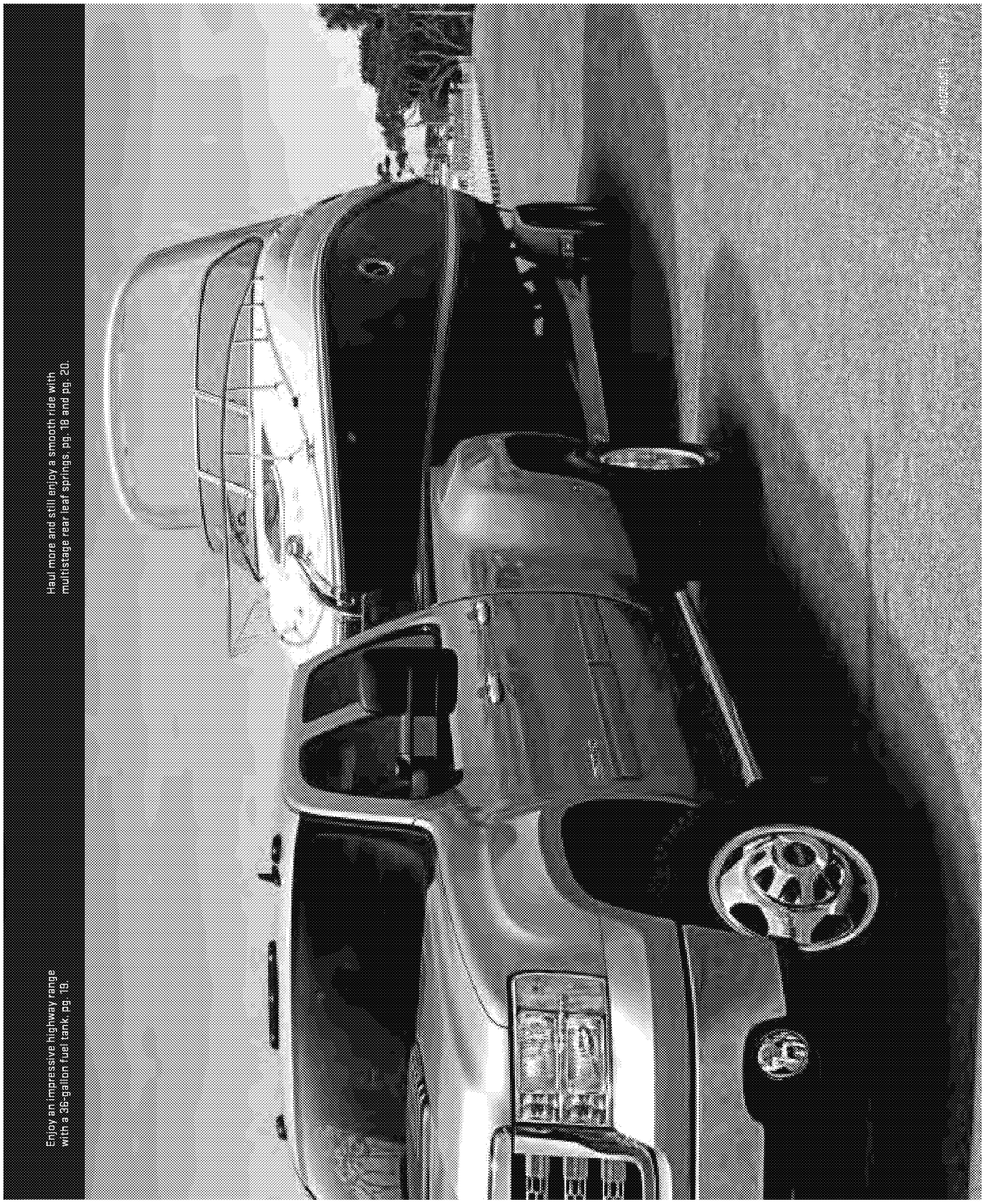
MODELS

SIERRA 2500HD AND 3500HD: DOING MORE. WITH MORE.

When there's tough work to do or serious recreation to enjoy, GMC Sierra 2500HD and Sierra 3500HD are your trucks. They share intelligence, versatility and strength—both models offer the most standard trailering in their class—distinguished only by their capabilities. Sierra 2500HD provides a maximum ¾-ton fifth-wheel trailer rating of up to 17,800 lbs[1] and a maximum payload of up to 4212 lbs.[2] Elevate the capability with Sierra 3500HD in either single- or dual-rear-wheel configurations and get a max fifth-wheel trailer rating of up to 23,100 lbs[1] and a max payload of up to 7222 lbs.[2] In either series, you can raise the standards of Professional Grade to the highest level of excellence with Sierra Denali.

[1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [2]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo.

SIERRA 3500HD CREW CAB SLT WITH DUAL REAR WHEELS
IN QUICKSILVER METALLIC shown with available equipment.
Increase your braking confidence with
the available diesel exhaust brake. pg. 18.
GMC


Enjoy an impressive highway range
with a 36-gallon fuel tank. pg. 19.
Haul more and still enjoy a smooth ride with
multistage rear leaf springs. pg. 18 and pg. 20.

SIERRA 2500 DENALI HD INTERIOR IN EBONY
shown with available equipment.

Get a warm welcome with a leather-wrapped, heated steering wheel. pg. 12.

COMFORT ZONE. Sierra Denali HD is a truck built by—and for—those who demand attention to detail. Its seating surfaces are trimmed in premium leather that's perforated for comfort. The front seats are heated, cooled and feature 12-way power adjustment. The gauge cluster integrates a Driver Information Center, putting valuable information in one place. Every surface says this is no ordinary truck. Every feature contributes to making Denali the ultimate Sierra.

FEATURES & BENEFITS

PROFESSIONAL GRADE: YOUR USER'S GUIDE.

The following pages offer detailed insights into the driving, hauling and trailering benefits Sierra HD pickups provide. Sierra HD trucks don't simply happen. They are born of a strict adherence to engineering excellence. Every component is the result of never saying never to what's possible. And to make sure the strongest, most powerful and most capable Sierra HD pickups stay that way, we back them with Pro Grade Protection (see page 15 to learn more).

SIERRA 2500HD CREW CAB SLT IN ONYX BLACK
shown with available equipment.

Keep you and your trailer heading in the same direction with Trailer Sway Control. pg. 20

Make it easier to get in and out of your Sierra with available accessory assist steps. pg. 24

EXTERIOR FEATURES

LOADED EVEN BEFORE YOU LOAD IT.

No matter which one you choose, Sierra 2500HD and Sierra 3500HD ingeniously combine brains and brawn. They're equipped with features (as well as available options) that will help bring any job down to size, while making your travels feel nearly effortless. The following are just a few of the features that make Sierra HD the heavy favorite in heavy dutys.

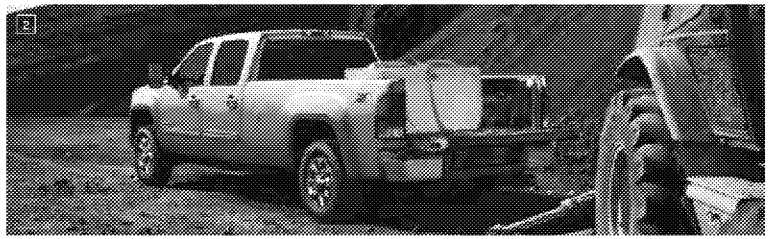
SIERRA 2500HD

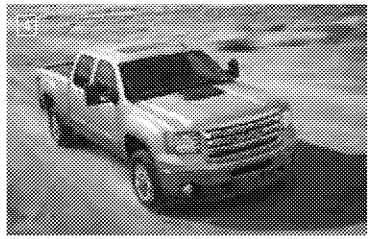
SIERRA 2500 DENALI HD Our ¾-ton Sierra 2500 Denali HD sits on a fully boxed, high-strength steel frame specifically engineered for HD applications. With the available Duramax Diesel 6.6L V-8 Turbo, it has a trailering capacity of up to 17,400 lbs.[1]

PAYLOAD AND TRAILERING Sierra 2500HD has a maximum payload of up to 4212 lbs[2] and with the available Duramax Diesel 6.6L V-8 Turbo, a maximum trailering capacity of up to 13,000 lbs[1] with a conventional ball hitch, or up to 17,500 lbs[1] with a fifth-wheel or goosneck hitch.

FOLDING MIRRORS The outside mirrors fold to make it easier to navigate tight spaces. Available camper mirrors (shown at bottom right) extend to give you a wide view, and you can retract them when parking in narrow spaces.

RECIRCULATING BALL STEERING Sierra HD models feature recirculating ball power steering. The high-capacity power steering pump and large reservoir help to give a constant level of assist, even when operating at the maximum weight.





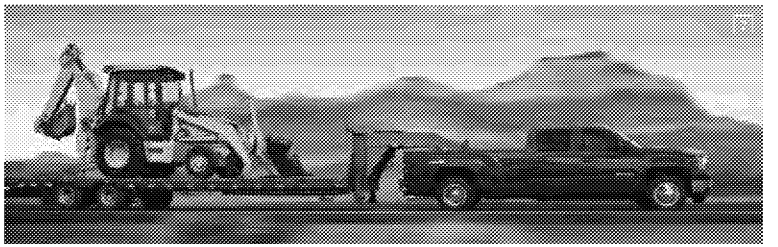
SIERRA 3500HD

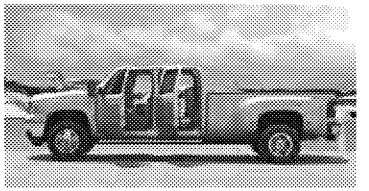
SIERRA 3500 DENALI HD Our Sierra 3500 Denali HD is the ultimate expression of Professional Grade engineering. It offers an available maximum payload of up to 5484 lbs[2] and maximum trailering of up to 22,600 lbs[1] with the available Duramax Diesel 6.6L V-8 Turbo.

WIDE-VIEW MIRROR All 3500HD models come standard with vertical compact-style, convex spotter surface mirrors that help you see what's along your sides when you're trailering a wide load.

TRAILERING CAPACITY An impressive 1-ton maximum fifth-wheel trailering capacity of up to 23,100 lbs[1] and a GCWR of 30,500 lbs.[3]

PAYLOAD CAPACITY The 3500HD Regular Cab 2WD Long Box with dual rear wheels offers a maximum payload capacity of up to 7222 lbs.[2] If it's cargo and crew you need to haul, or a combination of both, the Sierra Crew Cab is a Sierra built for the heaviest of heavy-duty jobs.



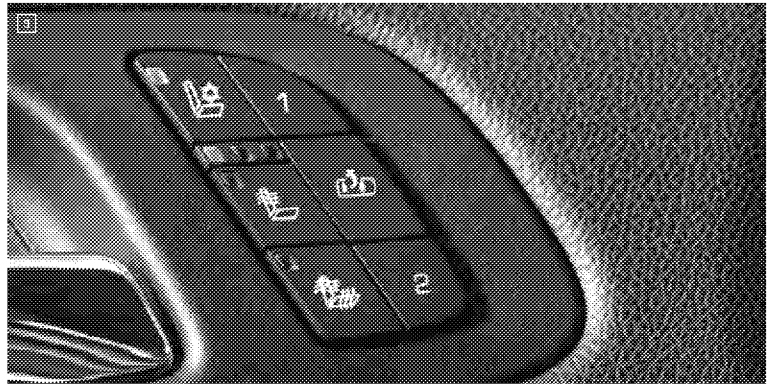


[1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [2]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [3]When properly equipped. Includes weight of the vehicle and trailer combination, including the weight of driver, passengers, fuel, optional equipment and cargo in the vehicle and trailer.

INTERIOR FEATURES

BUSINESS CLASS.

Climb into the cab of a Sierra HD and you'll quickly realize everything that surrounds you has been purpose-built for your needs. From the integration of advanced technologies to the supportive seats to carefully calculated storage bins, Sierra HD's spacious interior is designed to put the driver in control and passengers at ease. After all, GMC engineers feel work shouldn't be without its comforts.



POWER FRONT SEATING Get comfortable with power-adjustable front seats. Power driver-seat adjustment is available for 40/20/40 seating with select equipment packages, and power driver and passenger seats are included with all bucket seats in SLE (six-way), SLT (10-way) and Denali (12-way).

HEATED AND COOLED FRONT SEATS The ultimate in all-weather comfort, these seats are appointed in a perforated leather that allows the cooling feature to circulate air between you and the seat surface. They are standard on Denali and available on SLT models.

POWER-ADJUSTABLE PEDALS To help drivers of varying sizes sit at a comfortable distance from the steering wheel, adjustable pedals with memory are available on SLE and SLT models, and are standard on Denali.

HEATED STEERING WHEEL Exclusive to Denali, the leather-wrapped, heated steering wheel adds soothing warmth whenever the driver demands it.

BLUETOOTH[#1] FOR PHONE Extend your capabilities by activating the available Bluetooth feature. This lets your Bluetooth device work through the vehicle's controls and features already installed in your Sierra HD, including hands-free operation and dialing.

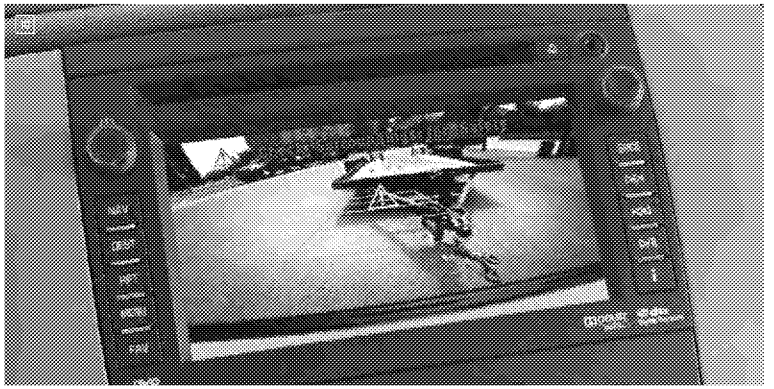
[#1]Go to gmcnetconnect.com to find out which phones are compatible with the vehicle.

CLIMATE CONTROL All Sierra models are equipped with air conditioning. Automatic dual-zone climate control with individual settings for the driver and right-front passenger is standard on SLT and Denali, and available on SLE.

DRIVER INFORMATION CENTER Staying in touch with important vehicle information is as easy as pressing a button. The Driver Information Center includes the odometer and trip odometers, as well as a message center that includes vital vehicle functions and driving conditions. SLE, SLT and Denali include a compass and outside temperature indicator.

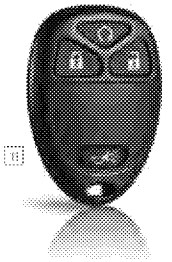
CONVENIENCE FEATURES

THAT'S EASY. Available on Sierra HD are a number of advanced features to enhance your level of convenience. Each helps transform ordinary tasks, like starting the vehicle, searching for a song and backing into a parking space, seamlessly integrating innovative technologies to create an exceptional driving experience. These are features you shouldn't leave home without.



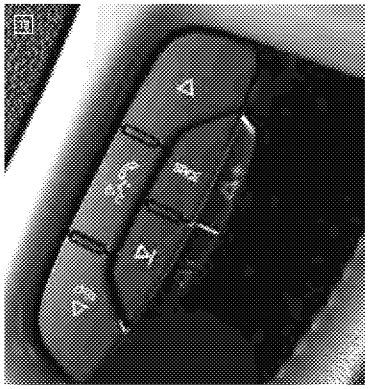
REAR-VISION CAMERA SYSTEM Make it easier to back up to a trailer or negotiate a tight space. This available system places a monitor in your rearview mirror (or navigation screen, if equipped) to display a view of the area behind the vehicle. The Rear-Vision Camera does not replace driver vision. Please use proper care when backing up.

REMOTE VEHICLE START This available feature lets you start your vehicle from up to 195 feet away. Your Sierra HD will run for up to 10 minutes. If equipped with the automatic climate control system, it will default to heating or cooling mode based on the outside temperature.



UNIVERSAL HOME REMOTE Never get locked out again. This available remote can be easily programmed to operate the majority of garage-door-opening systems, and has the benefit of never needing batteries.

ULTRASONIC REAR PARKING ASSIST This available system sends out ultrasonic waves that act like rear bumper radar to alert you to the distance of objects up to 6 feet behind the vehicle. The system operates at speeds less than 5 mph. The closer you are, the faster it beeps.



STEERING-WHEEL-MOUNTED RADIO CONTROLS Access your audio system with your fingertips while you keep your eyes on the road. These available fingertip controls can also manage most music search features of compatible MP3 and iPod® players, as well as Bluetooth[1] for phone.

[1]Go to gmbluetoothconnect.com to find out which phones are compatible with the vehicle.

ENTERTAINMENT

WORK HARD. PLAY HARD.

Sierra HD is available with a range of entertainment technologies to enhance your drive. The quiet cabin is the ideal starting point for you and your passengers to enjoy available audio and the DVD Rear-Seat Entertainment System. Finding the information, music and video you want is easy thanks to steering-wheel and touch-screen controls at your fingertips.

BOSE® AUDIO SYSTEMS Bose audio is engineered to give you the realism and presence of a live performance. Standard on SLT and available on SLE models, Bose audio features steering-wheel-mounted radio controls and a premium speaker system.

BOSE CENTERPOINT® SOUND Denali models include Bose Centerpoint surround sound with SurroundStage® signal processing for the sensation of a live performance. This technology, along with AudioPilot® noise compensation, wraps you in sound, delivering five independent channels from existing two-channel recordings.

REAR-SEAT ENTERTAINMENT SYSTEM Available in SLT and Denali Crew Cab models, rear-seat passengers will enjoy this system that includes a DVD player and 8" diagonal flip-down screen. It also comes with a separate upper DVD slot in the radio to let front-seat passengers control the DVD or music playing behind them. It's compatible with most popular video gaming systems.

AUXILIARY INPUT This available feature accommodates most MP3 players and devices, including many smartphones. So you can bring the music and entertainment you love to your Sierra just by plugging in.

TOUCH-SCREEN NAVIGATION SYSTEM[1] For easy operation, the available system includes a large 7" diagonal in-dash touch-screen display, 2-D or 3-D map graphics and 3 months of NavTraffic.[2] OnStar[3] subscribers can also use this system with OnStar Turn-by-Turn Navigation assistance (6 months standard). The screen also serves as a large, easily read monitor for the available Rear-Vision Camera System.

[1]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [2]If you subscribe after your trial period, *subscriptions are continuous until you call SiriusXM to cancel.* See SiriusXM Customer Agreement for complete terms and geographic limitations at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change. [3]Visit onstar.com for coverage map, details and system limitations.

USB PORT[4] Plug your digital devices into the available USB port in the center console.

[4]Not compatible with all devices.

SIRIUSXM SATELLITE RADIO/NAVTRAFFIC[5] Enjoy SiriusXM Satellite Radio with a 3-month trial subscription to the XMPremier Package. Get over 130 channels, including commercial-free music, plus sports, news, talk, comedy and entertainment. With NavTraffic, you'll get continuously updated traffic information, right on your vehicle's available navigation system.

[5]If you subscribe after your trial period, *subscriptions are continuous until you call SiriusXM to cancel.* See SiriusXM Customer Agreement for complete terms and geographic limitations at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change.

ONSTAR FEATURES

FRIENDS IN HIGH PLACES

Standard for 6 months, the OnStar Directions & Connections Plan[5] lets you speak to a live OnStar Advisor just by pressing the blue OnStar button on your rearview mirror.

SAFETY

AUTOMATIC CRASH RESPONSE[7] In many crashes, built-in sensors can automatically alert an OnStar Advisor who is immediately connected into your vehicle to see if you need help sent to your exact location—even if you can't respond.

CRISIS ASSIST During severe weather or other crisis situations, OnStar offers assistance to help you connect with loved ones and navigate your way to safety.

EMERGENCY SERVICES If someone in your Sierra HD needs emergency help, the OnStar emergency button gives you a priority connection to a specially trained Advisor at any time, day or night.

ROADSIDE ASSISTANCE[8] If you're stranded, run out of gas or have a flat tire—one push of the OnStar button can immediately connect you to an Advisor, ready to help any hour of the day or night.

REMOTE DOOR UNLOCK[9] If you get locked out of your Sierra HD, OnStar can help. An OnStar Advisor can send a signal to your Sierra HD that usually unlocks the doors within minutes.

REMOTE HORN AND LIGHTS Can't remember where you parked? Call the toll-free number and OnStar will send a signal to flash your lights and sound your horn to help you locate your Sierra HD.

STOLEN VEHICLE ASSISTANCE[9] If your Sierra HD is ever stolen, OnStar can help locate it after verification with law enforcement.

CONNECTIONS

HANDS-FREE CALLING[10] With voice-activated dialing, available OnStar Hands-Free Calling is built into your Sierra HD. Push the voice command button, call out the number and you're free to keep your eyes on the road.

TURN-BY-TURN NAVIGATION OnStar Turn-By-Turn Navigation is simple—all you have to do is push your blue OnStar button and ask the OnStar Advisor to download directions to your Sierra HD.

ONSTAR eNAV WITH MAPQUEST.COM™ Get a head start on a trip by checking out your destination on mapquest.com. With OnStar eNav, just click the "Send" link on the Web site, and directions will be sent to your vehicle.

DESTINATION DOWNLOAD With the optional Navigation System, simply press your blue OnStar button, and a trained Advisor will download directions to your Sierra HD's navigation screen.

ONSTAR REMOTELINK™ KEY FOB SERVICES[12] Unlock. Start. Find. From anywhere. New this year, OnStar RemoteLink Key Fob Services are included for 5 years on OnStar-equipped 2014 vehicles when you download the app and use RemoteLink services during the 6-month trial period and any consecutive periods with an OnStar plan. Services include remote door unlock and lock, remote start and stop (requires factory-installed remote start) and remote horn and lights.

ONE PRO GRADE PROTECTION

PROFESSIONAL GRADE COVERAGE.

To make sure GMC's Professional Grade engineering stays that way, Pro Grade Protection is now standard on every 2014 Sierra HD. From scheduled maintenance to protecting the entire vehicle and the powertrain in between, you can drive with confidence knowing that Professional Grade doesn't simply describe your Sierra HD's design and engineering, it's how well we protect it, too.

2-YEAR/24,000-MILE RECOMMENDED SCHEDULED MAINTENANCE[13]

3-YEAR/36,000-MILE BUMPER-TO-BUMPER LIMITED WARRANTY[14]

5-YEAR/100,000-MILE POWERTRAIN LIMITED WARRANTY[14]

[5]Visit onstar.com for coverage map, details and system limitations. [7]OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data. [8]Roadside service provided by Allstate Roadside Services. [9]Services vary by model and conditions. [10]Visit onstar.com for coverage map, details and system limitations. OnStar Hands-Free Calling requires existing OnStar service contract and prepaid minutes. Not available in certain markets. Calls can be made in U.S. and Canada only. [12]Available on select Apple® Android™ and BlackBerry® devices. Services vary by device, vehicle and conditions. Requires an active OnStar subscription. [13]Coverage is available for 5 years from the date of vehicle delivery and is transferable. Does not include any emergency services or other OnStar services. To cancel OnStar RemoteLink Key Fob Services or if your vehicle is sold, it is important to contact an OnStar Advisor. See onstar.com/mobile for full details. [13]Covers only scheduled oil changes with filter, tire rotations and 27-point inspections, according to your new vehicle's recommended maintenance schedule for up to 2 years or 24,000 miles, whichever comes first. Does not include air filters. Maximum of 4 service events. See participating dealer for other restrictions and complete details. [14]Whichever comes first. See dealer for limited warranty details.

HD ENGINES

POWER, PACKED. To make sure your heavy-duty work demands are accomplished with ease, Sierra 2500HD and 3500HD models offer Vortec gasoline and Duramax Diesel V-8 engines. No matter which you choose, you'll have plenty of what you demand from a heavy-duty pickup: power and torque.

VORTEC 6.0L V-8 ENGINE To give you uncompromised power and torque for confident daily driving, passing and trailering, look no further than the Vortec 6.0L V-8 engine. It uses innovative "vortex technology" to swirl and tumble incoming air and fuel for optimum power and response.

E85 FLEXFUEL CAPABILITY[1] The Sierra 6.0L gas V-8 engine is capable of running on E85 ethanol, an advanced biofuel.

[1]E85 FlexFuel capability is not available in AZ, CA, CT, DE, MA, MD, ME, NJ, NY, OR, PA, RI, VT and WA. E85 is a combination of 85% ethanol and 15% gasoline. Go to efdc.energycurrently/fuels to see if there is an E85 fuel station near you.

VARIABLE VALVE TIMING (VVT) For easy responsiveness in low-speed city driving and bold power for open-road passing or trailering, the Vortec 6.0L V-8 features VVT. It monitors and changes valve open and close points for near-peak levels of torque across the entire range of engine speeds.

DURAMAX DIESEL 6.6L V-8 TURBO With direct-injection technology that helps it start in as little as 3.0 seconds at -30°F and a sophisticated Allison® transmission with overdrive, the available Duramax Diesel 6.6L gives you a maximum highway range of up to 650 miles on a single fill-up.[2]

[2]Based on GM testing and fuel-tank capacity. Your range may be less.

DURAMAX B20 BIODIESEL CAPABILITY To reduce carbon-dioxide emissions and stretch your fuel budget, the Duramax 6.6L can operate on B20 biodiesel, a mix of 20 percent biodiesel from domestic, renewable resources, and 80 percent petroleum diesel.

DURAMAX HIGH-PRESSURE DIRECT INJECTION For fast starts in cold weather, quieter operation and maximum efficiency, the direct-injection system operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, burning clean and fast with lower emissions.

CNG Dedicated Compressed Natural Gas (CNG) fuel systems are available on Sierra 2500HD Crew Cab models. CNG vehicles are equipped with a specially designed 6.0L Vortec engine built for gaseous fuel, along with an integrated and warranted dedicated gaseous fuel system in place.

OIL LIFE MONITOR For long life and durability, nothing is more important than changing your oil at the right time. GMC engineered the mystery out of this essential service with the Oil Life Monitor. It calculates how much life your oil has left, based on when and how you drive. Then, it updates you with a telltale on your Driver Information Center.

ONSTAR VEHICLE DIAGNOSTICS[3] Standard with your 6-month trial subscription to OnStar, the OnStar Vehicle Diagnostics service can run hundreds of checks of your engine, transmission, antilock brakes and more, then organize the information into an easy-to-read monthly report. OnStar can also run a check of your vehicle as you drive just by pressing the blue button and asking the Advisor for an On-Demand Diagnostics check.

[3]Visit onstar.com for details and system limitations.

HEAVY-DUTY ENGINES

VORTEC 6.0L V-8 VVT (L96)
HORSEPOWER: 360 hp @ 5400 rpm*
TORQUE: 380 lb-ft @ 4200 rpm
FlexFuel Capable
*6½ ton models. See page 20 for full engine specifications.

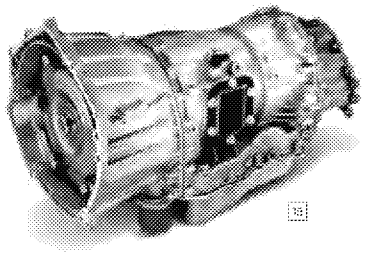
DURAMAX DIESEL 6.6L V-8 TURBO
HORSEPOWER: 397 hp @ 3000 rpm
TORQUE: 765 lb-ft @ 1600 rpm

6.0L V-8 SFI BI-FUEL (LC9)
HORSEPOWER: 300 hp @ 5400 rpm (gasoline)
301 hp @ 5000 rpm (CNG)
TORQUE: 380 lb-ft @ 4200 rpm (gasoline)
333 lb-ft @ 4200 rpm (CNG)

TRANSMISSION/DRIVETRAIN

POWER, DELIVERED.

A pickup truck's transmission and driveline components are critical to translating every rotation of the engine's crankshaft into power at the drive wheels—power to tow and haul, power to pass, power to grip snow-covered asphalt or gravel-strewn back roads. GMC Sierra HD offers a range of robust yet refined transmissions precisely matched to maximize the power delivery, efficiency and load demands of our HD engines.



EATON® HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL No other competitor in its class offers an available fully automatic locking rear differential for on- and off-road use. Available on Sierra 2500HD and standard on 3500HD, the Eaton locker senses when there's a difference in rotational speed between the left and right rear wheels of approximately 100 rpm. It then locks the differential to turn both rear wheels in unison for added traction.

TOW/HAUL MODE To give you more power to accelerate, Tow/Haul mode raises transmission upshift points. This feature also helps you slow your Sierra by raising downshift points, which uses engine compression to slow your Sierra.

AUTOMATIC ENGINE GRADE BRAKING Standard with gas-engine 6-speed automatic transmissions, Grade Braking automatically senses when you want to slow your Sierra, and when the conditions are met, engages a Grade Braking shift schedule that helps you maintain your desired speed.

HEAVY-DUTY 6-SPEED AUTOMATIC WITH OVERDRIVE Sierra HD's Vortec 6.0L V-8 is mated to a 6-speed automatic with overdrive. It's a sophisticated tool featuring Tow/Haul mode, Driver Shift Control and Automatic Engine Grade Braking to help you use the full potential of Sierra HD.

DRIVER SHIFT CONTROL Move through the gears like a manual with the convenience of an automatic. Move the shift lever to "M," and you get fingertip "tap up/down" range control of transmission gear selection. Included with select automatic transmissions.

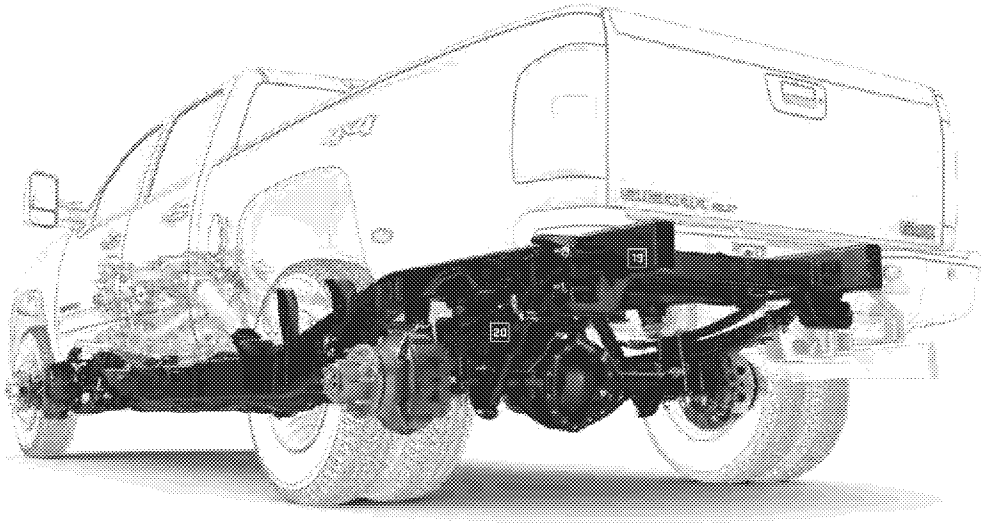
ALLISON® 1000 SERIES 6-SPEED AUTOMATIC WITH OVERDRIVE How do you handle the 765 lb-ft of torque produced by Sierra HD's available Duramax Diesel engine? GMC engineers specified the Allison 1000 Series 6-speed automatic with overdrive for its heavy-duty strength and durability. Designed by the same company that makes transmissions for military tanks, this transmission is the exclusive partner for the available Duramax Diesel engine.

AUXILIARY EXTERNAL TRANSMISSION OIL COOLER An air-to-oil auxiliary cooling unit helps keep transmission temperatures in check—especially critical when trailering or plowing snow.

CHASSIS AND CONTROL SYSTEMS

STRENGTH WITH SMARTS.

There's a critical difference between just driving a truck and commanding a GMC Sierra HD: its chassis and control systems. GMC engineers took the powerful drivetrains of Sierra and mounted them to a strong, rigid frame—built specifically for heavy-duty capabilities. Then they gave the chassis advanced control systems designed to make driving Sierra HD easier under the heaviest loads.



FULLY BOXED FRAME Crafted from high-strength steel, the HD frame is fully boxed along its entire length, with fully welded (not riveted) brackets and cross-members. Tubular cross-members are through-rail welded for significantly added strength and resistance to twisting over rough surfaces.

INDEPENDENT FRONT SUSPENSION For ride comfort without sacrificing strength, Sierra HDs have an independent front suspension designed specifically for the constant punishment of heavy-duty use. With a maximum unsurpassed pickup Gross Front Axle Weight Rating of up to 6000 lbs.[1] this torsion-bar suspension design allows you to make seasonal ride-height adjustments in minutes, with a single wrench.

[1]Capabilities and weight ratings are dependent upon model, engine, transmission and GVWR combinations. See your GMC dealer for details.

MULTILEAF REAR SPRINGS To handle heavy-duty payloads, GMC engineers outfitted Sierra HD models with rear leaf springs that are 3 inches wide—two-stage for 2500HD models and three-stage for 3500HD models.

TORSION-BAR DESIGN The Sierra HD frame uses a torsion-bar suspension. Pioneered for pickups by GMC, the torsion bar is designed to support different front axle loads and to retain proper trim height.

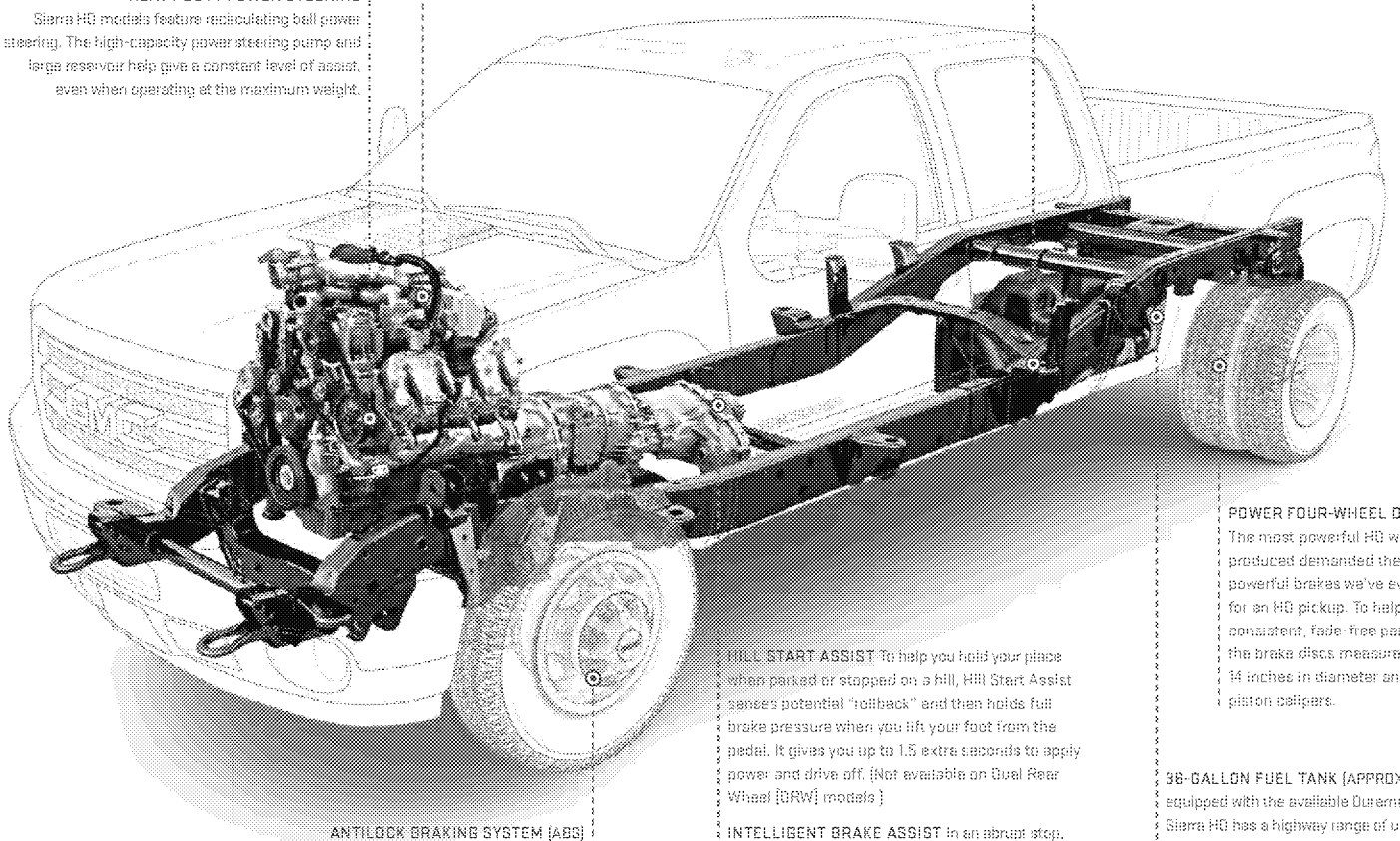
STABILITRAK A stability control system that's standard on all Single Rear Wheel (SRW) Sierra models, StabiliTrak senses when your vehicle is not responding to steering inputs and adjusts engine speed and applies brake pressure to any individual wheel to help maintain directional control.

TRACTION CONTROL SYSTEM To make the most of available traction on many road surfaces, traction control measures and compares the speed of your wheels. If it senses one or more wheels starting to spin, such as on a slippery surface, the system applies individual brakes and manages engine power to slow the wheel down and maintain traction so you can move forward with a better sense of control.

HEAVY-DUTY POWER STEERING
Sierra HD models feature recirculating ball power steering. The high-capacity power steering pump and large reservoir help give a constant level of assist, even when operating at the maximum weight.

DIESEL EXHAUST BRAKE To let you engage an extra measure of braking confidence on long grades, the diesel exhaust brake, included with the available Duramax Diesel engine, uses engine compression to create "negative torque" to help slow the vehicle. It's factory installed and calibrated to work with the rest of your Sierra HD's braking system.

HYDRAULIC BODY MOUNTS How do you balance the demand for a rigid frame with desire for cabin comfort? GMC engineers positioned the Sierra HD Crew Cab models on rear mounts filled with hydraulic fluid, creating a smooth, quiet ride.



POWER FOUR-WHEEL DISC BRAKES
The most powerful HD we've ever produced demanded the most powerful brakes we've ever developed for an HD pickup. To help ensure consistent, fade-free performance, the brake discs measure a generous 14 inches in diameter and utilize twin-piston calipers.

HILL START ASSIST To help you hold your place when parked or stopped on a hill, Hill Start Assist senses potential "rollback" and then holds full brake pressure when you lift your foot from the pedal. It gives you up to 1.5 extra seconds to apply power and drive off. (Not available on Dual Rear Wheel [DRW] models.)

INTELLIGENT BRAKE ASSIST In an abrupt stop, milliseconds can be your margin of safety. That's why Sierra's Intelligent Brake Assist senses when you're making an emergency stop, then automatically applies full braking force before your foot can press the pedal all the way. (Not available on DRW models.)

36-GALLON FUEL TANK (APPROX.) When equipped with the available Duramax Diesel, Sierra HD has a highway range of up to 680 miles on a single tank of fuel,[1] thanks to its 36-gallon fuel tank.

[1]Based on GM testing and fuel-tank capacity. Your range may be less.

ANTILOCK BRAKING SYSTEM (ABS)
For confident stops in a variety of conditions, every SRW Sierra HD features four-channel antilock brakes. When the brakes are applied, ABS detects impending wheel lock-up and pulses that wheel's brake to prevent it. The system can activate any combination of vehicle brakes to maintain control.

TRAILERING

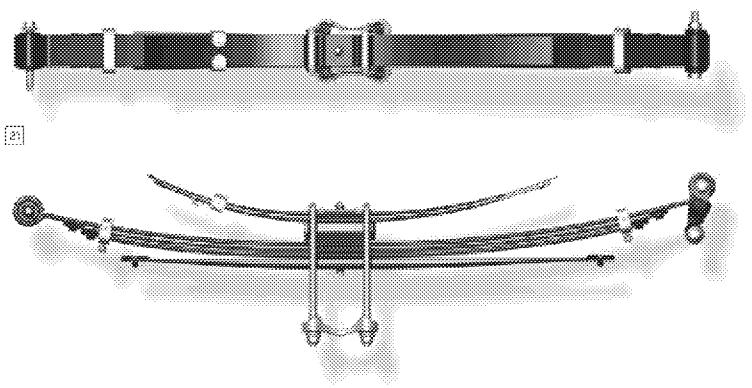
HEAVY EMPHASIS ON MORE. GMC Sierra HD is engineered to offer Professional Grade trailering capability to tow more and thus do even more—in fact, 2500HD and 3500HD provide the most standard trailering in their class. Whether you're headed out for work or recreation, Sierra HD offers a wide range of trailering capacities to meet your demands. Complete trailering ratings to help you make an informed purchase decision are listed on page 28.

MULTISTAGE REAR LEAF SPRINGS For more capacity when you need it and a smoother ride when you don't, Sierra HD's 3"-wide multileaf rear springs engage progressively as the load in the bed or on the hitch increases. In 2500HD, it's a two-stage progression, and on 3500HD, it's three-stage for added load-bearing capacity.

TRAILER SWAY CONTROL Keep you and your trailer heading in the proper direction, automatically. This system uses StabiliTrak sensors to detect a swaying trailer and applies the vehicle's and the trailer's brakes (if properly equipped) to help bring it back in line. (Not available on Dual Rear Wheel [DRW] models.)

TRAILER BRAKE CONTROLLER For fingertip control and easy monitoring of your trailer brakes, Sierra HD offers an integrated trailer brake controller. It's located close to the steering wheel for easy adjustments and displays the level of brake force or "gain" in the Driver Information Center. (Standard on 3500HD models.)

FIFTH-WHEEL FRAME MOUNT PROVISIONS Sierra HD models offer easy installation of fifth-wheel and gooseneck hitches. GMC engineers added prepierced access holes to preserve frame integrity, as well as a pair of extra cross-members for added strength in the hitch-mount location.



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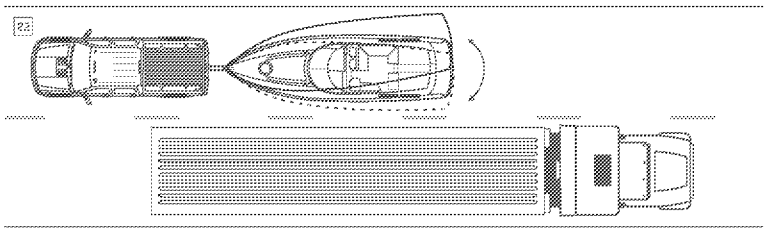
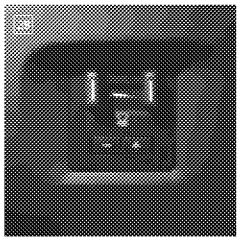
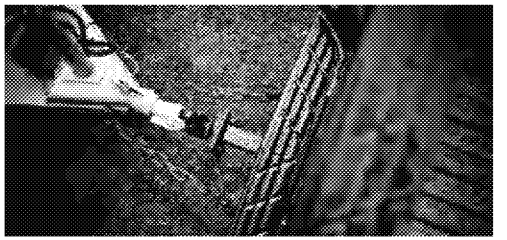


22



23



MAXIMUM TRAILER WEIGHT RATINGS[1]

2500HD	Up To 17,800 lbs
3500HD	Up To 23,100 lbs

Complete trailering ratings are listed on page 28.

[1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.

SAFETY

YOU CAN NEVER BE TOO SAFE.

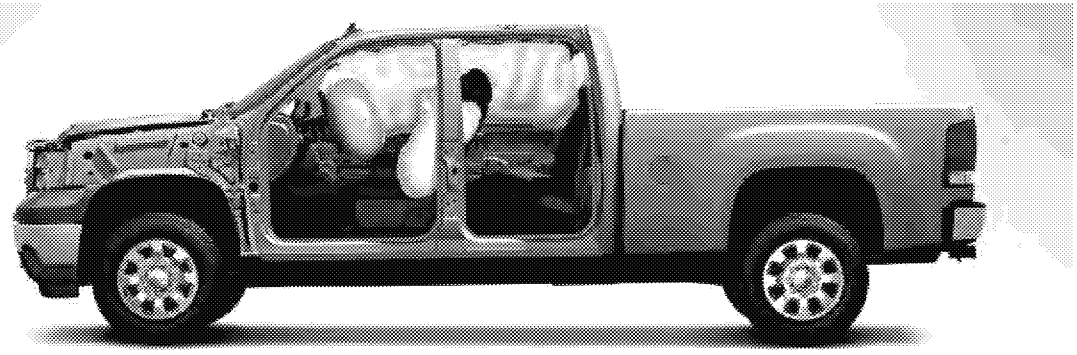
Sierra HD is designed to help protect you before, during and after a collision. Advanced chassis control technologies help Sierra HD drivers avoid potential accidents. A system of air bag supplemental restraints[1] helps protect passengers during a collision. With the available OnStar Automatic Crash Response[2] (standard for 6 months), Sierra HD can even connect you to help in the critical moments immediately after you're involved in a crash.

FRONTAL AND HEAD CURTAIN SIDE-IMPACT AIR BAGS[1] All Sierra HD models come with driver and front-passenger air bags. Available side-impact air bags unfurl from the roof rail like a protective curtain for outboard passengers and can be activated by either rollover sensors or side-impact sensors. (Standard on Denali models.)

SEAT-MOUNTED SIDE-IMPACT AIR BAGS[1] To help protect the thorax and pelvic regions of the driver and outside front passenger in a side-impact collision, Sierra Heavy Duty Denali models include side-impact air bags mounted on the driver and outside front-passenger seat. (Also available on other select Heavy Duty models.)

LATCH CHILD SEAT ANCHORING SYSTEM Make it easier to properly install a child seat. LATCH stands for Lower Anchors and Top tethers for CHildren. A LATCH seat will install to specially designed retainer hooks in your Sierra HD with an audible "click." You can also install a top tether strap that helps limit movement in a forward crash to help reduce the chance of injury.

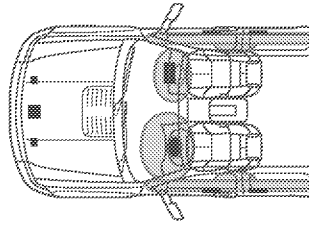
24



REINFORCED STEEL SAFETY CAGE DESIGN
Sierra HD's robust body structure is engineered to help maintain the integrity of the passenger compartment in the event of a collision. All steel from wheel to wheel, the body is designed to crush in a controlled manner in the event of a collision, absorbing the energy of a crash as much as possible.

PASS-KEY III+ THEFT DETERRENT SYSTEM
Preventing unauthorized starting attempts in your Sierra HD comes down to a tiny chip found in your ignition key. It functions as an electronic "fingerprint" that disables your starting system if it detects a theft attempt is under way.

25



[1]Air bag inflation can cause severe injury or death to anyone too close to the air bag when it deploys. Be sure every occupant is properly restrained. Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an entire frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information. [2]Visit onstar.com for coverage map, details and system limitations. OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data.

SELECTION

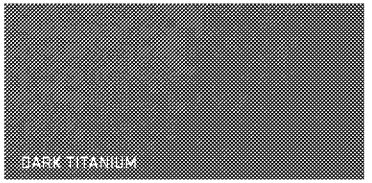
AFTER ALL, IT IS YOUR SIERRA HD. Like every GMC, Sierra HD is built to the strictest standards for engineering, performance and capability.

Yet, the benchmark that means the most to us is yours. So, to make sure it's exactly the way you want it, this is your opportunity to make several important selections.

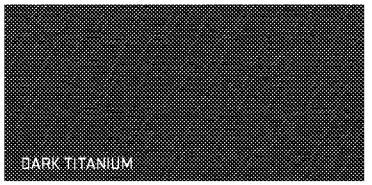
You'll find numerous choices in exterior, interior, entertainment, performance and accessory options. Build your Sierra HD to reflect your preferences.

INTERIOR COLORS

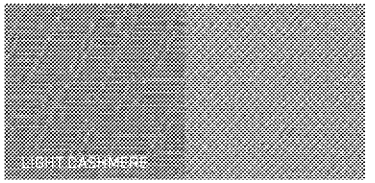
VINYL
(Standard: WT)

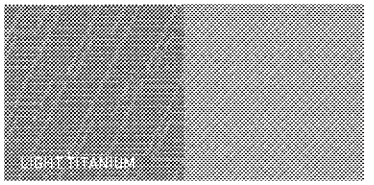


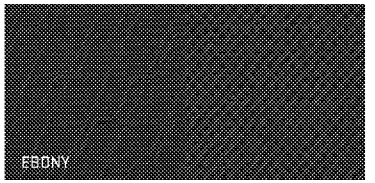
CLOTH
(Available: WT)



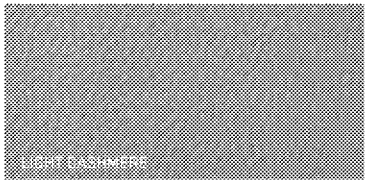
PREMIUM CLOTH
(Standard: SLE)

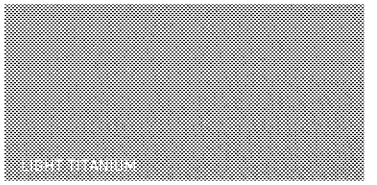


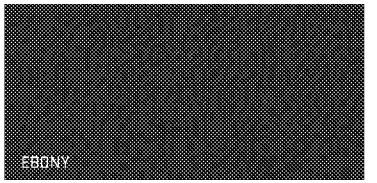




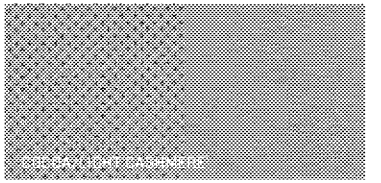
LEATHER-APPOINTED
(Standard: SLT; Available: SLE)

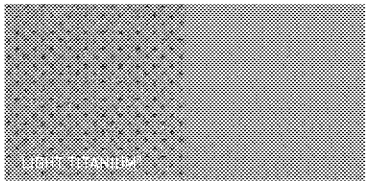


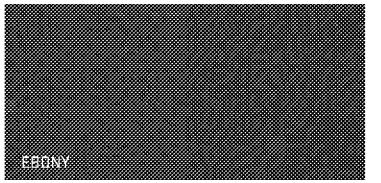




PERFORATED LEATHER-APPOINTED
(Standard: Denali; Available: SLT)







*Very Dark Cashmere/Light Cashmere on SLE. †Not available on Denali.

EXTERIOR COLORS

ONYX BLACK[2]

QUICKSILVER METALLIC

SUMMIT WHITE[2]

STEEL GRAY METALLIC[2]

SONOMA RED METALLIC[2]

STEALTH GRAY METALLIC

FIRE RED

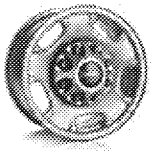
MOCHA STEEL METALLIC

HERITAGE BLUE METALLIC

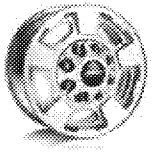
All colors are basecoat/clearcoat for high gloss and durable finish. See your dealer for more details on paint and color availability.
[2]Available on Denali.

WHEELS

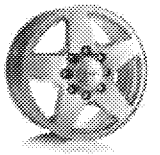
2500HD WHEELS



PYN
17" PAINTED STEEL
STANDARD: WT

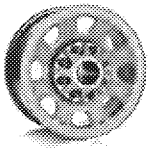


PYG
17" CAST-ALUMINUM
BRIGHT MACHINED
STANDARD: SLE
AVAILABLE: WT

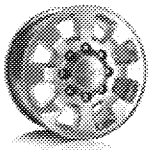


PYS
20" ALUMINUM
AVAILABLE: SLE AND SLT

2500HD/3500HD SRW WHEELS

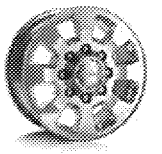


PYT
18" PAINTED STEEL
STANDARD: 3500HD WT
AVAILABLE: 2500HD WT

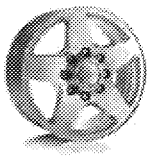


PYB
18" FORGED POLISHED
ALUMINUM
STANDARD: 2500HD SLT, 3500HD SLE AND SLT
AVAILABLE: 2500HD SLE

DENALI HD SRW WHEELS

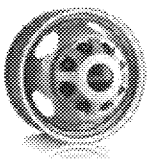


PYP
18" FORGED POLISHED
ALUMINUM
STANDARD: 2500 AND 3500 DENALI HD

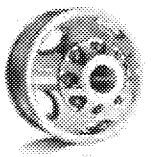


PYB
20" ALUMINUM
AVAILABLE: 2500 DENALI HD

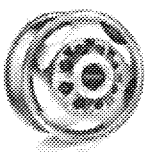
3500HD DRW WHEELS



PYW
17" PAINTED STEEL
STANDARD: WT

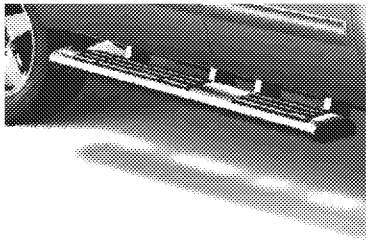


P08
17" CHROME SKINS
AND CENTER CAPS
STANDARD: SLE AND SLT



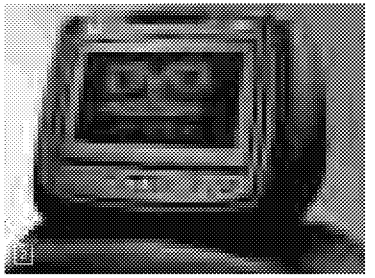
R87
17" FORGED POLISHED
ALUMINUM
STANDARD: 3500 DENALI HD DRW
AVAILABLE: 3500HD SLE AND SLT DRW

BUT WAIT, THERE'S MORE. Engineered to the same standards as your Sierra HD, available GMC Accessories range from functional enhancements like assist steps and bed management systems to a stylish array of accents. So go ahead, outfit your Sierra HD exactly the way you want it.



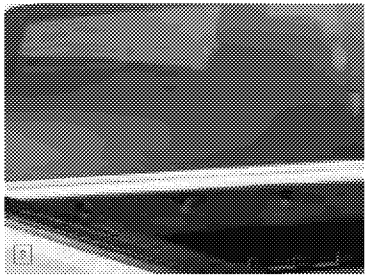
1

ASSIST STEPS Make it easier to get in and out of your truck with these stylish assist steps. Crafted from rust-resistant stainless steel, they are available in either chrome or black powder coat and in 6-inch oval or 3-inch round styles.



2

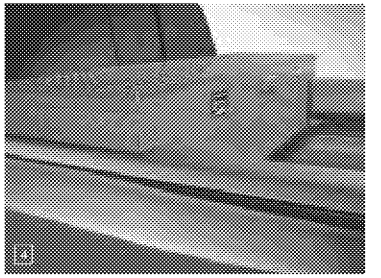
INTEGRATED DVD A dual-player DVD system mounted in back of each front head restraint with wireless headphones gives rear-seat passengers personal entertainment. Single remote control included.



3

BED RAIL CAPS Give the rails on your Sierra HD's pickup bed extra protection against wear and tear with these tough-as-nails rail caps.

SOFT TONNEAU COVER Roll-up design shields cargo, easily rolls up to allow full access to the bed and is constructed with integrated crossbows.



4

STATIONARY TOOLBOX Diamond-patterned toolbox features dual gas shocks for smooth opening and closing and the GMC logo.

VEHICLE SPECIFICATIONS

TRIM LEVELS	WT	SLE	SLT	DENALI
CONFIGURATIONS				
Regular Cab	●	●	–	–
Crew Cab	●	●	●	●
MECHANICAL SIERRA 2500HD/3500HD				
ALTERNATOR 125-amp	●	●	●	●
160-amp. Included with Snow Plow Prep Package when Vortec 6.0L SFI V-8 is ordered. Requires Vortec 6.0L SFI V-8.	○	○	○	○
Dual, 125 amps each. Included with Snow Plow Prep Package when Duramax Diesel 6.6L V-8 Turbo is ordered. Requires Duramax Diesel 6.6L V-8 Turbo engine.	○	○	○	○
BATTERY Heavy-duty, maintenance-free with 800 cold-cranking amps, rundown protection and retained accessory power	●	●	●	●
Auxiliary heavy-duty, maintenance-free with 800 cold-cranking amps. Not available with Duramax Diesel 6.6L V-8 Turbo engine.	○	○	○	○
Heavy-duty, 2 batteries, maintenance-free with 730 cold-cranking amps, with rundown protection and retained accessory power. Included and only available with Duramax Diesel 6.6L V-8 Turbo engine.	○	○	○	○
BRAKES Power 4-wheel disc, 4-wheel antilock	●	●	●	●
EATON® HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL Included with Heavy-Duty Trailering Package. Standard on all 3500HD pickup models.	○	○	●	●
ENGINE Vortec 6.0L V-8 VVT FlexFuel with SFI	●	●	●	●
Duramax Diesel 6.6L V-8 Turbo with direct injection and B20 biodiesel capability	○	○	○	○
ENGINE BLOCK HEATER	○	○	○	○
ENGINE OIL COOLER Heavy-duty external air-to-oil. Integral to driver side of radiator tank.	●	●	●	●
EXHAUST Aluminized stainless steel	●	●	●	●
EXHAUST BRAKE Included with Duramax Diesel 6.6L V-8 Turbo engine only	○	○	○	○
FRAME Fully boxed with hydroformed front section	●	●	●	●
10,000-lb GVWR[2] package. Select Sierra 3500HD SRW models. See your dealer for details.	○	○	○	○
HIGH-CAPACITY AIR CLEANER	●	●	●	●
HIGH IDLE SWITCH	○	○	○	○
RADIATOR GRILLE AND FRONT BUMPER OPENINGS COVER For cold weather. Requires Duramax Diesel 6.6L V-8 Turbo engine	○	○	○	○
REAR AXLE 4.10 ratio. Requires Vortec 6.0L V-8 engine.	●	●	●	●
3.73 ratio	○	○	○	○
SKID PLATE PACKAGE Frame-mounted shields. Includes front underbody shield starting behind front bumper and running to first cross-member, protecting front underbody, oil pan, differential case and transfer case. Requires 4WD on WT models. Not available on 2WD SLE and SLT models unless Z71 Off-Road Suspension Package is ordered.	○	○	○	●
SNOW PLOW PREP PACKAGE Includes 10-amp power for back-up and roof emergency light, 160-amp alternator (dual 125-amp included with diesel), high-flow front bumper, forward lamp wiring harness, provision for cab roof-mounted lamp/beacon, instrument panel jumper wiring harness for electronic trailer brake controller, Skid Plate Package (4WD models only) and increased Front Gross Axle Weight Rating (FGAWR). See chart on page 27 for more details.	○	○	○	○
STABILITRAK Stability control system. Includes electronic trailer sway control, Intelligent Brake Assist and Hill Start Brake Assist (SRW models only).	●	●	●	●
STEERING Power, recirculating ball	●	●	●	●

TRIM LEVELS	WT	SLE	SLT	DENALI
SUSPENSION Front independent with torsion bar	●	●	●	●
Rear multileaf springs, semielliptic with urethane jounce bumpers	●	●	●	●
HEAVY-DUTY HANDLING/TRAILERING SUSPENSION PACKAGE	●	●	●	●
Z71 OFF-ROAD SUSPENSION PACKAGE Includes off-road jounce bumpers, off-road 35-mm deflective disk twin-tube shock absorbers, 33-mm front stabilizer bar, Skid Plate Package and Z71 decals on rear quarters	–	○	○	○
HEAVY-DUTY TRAILERING PACKAGE Includes trailering hitch platform and 2.5" receiver with 2" adapter, 7-wire harness with independent fused trailering circuits mated to a 7-way socket connector, wiring harness for aftermarket trailer brake controller (located in the instrument panel harness) and integrated trailer brake controller. Standard on all 3500HD models.	○	○	●	●
Integrated trailer brake controller. Requires Heavy-Duty Trailering Package. Standard on all 3500HD models.	○	○	●	●
Trailering wiring provisions for camper, fifth-wheel and gooseneck trailers; includes additional 8-way wiring harness routed to front of pickup box. Requires Heavy-Duty Trailering Package.	○	○	○	○
TRAILER SWAY CONTROL SRW models only	●	●	●	●
TRANSFER CASE With floor-mounted shifter (4WD models)	●	–	–	–
Electronic shift with rotary dial controls (4WD models)	–	●	●	●
TRANSMISSION 6L90-E 6-speed automatic. Standard and only available with Vortec 6.0L V-8.	●	●	●	●
Allison® 1000 Series 6-speed automatic. Included and only available with Duramax Diesel 6.6L V-8 Turbo.	○	○	○	○
TRANSMISSION OIL COOLER Auxiliary external heavy-duty air-to-oil	●	●	●	●
SEATING – ALL MODELS				
SEATS 40/20/40 front split bench with driver and front passenger manual recline and center fold-down armrest with storage	●	–	–	–
40/20/40 front split bench with driver and front passenger manual recline. Center fold-down armrest and lockable storage compartment in seat cushion (includes auxiliary power outlet). Adjustable outboard head restraints on Crew Cab model.	–	●	–	–
Front buckets with 6-way power seat adjusters, manual recline, manual lumber and adjustable head restraints. Requires Crew Cab model.	–	○	–	–
Front buckets with 10-way power seat adjusters (SLT) or 12-way (Denali) including power lumber control, heated seat cushions and seatbacks, 2-position driver memory (does not apply to lumber adjuster on SLT) and adjustable head restraints. Includes floor console and storage pockets.	–	–	●	●
Heated and cooled perforated leather-appointed seating with 12-way seat adjuster for driver and front passenger. Includes seat-mounted side-impact air bags[3] on SLT and Denali HD SRW models.	–	–	○	●
Driver-side manual seat adjuster with lumber control. On WT models, included and only available with Dark Titanium Cloth seat trim.	○	●	–	–
60/40 folding rear bench. WT and SLE require Crew Cab model.	●	●	●	●
SEAT TRIM Dark Titanium vinyl with Graphite-colored rubberized-vinyl floor covering	●	–	–	–
Dark Titanium Cloth	○	–	–	–
Premium Cloth	–	●	–	–
Front leather-appointed seating. Includes 6-way power driver seat adjuster on SLE models. Not available on Regular Cab models.	–	○	●	–
Premium front Nuance leather-appointed seating	–	–	–	●

KEY ● STANDARD ○ AVAILABLE – NOT AVAILABLE

[2]When properly equipped; includes weight of vehicle, passengers, cargo and equipment. [3]Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information.

VEHICLE SPECIFICATIONS

TRIM LEVELS

INSTRUMENTATION AND CONTROLS—ALL MODELS

	WT	SLE	SLT	DENALI
CRUISE CONTROL	●	●	●	●
INSTRUMENTATION Analog cluster with speedometer, fuel level, engine temperature and tachometer. On SLE, SLT and Denali models, includes voltmeter and oil pressure indicators	●	●	●	●
Driver Information Center with odometer, trip odometer and message center. On SLE, SLT and Denali models, includes compass and outside temperature.	●	●	●	●
POWER-ADJUSTABLE PEDALS Requires Convenience Package	–	○	○	●
REAR-VISION CAMERA SYSTEM With inside rearview mirror display. If Touch-Screen Navigation[1] is ordered, camera display is on NAV screen. Requires locking tailgate. On SLE model, also requires SLE Preferred Package. Not available on Regular Cab models.	–	○	○	●
STEERING WHEEL Tilt-Wheel adjustable steering column with brake/transmission shift interlock	●	●	●	●
Leather-wrapped (color-keyed on Denali). On WT model, requires Bluetooth[2]	○	●	●	●
Steering-wheel-mounted audio controls. On WT model, requires Bluetooth.[2] On SLE model, requires Preferred Package	○	○	●	●
Heated, leather-wrapped and color-keyed	–	–	–	●
ULTRASONIC REAR PARKING ASSIST With audible warning. Requires Crew Cab model and Convenience Package.	–	○	○	●

INTERIOR DETAILS—ALL MODELS

	WT	SLE	SLT	DENALI
CARPETING Color-keyed with rubberized-vinyl floor mats. Crew Cab models also include rear floor mats; WT models require Dark Titanium Cloth seat trim.	○	●	●	–
Color-keyed with removable carpeted floor mats for first and second rows	–	–	–	●
CLIMATE CONTROL Single-zone manual air conditioning	●	●	–	–
Dual-zone automatic air conditioning with individual settings for driver and right-front passenger; not available with Regular Cab models. Requires Preferred Package.	–	○	●	●
DEFOGGER Rear window. Not available with power-sliding rear window	○	○	●	●
FLOOR COVERING Rubberized vinyl	●	○	–	–
REARVIEW MIRROR With manual day/night adjustment	●	●	–	–
Auto-dimming. Standard on SLE 3500HD models.	–	○	●	●
SUNROOF Power with express-open. Includes Universal Home Remote. Crew Cab models only.	–	–	○	○
WINDOWS Power with driver express-down. SLT and Denali models include front passenger express-down.	–	●	●	●
Rear, power-sliding. Not available on Regular Cab models or with rear-window defogger.	–	○	○	○

OPTION PACKAGES—SIERRA 2500HD/3500HD

	WT	SLE	SLT	DENALI
WORK TRUCK PREFERRED PACKAGE Includes Solar-Ray deep-tinted glass, EZ-Lift locking tailgate, chrome grille with chrome surround and fog lamps. On 2500HD models, includes 17" chrome-clad steel wheels. Also includes power door locks and remote keyless entry on Regular Cab models.	○	–	–	–
SLE PREFERRED PACKAGE (REGULAR CAB) Includes remote vehicle start system, steering-wheel-mounted controls, Bluetooth[2] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate	–	○	–	–
SLE PREFERRED PACKAGE (CREW CAB) Includes steering-wheel-mounted controls, dual-zone automatic air conditioning, 8-way power driver seat adjuster, Bluetooth[2] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate	–	○	–	–
SLE PREMIUM PACKAGE (CREW CAB) Includes 20" forged polished-aluminum wheels on 2500 models, outside heated power-adjustable vertical camper mirrors, heavy-duty trailering equipment, heavy-duty automatic locking rear differential, dual-zone automatic air conditioning, Bluetooth[2] for your cell phone, steering-wheel-mounted audio controls, AM/FM stereo with CD player and MP3 playback, driver 8-way power seat adjuster, front fog lamps, EZ-Lift locking tailgate, inside rearview auto-dimming mirror, 6" oval chromed tubular assist steps, bodyside moldings with chrome accents and chrome door handles. On Dual Rear Wheel Crew Cab models, includes 17" (RS7) forged polished-aluminum wheels. Not available with SLE Preferred Package	–	○	–	–
SLE CONVENIENCE PACKAGE Includes power-adjustable pedals, Universal Home Remote, remote vehicle start system, rear-window defogger and Ultrasonic Rear Parking Assist	–	○	–	–
SLT CONVENIENCE PACKAGE Includes Universal Home Remote, power-adjustable pedals, EZ-Lift locking tailgate, Ultrasonic Rear Parking Assist and rear wheelhouse liners (dealer installed)	–	–	○	–

ENTERTAINMENT/COMMUNICATION/NAVIGATION—ALL MODELS

	WT	SLE	SLT	DENALI
AM/FM STEREO With seek-and-scan and digital clock	●	–	–	–
With MP3-compatible CD player	○	●	–	–
With CD player and MP3 playback, USB port[3] and auxiliary input jack. On SLE models, requires SLE Preferred Package.	–	○	●	–
With MP3-compatible 6-disc CD player, USB port[3] and auxiliary input jack	–	–	○	●
With MP3-compatible CD/DVD player and USB port.[3] On SLT models, requires Crew Cab model and Rear-Seat Entertainment Package. On Denali models, requires Rear-Seat Entertainment Package.	–	–	○	○
TOUCH-SCREEN NAVIGATION[1] With CD or DVD player and MP3 playback, color touch-screen display, enhanced HDD-based navigation with voice recognition, memory available for music storage, USB port[3] Radio Data System (RDS)[4] and pause/play radio. Touch-Screen Navigation with DVD player requires Rear-Seat Entertainment Package.	–	–	○	○
BOSE® AUDIO PREMIUM SPEAKER SYSTEM WITH SUBWOOFER On SLE models, requires front bucket seats and SLE Preferred Package	–	○	●	●
Centerpoint® Surround Sound System	–	–	–	●
REAR-SEAT ENTERTAINMENT PACKAGE Rear-seat DVD player with LCD display and 2 sets of wireless headphones. Includes rear audio controls. Requires Crew Cab model. On SLT models, includes CD/DVD player. Upgradable to CD/DVD player with navigation. On Denali models, requires CD/DVD player or CD/DVD player and HDD-based navigation	–	–	○	○
SIRIUSXM SATELLITE RADIO[5] Including 3 trial months of service	○	●	●	●
NAVTRAFFIC[6] Including 3 trial months of service. Included and only available with Touch-Screen Navigation[1]	–	–	○	○
BLUETOOTH FOR PHONE[2] Personal cell-phone connectivity to vehicle audio system allowing hands-free calling	○	○	●	●
ONSTAR[7] Directions & Connections Plan. 6-month subscription.	○	●	●	●

KEY ● STANDARD ○ AVAILABLE – NOT AVAILABLE

VEHICLE SPECIFICATIONS

	WT	SLE	SLT	DENALI
CONVENIENCE FEATURES - ALL MODELS				
POWER DOOR LOCKS With remote keyless entry (2 transmitters, panic button and content theft alarm). Remote keyless entry does not lock/unlock tailgate. Standard on Crew Cab models.	○	●	●	●
REMOTE START With remote keyless entry	--	○	●	●
UNIVERSAL HOME REMOTE	--	○	○	●
EXTERIOR STYLING AND FUNCTIONALITY - ALL MODELS				
BODYSIDE MOLDINGS Body-colored. Chrome insert on Denali models. Not available on Regular Cab 2WD models	--	●	●	●
BUMPERS Chrome. On Sierra WT models, includes black bumper top caps. On SLE and SLT models, includes body-color bumper top caps	●	●	●	--
Front, body-colored	--	--	--	●
Rear, chrome step-style with pad	●	●	●	--
Rear, body-colored step-style with pad	--	--	--	●
DOOR HANDLES Chrome	--	--	--	●
EZ-LIFT LOCKING TAILGATE	○	○	○	●
FRONT LICENSE PLATE BRACKET Included in all states that require a front license plate	○	○	○	○
GLASS Solar-Ray deep tinted	○	●	●	●
GRILLE Chrome grille surround with black horizontal bars. WT models only.	●	--	--	--
Chrome grille surround with chrome horizontal bars. On WT models, requires Work Truck Preferred Package. On Denali models, includes unique chrome upper and lower.	○	●	●	●
LIGHTS Halogen front fog lamps. On WT and SLE models, requires Preferred Package.	○	○	●	●
Dual cargo area lamps	●	●	●	●
RECOVERY HOOKS Front, frame-mounted	●	●	●	●
SPRAY-IN BEDLINER Available on Crew Cab Standard and Long Box models only	○	○	○	○
TIRE CARRIER Outside spare, winch-type	●	●	●	●
WIPERS Wet-arm front intermittent	●	●	●	●
OUTSIDE MIRRORS - ALL MODELS				
Manual-folding, black (2500HD model)	●	--	--	--
Heated power-adjustable, manual-folding, black (2500HD models only)	○	●	--	--
Heated power-adjustable/power-folding. With integrated turn signal indicators and driver-side auto-dimming; body-color. Not available on 3500HD models.	--	○	●	●
VERTICAL CAMPER Manual-folding with lower convex spotter glass. Standard on 3500HD models. Available on 2500HD models.	○	--	--	--
Heated, power-adjustable with integrated turn signal indicators; manual-folding/extension; black (convex glass is not heated or power adjustable). SLE 2500HD models require inside rearview auto-dimming mirror or inside rearview auto-dimming mirror with camera display. Standard on 3500HD SLE, SLT and Denali models	--	○	○	○

KEY ● STANDARD ○ AVAILABLE -- NOT AVAILABLE

	WT	SLE	SLT	DENALI
SAFETY				
AIR BAGS[7] Frontal, includes driver and front passenger single-stage air bags	●	●	●	●
Head curtain, front and rear, side-impact				
2500HD models. On SLT models, requires heated and cooled leather-appointed seating.	○	○	○	●
3500HD models (SRW only)	○	○	○	●
Seat-mounted, thorax and pelvic, side-impact for driver and outboard front passenger				
2500HD models	○	○	○	●
3500HD models (SRW only)	○	○	○	●
TIRE PRESSURE MONITORING SYSTEM Does not monitor spare tire. Standard on 3500HD models with GVWR[8] less than 10,000 lbs	●	●	●	●
DAYTIME RUNNING LAMPS With automatic lamp control	●	●	●	●

SIERRA AXLE RATINGS AND PLOW WEIGHTS

FRONT GROSS AXLE WEIGHT RATING (FGAWR) WITH SNOW PLOW PREP PACKAGE (4WD MODELS ONLY)

BODY	ENGINE RPO	ENGINE TYPE	2500HD	3500HD SRW	3500HD DRW
Regular Cab	L96	Gas	5200	5600	5600
	LML	Diesel	6000	6000	6000
Crew Cab Standard Box (includes Denali)	L96	Gas	5200	5800	--
	LML	Diesel	6000	6000	--
Crew Cab Long Box (includes Denali)	L96	Gas	5600	5600	5600
	LML	Diesel	6000	6000	6000

MAXIMUM PLOW WEIGHTS (4WD MODELS ONLY)

BODY	ENGINE RPO	ENGINE TYPE	2500HD	3500HD SRW	3500HD DRW
Regular Cab	L96	Gas	100/925	100/1000	100/1000
	LML	Diesel	100/1000	100/975	100/875
Crew Cab Standard Box (includes Denali)	L96	Gas	100/925	100/1000	--
	LML	Diesel	100/1000	100/975	--
Crew Cab Long Box (includes Denali)	L96	Gas	100/1000	100/1000	100/925
	LML	Diesel	100/925	100/975	100/700

SRW-Single Rear Wheel DRW-Dual Rear Wheel 100/xxx=100 lbs maximum of permanently attached snow plow mounting hardware/xxx lbs maximum of removable snow plow blade and blade hardware. Maximum plow weights based on a vehicle with average manufacturer option content and 150 lbs each for driver and one additional front-seat occupant. Additional equipment and occupants will reduce maximum plow weight. Rear compensating weight may be required to maintain front axle weight below 65% of total vehicle weight when equipped with snow plow. Consult your snow plow manufacturer for specific compensating weight recommendation.

[1]Not coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [2]Go to gmrtaconnect.com to find out which phones are compatible with the vehicle. [3]Not compatible with all devices. [4]RDS functions only where stations broadcast RDS information. [5]If you subscribe after your trial period, *subscriptions are continuous until you call SiriusXM to cancel.* See SiriusXM Customer Agreement for complete terms at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change. For more information about NavTraffic, visit siriusxm.com/navtraffic. For more information about Travel Link, visit siriusxm.com/travellink. XM satellite service is available only to those in the 48 contiguous USA and DC. [6]Visit onstar.com for details and system limitations. [7]Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information. [8]When properly equipped; includes weight of vehicle, passengers, cargo and equipment.

VEHICLE SPECIFICATIONS

SIERRA HD SPECIFICATIONS

ENGINES

	VORTEC 6.0L V-8 VVT (L96)	DURAMAX DIESEL 6.6L V-8 TURBO (LML)
FUEL TYPE	Gasoline (flexfuel)	Diesel (B20 biodiesel capable)
CAPACITY	6.0 liters (364 cu. in.)	6.6 liters (402 cu. in.)
SAE NET HORSEPOWER @ RPM	360@5400 (<10,000-lb GVWR[2]) 322@4600 (>10,000-lb GVWR[2])	397@3000
SAE NET TORQUE @ RPM (LB-FT)	380@4200	765@1600
TRANSMISSIONS	Electronically controlled 6-speed heavy-duty automatic transmission with overdrive, electronic engine grade braking and Tow/Haul mode	Electronically controlled Allison 1000 Series 6-speed automatic transmission with overdrive, electronic engine grade braking and Tow/Haul mode

STANDARD TECHNICAL DATA

	All models: Power 4-wheel antilock braking system	
Series/Drive Type	2WD	4WD
BRAKES	14" dia. 4-wheel disc	14" dia. 4-wheel disc
STEERING	Power recirculating ball	Power recirculating ball
FUEL TANK CAPACITY (Approx. gals.) Standard/Long Box	26.0	26.0
ALTERNATOR (amps)	125	125

MAXIMUM GVWR[2] (GROSS VEHICLE WEIGHT RATING) VORTEC 6.0L V-8/DURAMAX DIESEL 6.6L V-8 TURBO

	REGULAR CAB	CREW CAB
2500HD		
Standard Box	-- /--	9600/10,000
Long Box	10,000/9600	9600/10,000
3500HD		
SRW	10,700/11,400	11,000/11,600
DRW	13,400/13,000	13,000/13,000

CARGO DIMENSIONS[3]

	STANDARD BOX	LONG BOX
Cargo Volume	60.7 cu. ft.	75.5 cu. ft.
Inside Width at Floor	62.48"	62.48" - 64.70"
Box Length at Floor	76.9"	97.60"

EXTERIOR DIMENSIONS

	REGULAR CAB	CREW CAB
Height	77.50"-77.60"	78.10"-78.30"
Overall Length		
Standard Box	--	240.20"
Long Box	225.0"	259.10"

WHEELBASE

	REGULAR CAB	CREW CAB
Standard Box	-	153.70"
Long Box	133.7"	167.70"

FRONT SUSPENSIONS[6] INDEPENDENT TORSION BAR-2500HD/3500HD

STANDARD FRONT AXLE CAPACITY	2WD	4WD
Regular Cab (lbs)	4400/4400	4400/4400
Crew Cab (lbs)	4400/4400	4400/4400
STANDARD FRONT SPRING CAPACITY		
Regular Cab (lbs)	4400/4400	4400/4400
Crew Cab (lbs)	4400/4400	4400/4400

REAR SUSPENSIONS[6] SEMIELLIPTICAL MULTILEAF-2500HD/3500HD-SRW/3500HD-DRW

REAR AXLE CAPACITY	2WD
Regular Cab (lbs)	6200/7050/9825
Crew Cab (lbs)	6200/7050/9375
REAR SPRING CAPACITY	
Regular Cab (lbs)	6200/7050/9825
Crew Cab (lbs)	6200/7050/9375
REAR AXLE CAPACITY	4WD
Regular Cab (lbs)	6200/7050/9825
Crew Cab (lbs)	6200/7050/9375
REAR SPRING CAPACITY	
Regular Cab (lbs)	6200/7050/9375
Crew Cab (lbs)	6200/7050/9375

SELECT RATINGS All capacities in lbs

		MAXIMUM PAYLOAD[4]	MAXIMUM TRAILERING[5] BALL HITCH		MAXIMUM TRAILERING[5] FIFTH-WHEEL OR GOOSENECK	
			Vortec 6.0L V-8 / Duramax Diesel 6.6L V-8 Turbo			
2500HD		2WD/4WD	2WD	4WD	2WD	4WD
Regular Cab Long Box		4212/3598	13,000/13,000	13,000/13,000	14,700/12,800	14,400/17,500
Crew Cab Standard Box		3347/3068	13,000/13,000	13,000/13,000	14,200/17,400	13,800/16,800
General Crew Cab Standard Box		3347/3086	13,000/13,000	13,000/13,000	14,200/17,400	13,900/15,800
Crew Cab Long Box		3347/3306	13,000/13,000	13,000/13,000	14,100/16,700	13,600/14,700
3500HD						
Regular Cab	SRW	4825/4513	13,000/--	13,000/13,000	14,500/--	14,200/17,400
	DRW	7227/6876	14,100/--	13,000/16,000	14,200/--	13,800/21,100
Crew Cab	SRW Standard Box	4187/4150	13,000/13,000	13,000/13,000	14,000/17,200	13,700/17,000
	SRW Long Box	4308/4266	13,000/13,000	13,000/13,000	13,800/17,000	13,500/16,800
	General SRW	4187/4150	13,000/13,000	13,000/13,000	14,000/17,200	13,700/17,000
	DRW	6345/6914	13,500/16,500	13,000/16,000	13,500/22,800	13,200/21,900
	General DRW	6245/6914	13,500/16,500	13,000/16,000	13,500/22,800	13,200/22,500

[1]When properly equipped. Includes weight of vehicle, passengers, cargo and equipment. [2]Cargo and load capacity limited by weight and distribution. [3]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [4]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. [5]Gonacities and weight ratings are dependent on model, engine, transmission and GVWR combinations. See your GMC dealer for details.

IMPORTANT WORDS

COMMITMENT PLUS

From the owner orientation—and full tank of gas—you receive when you take possession of your Sierra HD to the **24-Hour Roadside Assistance, Courtesy Transportation and Travel Benefits**, Commitment Plus is a portfolio of owner privileges that lasts throughout your warranty. For expert product information, Roadside Assistance or other services, call 1-800-GMC-8782.

TRAVEL BENEFITS AND ROADSIDE ASSISTANCE Available around the clock: trip routing service, a program for reimbursement for trip interruption due to necessary warranty repairs, towing, flat tire change, jump-starts and more for 5 years or 100,000 miles (whichever comes first).

COURTESY TRANSPORTATION Available at participating dealers: shuttle service, reimbursement of certain public transportation or fuel expenses for overnight warranty repairs and courtesy rental for overnight work repairs. See your dealer for details.

GMC OWNER CENTER A complimentary, one-stop resource to enhance your GMC ownership experience. It's easy to sign up. Just go to gm.com/gmcownercenter/gmc.

ONSTAR

OnStar is a core asset of your Sierra HD. Benefiting from more than a decade of innovative development, it is both a highly advanced technology—fully integrated within the vehicle—and a warm human service. Standard on all Sierra HD models (except WT) are 6 months of the OnStar Directions & Connections Plan, including the convenience of available Hands-Free Calling.* It also includes Automatic Crash Response, Stolen Vehicle Assistance, link to Emergency Services, Roadside Assistance, Remote Door Unlock, OnStar Vehicle Diagnostics, Crisis Assist and Remote Horn and Lights. OnStar services require vehicle electrical system (including battery), wireless service and GPS satellite signals to be available and operating for features to function properly. OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data. Visit onstar.com for coverage maps, details and system limitations. Services vary with conditions.

HANDS-FREE CALLING

Available OnStar Hands-Free Calling capability is built into your Sierra HD. It's there when your cell phone is unavailable, its battery is low, you can't reach it easily or you left it at home or in the office. Your Hands-Free Calling system is the right choice whenever you need an easy way to make and receive calls—at the touch of the phone icon on the rearview mirror or the steering-wheel-mounted controls. Voice-activated dialing is convenient because you don't have to dial when you are at the wheel. And Hands-Free Calling is reliable because it's specially designed for better reception and fewer dropped calls in areas of limited cellular reception.

ONSTAR TURN-BY-TURN NAVIGATION

Standard on all Sierra HD models (except WT) are 6 months of the OnStar Directions & Connections Plan that adds innovative, easy-to-use Turn-by-Turn Navigation plus Information and Convenience Services and Driving Directions. With Turn-by-Turn Navigation, you simply tell the OnStar Advisor your intended destination, and directions will automatically be sent to your Sierra HD. If you drive off course, the system can reroute you to your intended destination. An automated voice then guides you turn-by-turn until you arrive at your destination. Turn-by-Turn Navigation is further enhanced with eNAV allowing you to send MapQuest™ directions directly to your vehicle. No need to print out directions: just call them up with simple voice commands.

SIRIUSXM SATELLITE RADIO

SiriusXM Satellite Radio* is standard on all Sierra HD models (except WT). It includes 3 trial months of service. SiriusXM Satellite Radio makes your drive come alive with commercial-free music channels from virtually every genre, artist-dedicated channels, live performances and more. Tune in to live play-by-play from the biggest sports, exclusive entertainment from top personalities, compelling talk, hilarious comedy, world-class news, local traffic and weather and family-friendly programming. Welcome to the world of satellite radio. Visit siriusxm.com for details.

GMC CERTIFIED SERVICE

Certified Service To help your Sierra HD live up to its performance promise, GMC Certified Service—found exclusively at your GMC dealer—is there. With all the engineering excellence in Sierra, GM-trained technicians have the expertise to care for all of it.

VISIT US AT GMC.COM

FACEBOOK.COM/GMC

ADDITIONAL NOTES

A NOTE ON CHILD SAFETY Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information.

TRAILERING AND OFF-ROAD INFORMATION Please carefully review the Owner's Manual for important safety information about trailering or off-road driving in your vehicle.

IMPORTANT WORDS ABOUT THIS CATALOG We have tried to make this catalog comprehensive and factual. We reserve the right, however, to make changes at any time, without notice, in prices, colors, materials, equipment, specifications, models and availability. Specifications, dimensions, measurements, ratings and other numbers in this catalog and other printed materials provided at the dealership or affixed to vehicles are approximates based upon design and engineering drawings and prototypes and laboratory tests. Your vehicle may differ due to variations in manufacture and equipment. Since some information may have been updated since the time of printing, please check with your GMC dealer for complete details. GMC reserves the right to lengthen or shorten the model year for any product for any reason, or to start and end model years at different times. All competitive claims are based on the latest information available at the time of printing and GM Large Pickup segment.

FLEET ORDERS Some standard content may be deleted with fleet orders. See dealer for details.

ENGINES GMC products are equipped with engines produced by GM Powertrain or other suppliers to GM worldwide. The engines in GMC products may also be used in other GM makes and models.

GMC.COM See more of Sierra HD on our Web site: gmc.com/sierra. More photos and information; hot links to related subjects; convenient dealer locator; pricing guide; spec out your own vehicle. Or call 1-800-GMC-8782.

AN IMPORTANT NOTE ABOUT ALTERATIONS AND WARRANTIES Installations or alterations to the original equipment vehicle (or chassis) as distributed by General Motors are not covered by the General Motors New Vehicle Limited Warranty. The special body company, assembler, equipment installer or outfitter is solely responsible for warranties on the body or equipment and any alterations (or any effect of the alterations) to any of the parts, components, systems or assemblies installed by GM. General Motors is not responsible for the safety or quality of design features, materials or workmanship of any alterations by such suppliers.

NEW-VEHICLE LIMITED WARRANTY All GMC light-duty vehicles come with a fully transferable, no-deductible 5-year/100,000-mile (whichever comes first) Powertrain Limited Warranty. GM vehicles registered in the USA are also covered for 3 years or 36,000 miles (whichever comes first). Coverage includes tires and towing to your nearest GMC dealership. Repairs will be made to correct any vehicle defect and most warranty repairs will be made at no charge. In addition, rust-through corrosion will be covered for 6 years or 100,000 miles (whichever comes first). See dealer for details.

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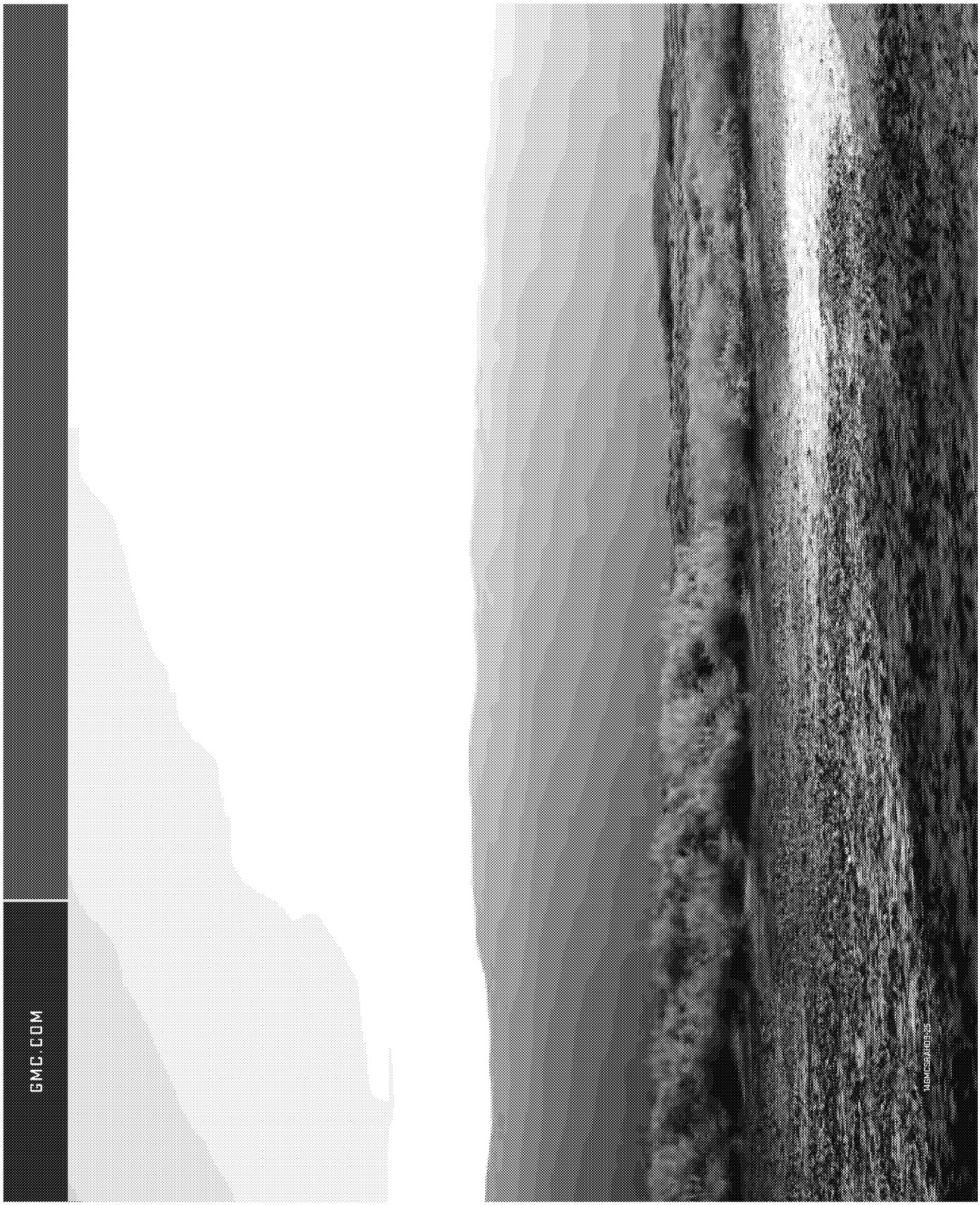
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EXHIBIT 10

WHERE POWER MEETS PRECISION
2013 GMC SIERRA
WE ARE PROFESSIONAL GRADE
GMC

2013 GMC SIERRA

GMC. Our commitment is to push the limits of what's possible. Our dedication is to build professional-grade SUVs, trucks and vans. Our products are purposefully engineered to offer you the highest standards of performance, innovation and versatility. Like you, GMC believes that just being good enough is never enough and jobs worth doing are worth doing well. It's why the 2013 Sierra was built to work smart as well as efficiently. It's why Sierra can offer over 300 horsepower and an EPA-estimated 22 hwy mpg[1] in the same V-8 engine.

GMC. We are Professional Grade.

MODELS

SIERRA DENALI/SLE DENALI HD pg. 6
SIERRA 1500 pg. 8
SIERRA ALL TERRAIN
SIERRA 2500HD pg. 12
SIERRA 3500HD pg. 14
FEATURES & BENEFITS pg. 16
COLOR & TRIM pg. 30
ACCESSORIES pg. 32
EQUIPMENT OPTIONS pg. 34

GMC

SIERRA 1500 DENALI [cover]

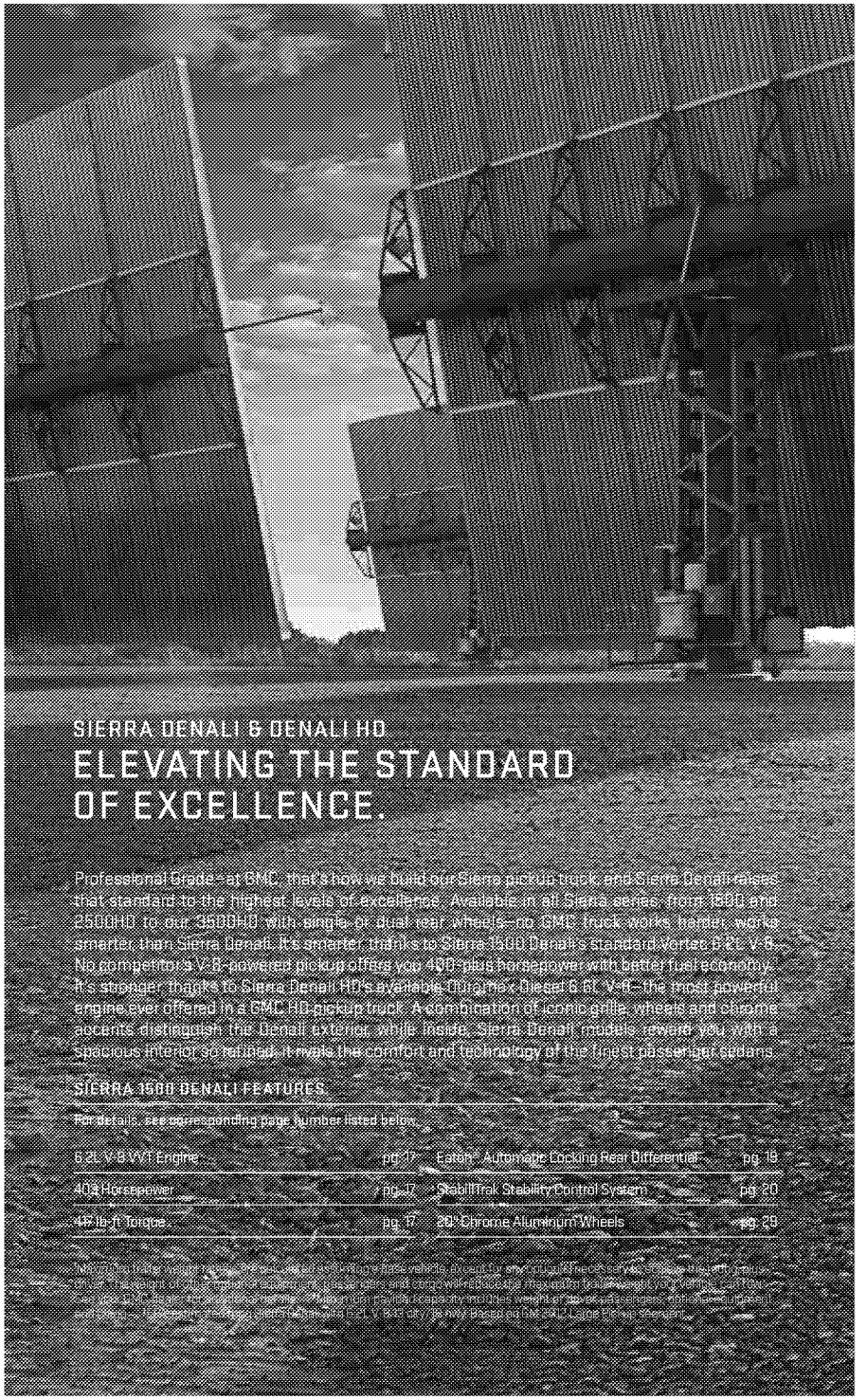
Our ½-ton Sierra 1500 Denali has a long list of standard features, including our 6.2L V-8. So you'll be able to combine strength and capability with premium features to create a truck tailored to your purpose.

SIERRA 2500 DENALI HD [cover]

Our ¾-ton Sierra 2500HD Denali sits on a fully boxed, high-strength steel frame specifically engineered for HD applications. With the available Duramax Diesel 6.6L V-8 Turbo, it has a trailering capacity of up to 16,500 lbs.[1]

SIERRA 3500 DENALI HD [cover]

Our 1-ton Sierra 3500HD Denali is the ultimate expression of professional-grade engineering. It offers an available maximum payload of up to 5,355 lbs.[2] and maximum trailering of up to 22,800 lbs.[1] with the available Duramax Diesel 6.6L V-8 Turbo.



SIERRA DENALI & DENALI HD

ELEVATING THE STANDARD OF EXCELLENCE.

Professional Grade.™ at GMC, that's how we build our Sierra pickup truck and Sierra Denali models that standard to the highest levels of excellence. Available in all Sierra series, from 1500 and 2500HD to our 3500HD with single or dual rear wheels—no GMC truck works harder, works smarter, than Sierra Denali. It's smarter, thanks to Sierra 1500 Denali's standard Vortec 6.2L V-8. No competitor's V-8-powered pickup offers you 400-plus horsepower with better fuel economy. It's stronger, thanks to Sierra Denali HD's available Duramax Diesel 6.6L V-8—the most powerful engine ever offered in a GMC HD pickup truck. A combination of iconic grille, wheels and chrome accents distinguish the Denali exterior, while inside, Sierra Denali models reward you with a spacious interior so refined, it rivals the comfort and technology of the finest passenger sedans.

SIERRA 1500 DENALI FEATURES

Refer to pg.[#] for corresponding page number listed below.

6.2L V-8 VVT Engine	pg. 17	Eaton® Automatic Locking Rear Differential	pg. 19
403 Horsepower	pg. 17	StabiliTrak Stability Control System	pg. 20
417 lb-ft Torque	pg. 17	20" Chrome Aluminum Wheels	pg. 28

[1] Max towing capacity based on Sierra 2500HD Denali with Duramax Diesel 6.6L V-8 Turbo, 4WD, Regular Cab, 6.5' box, 3.73 rear axle ratio, Z71 off-road package, 17" tires, 2,000 lbs. payload, 2,000 lbs. GCWR, 1,000 lbs. GCW, 1,000 lbs. trailer weight, 1,000 lbs. tongue weight, 1,000 lbs. cargo weight, 1,000 lbs. GAWR, 80 gal. fuel tank, trailer brakes, and long wire harness. Max payload capacity includes weight of driver, passenger, cargo, optional equipment and hitch. Trailering capacity based on SAE J2807 test data. Actual payload capacity includes weight of driver, passenger, cargo, optional equipment and hitch. Trailering capacity based on SAE J2807 test data. Actual payload capacity and trailering capacity may vary. Refer to the owner's manual for more information.

[2] Max payload based on Sierra 3500HD Denali with Duramax Diesel 6.6L V-8 Turbo, 4WD, Regular Cab, 8' box, 3.73 rear axle ratio, Z71 off-road package, 17" tires, 2,000 lbs. payload, 2,000 lbs. GCWR, 1,000 lbs. GCW, 1,000 lbs. trailer weight, 1,000 lbs. tongue weight, 1,000 lbs. cargo weight, 1,000 lbs. GAWR, 80 gal. fuel tank, trailer brakes, and long wire harness. Max payload capacity includes weight of driver, passenger, cargo, optional equipment and hitch. Trailering capacity based on SAE J2807 test data. Actual payload capacity and trailering capacity may vary. Refer to the owner's manual for more information.

SIERRA 1500 DENALI IN ONYX BLACK shown with available equipment

SIERRA 2500 DENALI HD INTERIOR IN EBONY shown with available equipment.
4 | Models

SIERRA DENALI INTERIOR

ITS DETAILS HAVE DETAILS.

Sierra Denali is a truck built by – and for – those who demand attention to detail. Its seating surfaces are trimmed in a premium leather material that's [illegible] for comfort. The heat seats are not only heated – they're cooled too, and [illegible] 12-way power adjustment. The gauge cluster integrates a Driver Information [illegible] that puts valuable information in one place. Every surface your eye [illegible] this is no ordinary truck. Every feature you engage fulfills Denali's aim to [illegible] ultimate Sierra.

SIERRA DENALI INTERIOR FEATURES

For details, see corresponding page number listed below.

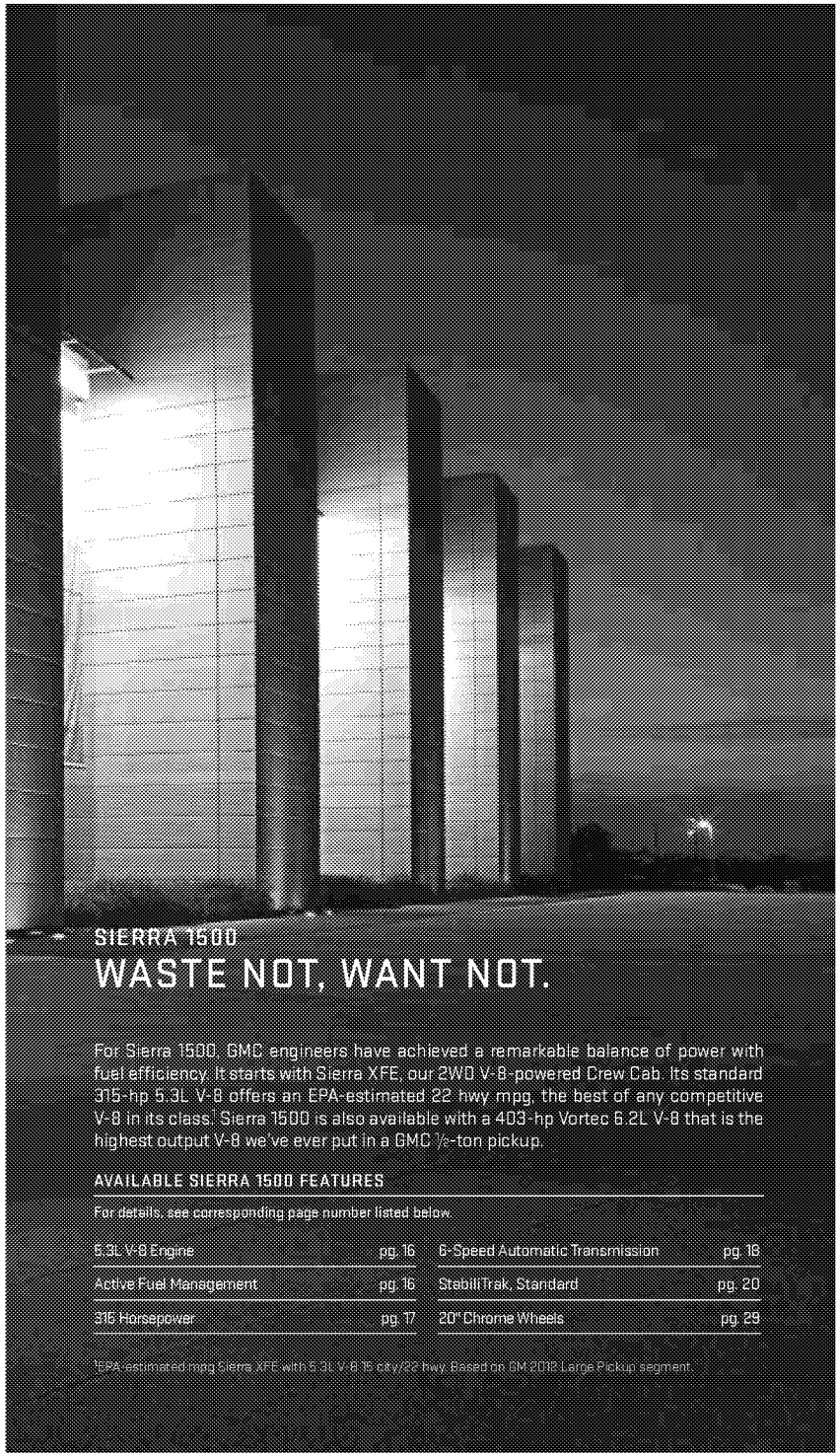
12-Way Power Heated & Cooled Front Seats pg. 24

Leather-Wrapped Heated Steering Wheel pg. 24

Automatic Dual-Zone Climate Control pg. 24

Bose® Centerpoint® Surround Sound System pg. 26

GMC



SIERRA 1500

WASTE NOT, WANT NOT.

For Sierra 1500, GMC engineers have achieved a remarkable balance of power with fuel efficiency. It starts with Sierra XFE, our 2WD V-8-powered Crew Cab. Its standard 315-hp 5.3L V-8 offers an EPA-estimated 22 hwy mpg, the best of any competitive V-8 in its class. Sierra 1500 is also available with a 403-hp Vortec 6.2L V-8 that is the highest output V-8 we've ever put in a GMC ½-ton pickup.

AVAILABLE SIERRA 1500 FEATURES

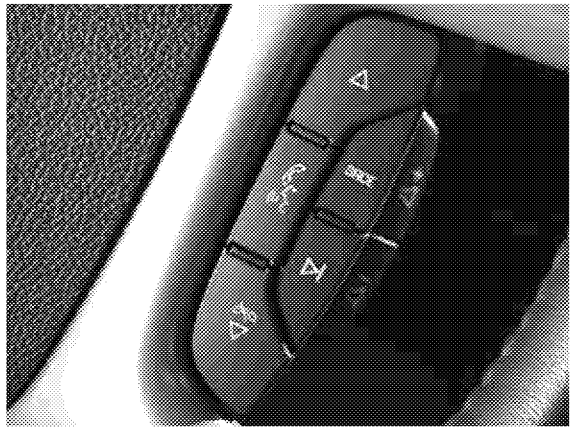
For details, see corresponding page number listed below.

5.3L V-8 Engine	pg. 16	6-Speed Automatic Transmission	pg. 18
Active Fuel Management	pg. 16	StabiliTrak, Standard	pg. 20
315 Horsepower	pg. 17	20" Chrome Wheels	pg. 29

[1]EPA-estimated mpg Sierra XFE with 5.3L V-8: 15 city/22 hwy. Based on GM 2012 Large Pickup segment.

1500 EXTENDED CAB

The rear doors of Sierra 1500 Extended Cab open 170 degrees, creating an ease of access for passengers and cargo that makes this Sierra ideal for everyday use.

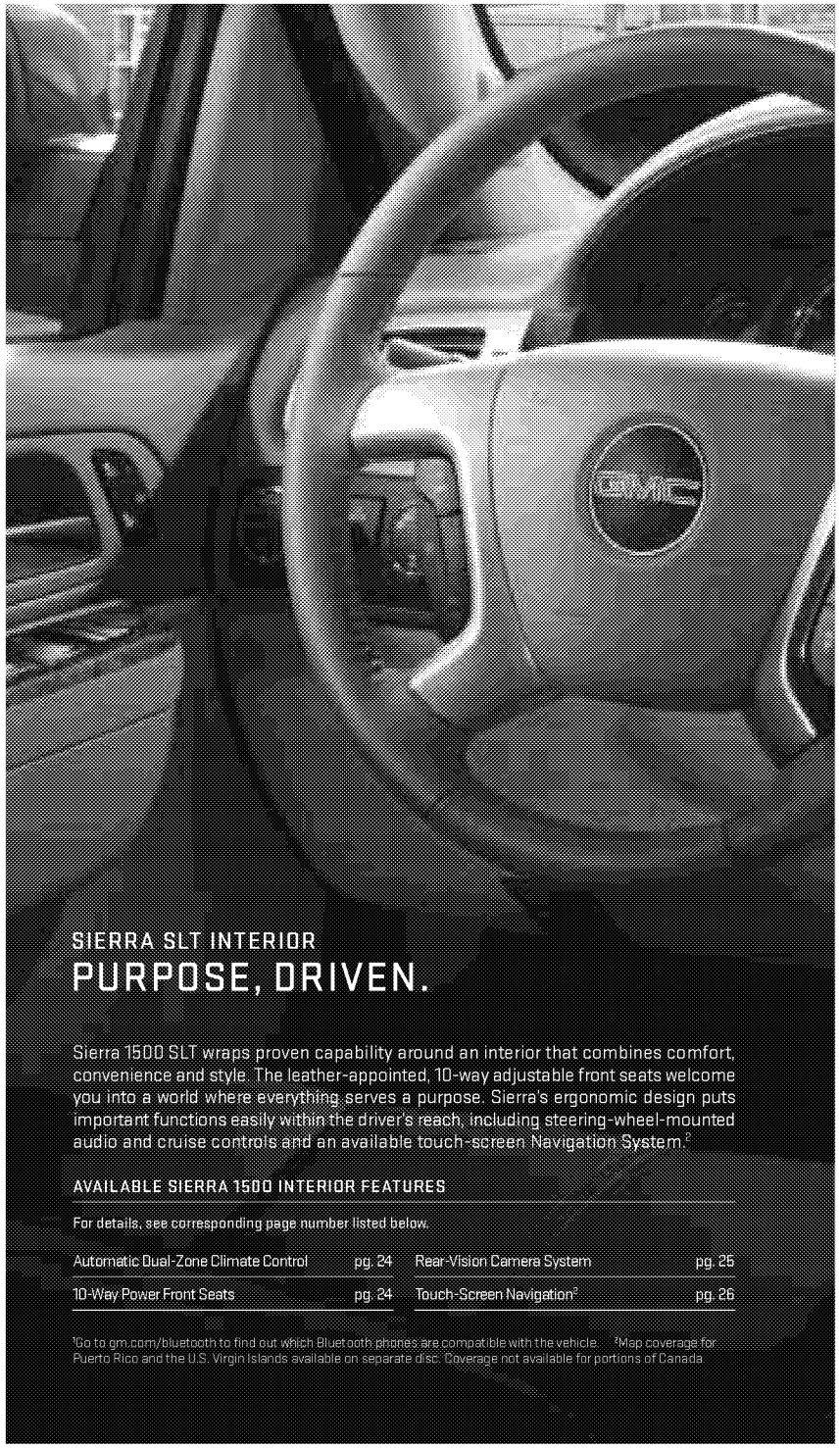


STEERING WHEEL CONTROLS (upper)

Available steering-wheel-mounted controls allow the Sierra 1500 driver convenient access to radio volume and Bluetooth[1] for phone while keeping all eyes on the road.

REAR-VISION CAMERA SYSTEM (lower)

To help make backing out of parking spaces or hitching up trailers easier, a rear-vision camera displays what's in its field of vision. The available system places a monitor in your rearview mirror or navigation screen, if equipped.



SIERRA SLT INTERIOR

PURPOSE, DRIVEN.

Sierra 1500 SLT wraps proven capability around an interior that combines comfort, convenience and style. The leather-appointed, 10-way adjustable front seats welcome you into a world where everything serves a purpose. Sierra's ergonomic design puts important functions easily within the driver's reach, including steering-wheel-mounted audio and cruise controls and an available touch-screen Navigation System.[2]

AVAILABLE SIERRA 1500 INTERIOR FEATURES

For details, see corresponding page number listed below.

Automatic Dual-Zone Climate Control	pg. 24	Rear-Vision Camera System	pg. 25
10-Way Power Front Seats	pg. 24	Touch-Screen Navigation[2]	pg. 26

[1]Go to gm.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [2]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada.

SIERRA 1500 SLT INTERIOR IN LIGHT TITANIUM shown with available equipment.
Models | 9

SIERRA ALL-TERRAIN

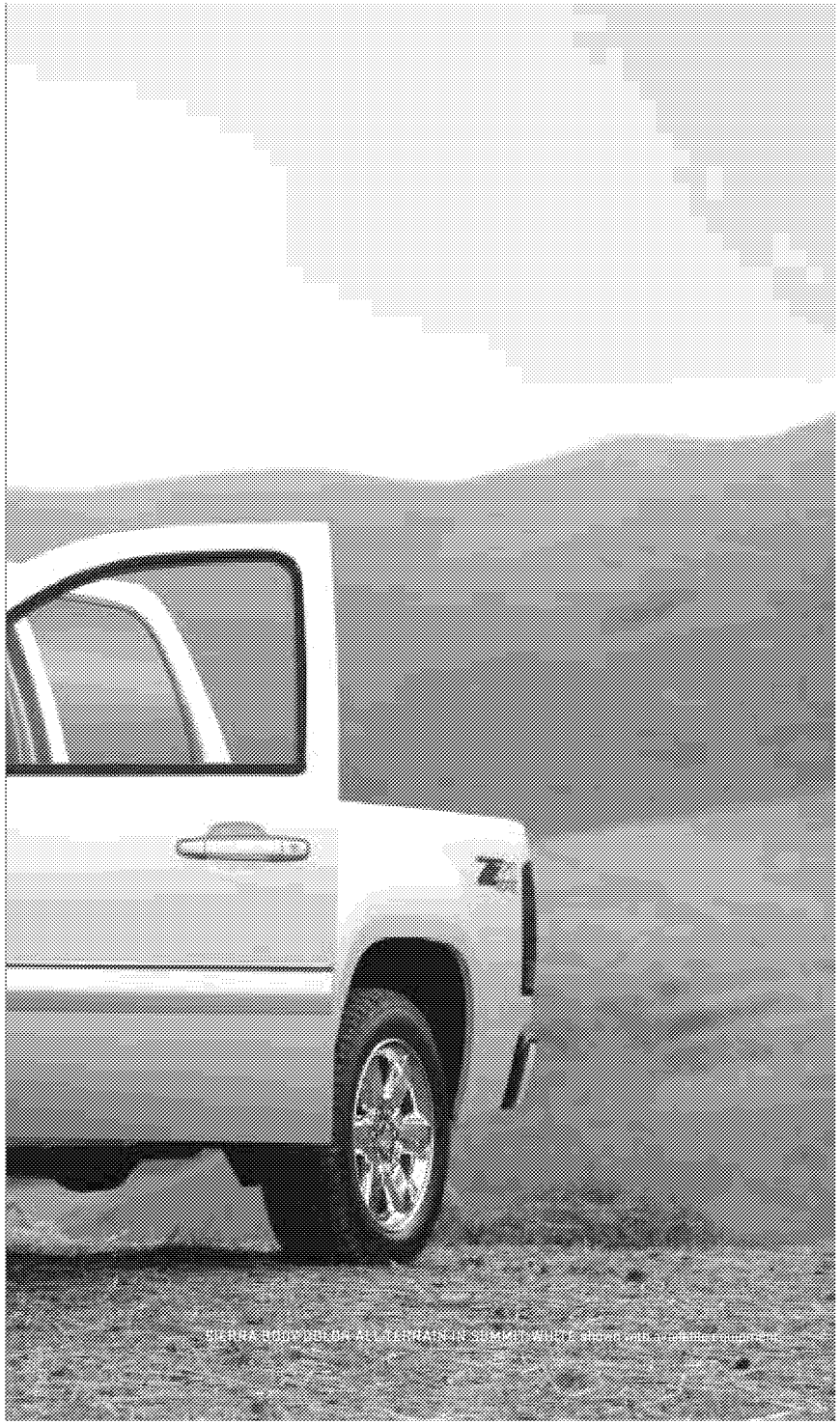
AN OFF-ROAD ALL-STAR.

When the pavement ends, Sierra All-Terrain is well-prepared. It was born ready, thanks to a Z71 Off-Road Suspension with off-road jounce bumpers, a high-capacity air cleaner and skid plates designed to protect the front underbody, oil pan, differential and transfer case (if equipped). Rancho® Tenneco™ shocks enhance its ability to take on challenging terrain. You decide the source of power: the standard 315-hp 5.3L V-8 or available 403-hp 6.2L V-8. You decide the style preferred: a four-bar chrome grille, chrome-accented bodyside molding and 18-inch chrome wheels, or body-color trim with body-color grille, bumpers, mirrors and door handles with 20-inch chrome wheels. Whichever you choose, Sierra All-Terrain is off-road ready the second you drive it off the showroom floor.

SIERRA ALL-TERRAIN FEATURES

For details, see corresponding page number listed below.

Available 403-hp 6.2L V-8	pg. 17	Heavy-Duty Trailering Package	pg. 34
Eaton Automatic Locking Rear Differential	pg. 18	Rancho Tenneco Shocks	pg. 34
18" Chrome-Clad Aluminum Wheels	pg. 29	Z71 Off-Road Suspension	pg. 34



SIERRA ALL-TERRAIN INTERIOR

The brushed aluminum trim and available two-tone leather-appointed seating give Sierra All-Terrain an interior designed to match its unique exterior style.

SIERRA 2500HD

STRENGTH WITH INTELLIGENCE.

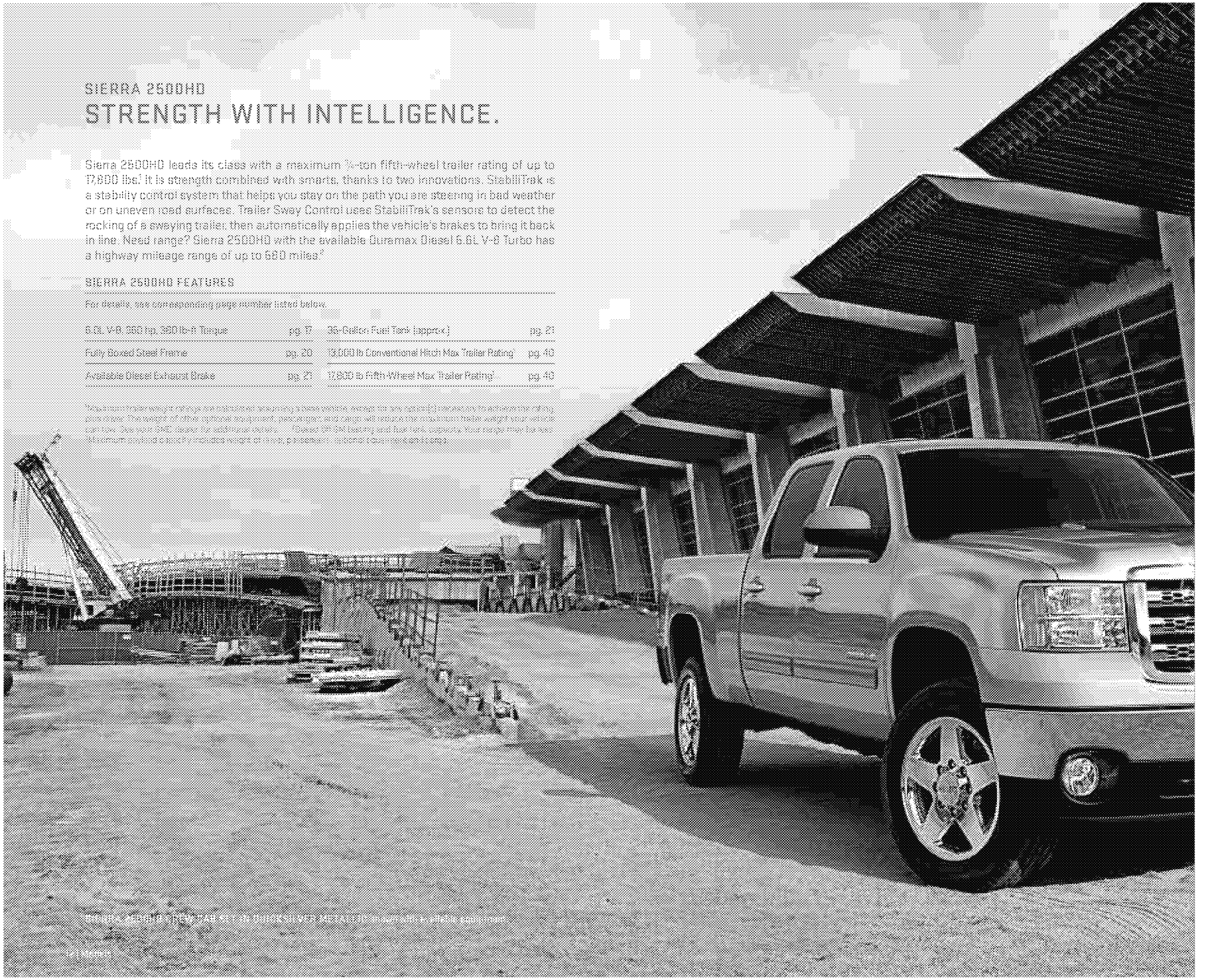
Sierra 2500HD leads its class with a maximum ¾-ton fifth-wheel trailer rating of up to 17,800 lbs.[1] It is strength combined with smarts, thanks to two innovations. StabiliTrak is a stability control system that helps you stay on the path you are steering in bad weather or on uneven road surfaces. Trailer Sway Control uses StabiliTrak's sensors to detect the rocking of a swaying trailer, then automatically applies the vehicle's brakes to bring it back in line. Need range? Sierra 2500HD with the available Duramax Diesel 6.6L V-8 Turbo has a highway mileage range of up to 680 miles.[2]

SIERRA 2500HD FEATURES

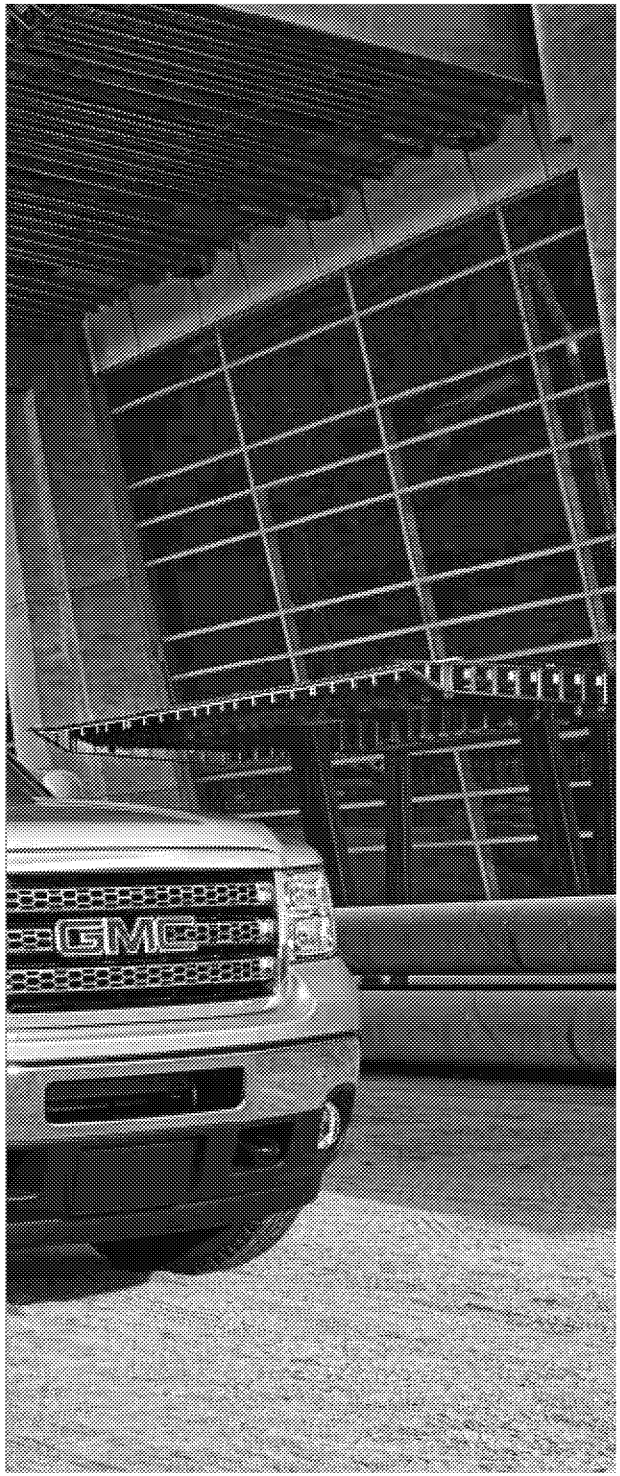
For details, see corresponding page number listed below.

6.0L V-8, 360 hp, 380 lb-ft Torque	pg. 17	36-Gallon Fuel Tank (approx.)	pg. 21
Fully Boxed Steel Frame	pg. 20	13,000 lb Conventional Hitch Max Trailer Rating[1]	pg. 40
Available Diesel Exhaust Brake	pg. 21	17,800 lb Fifth-Wheel Max Trailer Rating[1]	pg. 40

[1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [2]Based on GM testing and fuel tank capacity. Your range may be less. [3]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo.



SIERRA 2500HD CREW CAB SLT IN QUICKSILVER METALLIC (mounted with available equipment)



PAYLOAD AND TRAILERING (below, top left)

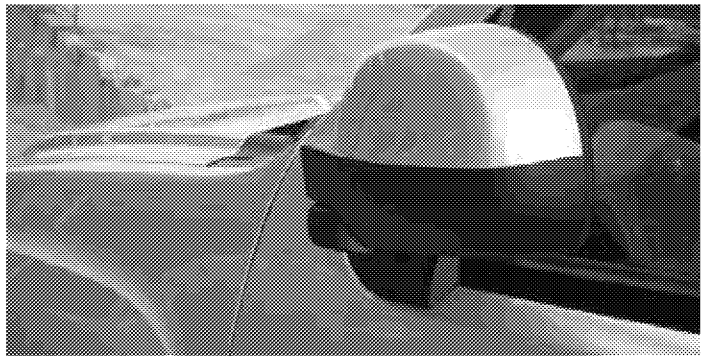
Sierra 2500HD has a maximum payload of up to 4212 lbs.[1] and with the available Duramax Diesel 6.6L V-8 Turbo, a maximum trailering capacity of up to 13,000 lbs[1] with a conventional ball hitch, or up to 17,800 lbs[1] with a fifth-wheel or goosenecks hitch.

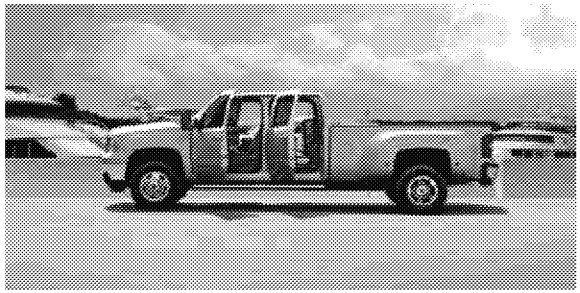
FOLDING MIRRORS (below, top right)

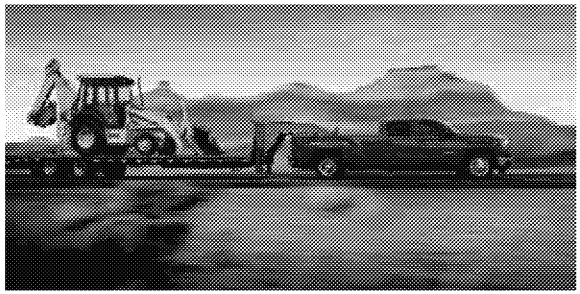
The outside mirrors fold to make it easier to navigate tight spaces, or available camper mirrors (shown at bottom) extend to give you a wide view and you can retract them when parking in narrow spaces.

RECIRCULATING BALL STEERING (bottom)

Who says the steering in a heavy-duty pickup needs to feel sluggish? Sierra HD models feature recirculating ball steering, which helps give the driver direct feedback to steering inputs. So the response is quick and nimble.







PAYLOAD CAPACITY [upper]

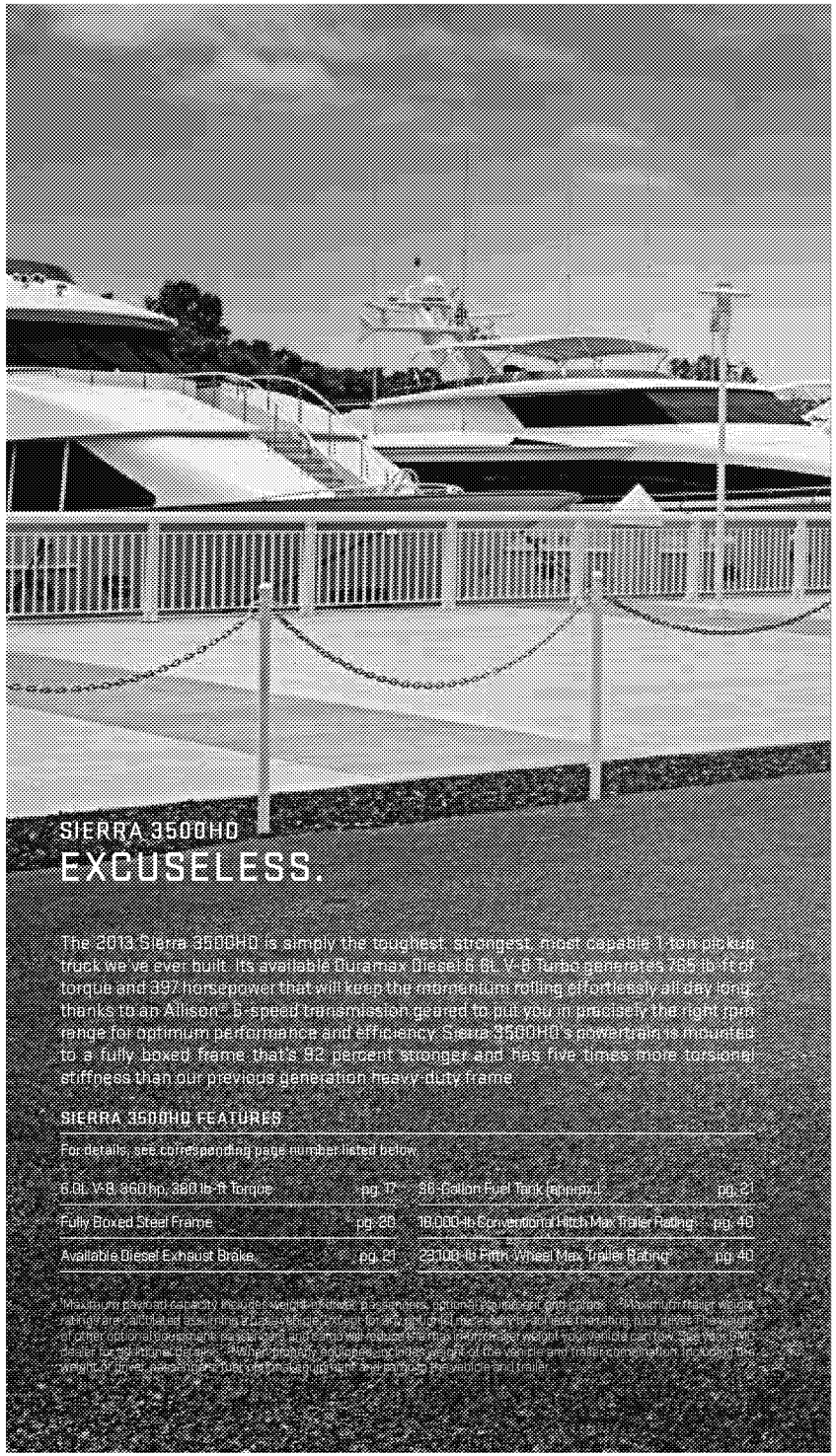
The most capacity you can get in a GMC Sierra? Our 3500HD Regular Cab 2WD Long Bed with dual rear wheels with a best-in-class payload capacity of up to 7222 lbs.[1] If it's cargo and crew you need to haul, or a combination of both, the Sierra Crew is a Sierra built for the heaviest of heavy-duty jobs.

WIDE-VIEW MIRROR [center]

All 3500HD models come standard with vertical camper-style, convex spotter surface mirrors that help you see what's along your flanks when you're trailering a wide load.

TRAILERING CAPACITY [lower]

With a best-in-class 1-ton maximum fifth-wheel trailering capacity of up to 23,100 lbs[2] and a GCWR of 30,500 lbs.[2] Sierra 3500HD puts professional-grade power to work for you (Crew Cab model shown can trailer up to 22,600 lbs[2]).



SIERRA 3500HD
EXCUSELESS.

The 2013 Sierra 3500HD is simply the toughest, strongest, most capable 1-ton pickup truck we've ever built. Its available Duramax diesel 6.6L V-8 turbo generates 765 lb-ft of torque and 397 horsepower that will keep the momentum rolling effortlessly all day long, thanks to an Allison® 6-speed transmission geared to put you in precisely the right gear range for optimum performance and efficiency. Sierra 3500HD's powertrain is mounted to a fully boxed frame that's 92 percent stronger and has five times more torsional stiffness than our previous generation heavy-duty frame.

SIERRA 3500HD FEATURES

For details, see corresponding pages numbered below.

6.0L V-8 360 hp, 380 lb-ft Torque	pg. 17	36-Gallon Fuel Tank (gasoline)	pg. 21
Fully Boxed Steel Frame	pg. 28	18,000-lb Conventional Hitch Max Trailer Rating	pg. 40
Available Diesel Exhaust Brake	pg. 21	23,100-lb Fifth Wheel Max Trailer Rating	pg. 40

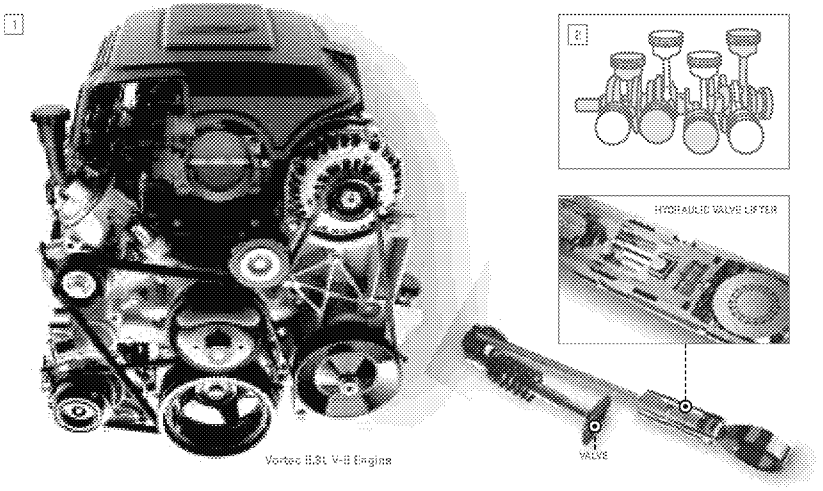
[1] Maximum payload capacity is the vehicle's weight capacity (GVWR) minus the weight of the vehicle and its fluids, including the weight of the driver, passenger(s), cargo, and hitch. [2] Maximum trailering capacity is based on a properly equipped vehicle. Actual capacity depends on vehicle configuration, including engine, axle ratio, and other options. Consult your local GMC dealer for more information. Remember to factor in your vehicle and trailer weight when towing. See your GMC dealer for engine details. [3] Payload capacity is the weight of the vehicle and trailer combination including the weight of driver, passenger(s), cargo, and hitch. See your GMC dealer for details.

SIERRA 3500HD CREW CAB SLT WITH DUAL REAR WHEELS IN QUICKSILVER METALLIC shown with available equipment
Models | 15

1500 ENGINES

Vortec gasoline-powered V-6 and V-8 engines available in Sierra 1500 are remarkable for the technology they bring to the full-size pickup. The results: power of up to 403 hp from the available Vortec 6.2L V-8, and competition-leading V-8 fuel efficiency of up to 22 mpg hwy from the available Vortec 5.3L V-8.[1]

[1]EPA-estimated 22 mpg hwy for Sierra XFE. Based on 2012 GM Large Pickup segment.



Vortec 5.3L V-8 Engine

VORTEC ENGINES To give you uncompromised power and torque for confident daily driving, passing and trailering, look no further than the Vortec engine family. Each model uses innovative "vortex technology" to swirl and tumble incoming air and fuel for optimum power and response.

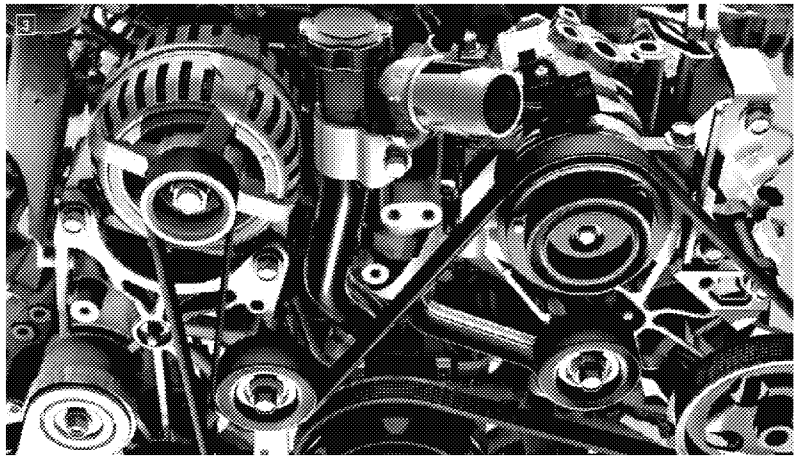
VARIABLE VALVE TIMING (VVT) For easy responsiveness in low-speed city driving and bold power for open-road passing or trailering, many Vortec engines feature VVT. It monitors and changes valve open and close points for near-peak levels of torque across the entire range of engine speeds.

ACTIVE FUEL MANAGEMENT Sierra 5.3L V-8 engines use Active Fuel Management. This available system senses load and demand, then activates or deactivates four of the engine's eight cylinders. In Sierra XFE, the result is competition-leading V-8 EPA-estimated highway fuel economy of 22 mpg.[2] A valve lifter (above) deactivates the cylinder. Under high-demand conditions, the valve's switching mechanism is depressurized, reengaging the cylinder and restoring full power, without you ever noticing the transition.

[2]Based on GM 2012 Large Pickup segment.

HD ENGINES

Sierra 2500HD and 3500HD models offer Vortec V-8 gasoline and Duramax Diesel engines. No matter which you choose, you'll have plenty of what you demand from a heavy-duty pickup: power and torque, with deep reserves of both for when your right foot asks for maximum effort.



DURAMAX DIESEL 6.6L V-8 TURBO With direct-injection technology that helps it start in as little as 3.0 seconds at -40°F and a sophisticated Allison® transmission with overdrive, the available Duramax Diesel 6.6L gives you a maximum highway range of up to 660 miles on a single fill-up.[1]

[1]Based on GM testing and fuel tank capacity. Your range may be less.

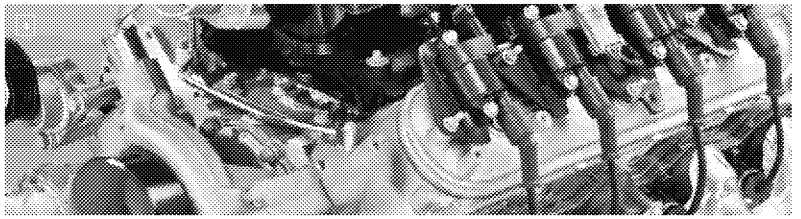
DURAMAX B20 BIODIESEL CAPABILITY To reduce carbon-dioxide emissions and stretch your fuel budget, the Duramax 6.6L can operate on B20 biodiesel, a mix of 20 percent biodiesel from domestic, renewable resources, and 80 percent petroleum diesel.

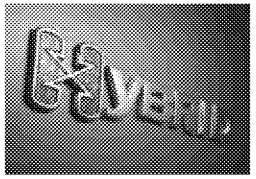
DURAMAX HIGH-PRESSURE DIRECT INJECTION For fast starts in cold weather, quieter operation and maximum efficiency, the direct injection system operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, burning cleaner and faster with lower emissions and greater power than the previous model.

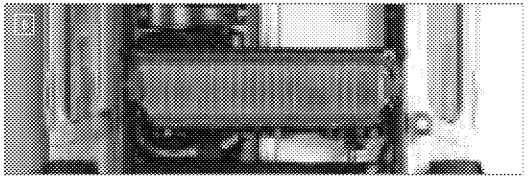
HYBRID

GMC engineers gave Sierra Hybrid the capability of a V-8 with the efficiency of a four-cylinder. The result: 332 horsepower, 367 lb-ft torque, up to 1527 lbs of payload[4] and up to 6100 lbs of conventional trailering[5]—all with a category-leading fuel economy of an EPA-estimated 20 city/23 hwy.[6]

[4]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [5]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any optional necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers, and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [6]Based on GM 2015 Large Pickup segment.







HYBRID MODEL VORTEC 6.0L V-8 VVT (L27) WITH ACTIVE FUEL MANAGEMENT To deliver outstanding economy[7] without compromise to torque or horsepower, the 6.0L V-8 VVT is engineered with Active Fuel Management technology to deactivate four of its eight cylinders under light loads and low speeds. At highway speeds, the cylinders reactivate in an instant to give you full engine power.

[6]EPA-estimated mpg 20 city/23 hwy.

300-VOLT NiMH BATTERY PACK The Nickel-Metal Hydride (NiMH) battery technology can store a lot of energy in a small space. In fact, the 300-volt battery pack is strong enough to propel your Sierra for miles, yet small enough to fit under the rear seat.

HYBRID MODEL 2-MODE ELECTRONICALLY VARIABLE TRANSMISSION To conserve fuel at low speeds or under light loads, this 2-mode transmission has two integral electronic motors that engage to give Sierra Hybrid smooth, effortless power. At higher loads and speeds with the 6.0L V-8 fully engaged, it acts as a normal automatic transmission.

REGENERATIVE BRAKING SYSTEM During normal stops, regenerative braking uses the motors in the hybrid transmission as generators to slow the vehicle by applying resistance in the motors rather than brake friction. Simultaneously, that energy is captured as electricity in the 300-volt battery pack, available for the next acceleration cycle.

ALL ENGINES

At GMC, we've always believed in building the right tool for the job. With Sierra, that translates into the widest range of engines of any pickup truck manufacturer. We also believe that keeping your GMC operating at peak performance should be easy, and thanks to innovative features like an Oil Life Monitor and available OnStar engine diagnostics, it is.

1500 ENGINES		
VORTEC 4.3L V-6 (LU3)	**HORSEPOWER:** 195 hp @ 4800 rpm	**TORQUE:** 250 lb-ft @ 2800 rpm
VORTEC 4.8L V-8 VVT (L20) Flex Fuel Capable	**HORSEPOWER:** 302 hp @ 5200 rpm	**TORQUE:** 305 lb-ft @ 4600 rpm
VORTEC 5.3L V-8 VVT (LMG) Active Fuel Management/Flex Fuel Capable, Iron Block	**HORSEPOWER:** 315 hp @ 5200 rpm	**TORQUE:** 335 lb-ft @ 4000 rpm
VORTEC 5.3L V-8 VVT (LC9) Active Fuel Management/Flex Fuel Capable, Aluminum Block	**HORSEPOWER:** 315 hp @ 5200 rpm	**TORQUE:** 335 lb-ft @ 4000 rpm
VORTEC 6.0L V-8 VVT (L96) Flex Fuel Capable	**HORSEPOWER:** 403 hp @ 5700 rpm	**TORQUE:** 417 lb-ft @ 4300 rpm
HEAVY DUTY ENGINES		
VORTEC 6.0L V-8 VVT (L96) Flex Fuel Capable	**HORSEPOWER:** 360 hp @ 5400 rpm[7]	**TORQUE:** 380 lb-ft @ 4200 rpm
	[7]Select models. See page 40 for engine specifications.	
DURAMAX DIESEL 6.6L V-8 TURBO	**HORSEPOWER:** 397 hp @ 3000 rpm	**TORQUE:** 765 lb-ft @ 1800 rpm
HYBRID ENGINE		
VORTEC 6.0L V-8 VVT (L27) Active Fuel Management EPA-est. mpg (city/highway): 20/23	**HORSEPOWER:** 332 hp @ 5000 rpm	**TORQUE:** 367 lb-ft @ 4100 rpm

OIL LIFE MONITOR For long life and durability, nothing is more important than changing your oil at the right time. GMC engineered the mystery out of this essential service with the Oil Life Monitor. It calculates how much life your oil has left, based on when and how you drive. Then, it updates you with a telltale on your Driver Information Center.

E85 FLEXFUEL CAPABILITY[8] Most Sierra gas V-8 engines are capable of running on E85 ethanol, an advanced biofuel.

[8]E85 is a blend of 85 percent ethanol and 15 percent regular gasoline. Visit gmc.com and search E85 for more information on E85 as an alternative fuel.

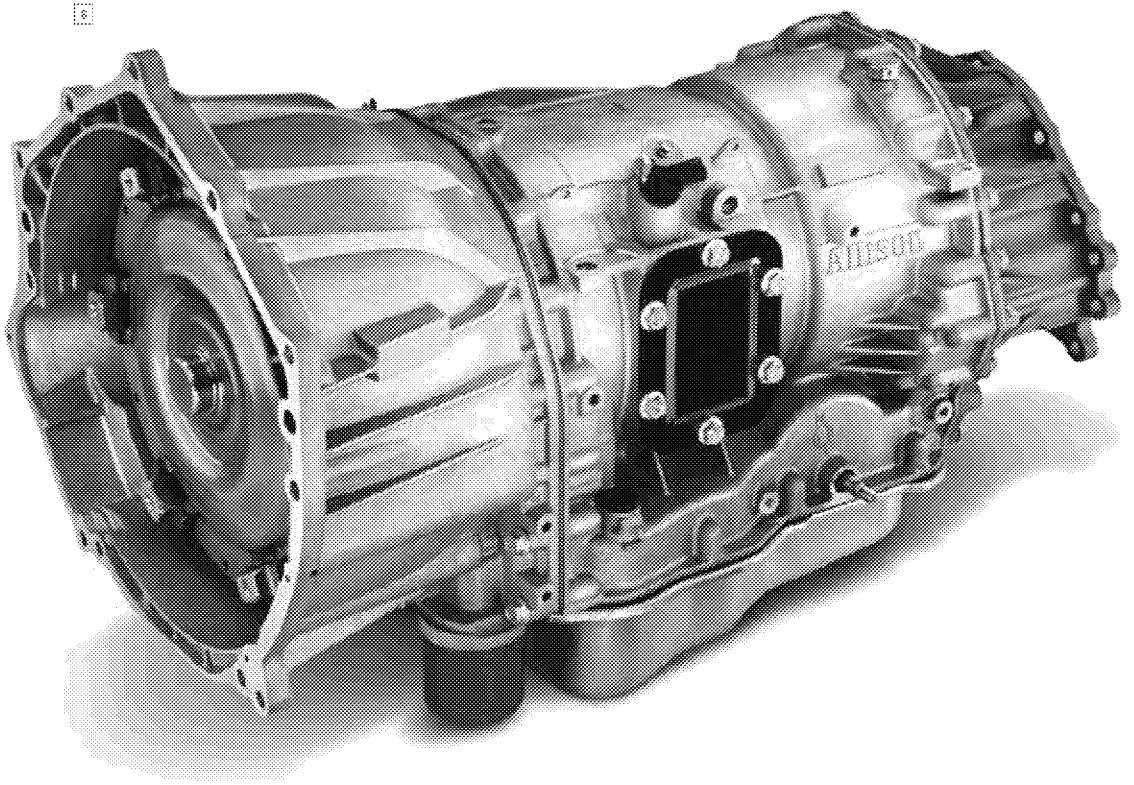
ONSTAR VEHICLE DIAGNOSTICS[9] Standard with your 6-month trial subscription to OnStar, the OnStar Vehicle Diagnostics service can run hundreds of checks of your engine, transmission, antilock brakes and more, then organize the information into an easy-to-read monthly report. OnStar can also run a check of your vehicle as you drive just by pressing the blue button and asking the Advisor for an On-Demand Diagnostics check. So now, the peace of mind that comes from knowing the condition of your Sierra's key systems is as easy as checking your e-mail.

[9]Visit onstar.com for details and system limitations.

TRACTION CONTROL SYSTEM To make the most of available traction on many road surfaces, traction control measures and compares the speed of your wheels. If it senses one or more wheels starting to spin, such as on a slippery surface, the system applies individual brakes and manages engine power to slow the wheel down and maintain traction so you can move forward with a better sense of control.

TRANSMISSIONS / DRIVETRAIN

A pickup truck's transmission and driveline components are critical to translating every rotation of the engine's crankshaft into power at the drive wheels—power to tow and haul, power to pass, power to grip snow-covered asphalt or gravel-strewn backroads. GMC Sierra offers a range of robust yet refined transmissions precisely matched to maximize the power delivery, efficiency and load demands of our eight Sierra engines.



SIERRA HEAVY DUTY

ALLISON® 1000 SERIES 6-SPEED AUTOMATIC WITH OVERDRIVE How do you handle the 765 lb-ft of torque produced by Sierra HD's available Duramax Diesel engine? GMC engineers specified the Allison 1000 Series 6-speed automatic with overdrive for its heavy-duty strength and durability.

HEAVY DUTY 6-SPEED AUTOMATIC WITH OVERDRIVE Sierra HD's Vortec 8.0L V-8 is mated to a 6-speed automatic with overdrive built for heavy duty. It's a sophisticated tool that features Tow/Haul mode, Driver Shift Control and Automatic Engine Grade Braking to help you use the full potential of Sierra HD with confidence.

SIERRA 1500

6-SPEED AUTOMATIC WITH OVERDRIVE Engineered for control and confidence in a wide variety of situations, the 6L80-E 6-speed automatic is an ideal partner for Sierra 1500's Vortec family of gasoline engines. Filled with innovative technology, this available transmission can help you cut steep climbs, long grades and heavy loads down to size.

4-SPEED AUTOMATIC OVERDRIVE TRANSMISSION Proven in millions of Sierra 1500s, this durable 4-speed automatic with overdrive gives you smooth shifts with the strength of millions of miles of experience. It's engineered with Tow/Haul mode to handle maximum loads with ease.

ALL MODELS

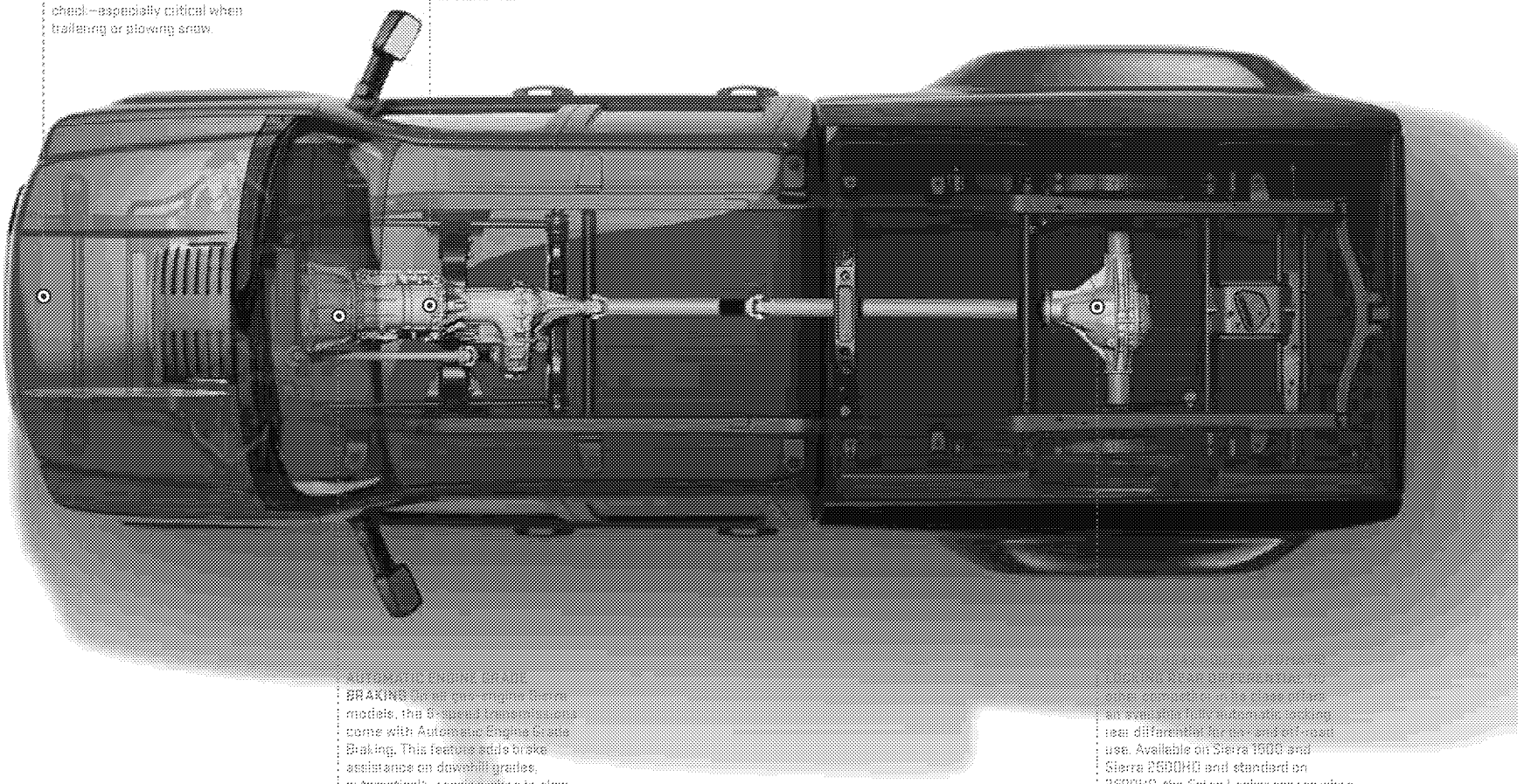
TOW/HAUL MODE To give you more power to accelerate, Tow/Haul mode raises transmission up-shift points. This feature also helps you slow your Sierra by raising downshift points, which uses engine compression to slow your Sierra.

AUTOMATIC ENGINE GRADE BRAKING Standard with gas-engine 6-speed automatic transmissions, Grade Braking automatically senses when you want to slow your Sierra, and when the conditions are met, engages a Grade Braking shift schedule that helps you maintain your desired speed.

DRIVER SHIFT CONTROL Move through the gears like a manual, with the convenience of an automatic. Move the shift lever to "M," and you get fingertip "tap up/down" range control of transmission gear selection. Included with select automatic transmissions.

AUXILIARY EXTERNAL TRANSMISSION OIL COOLER
Available on Sierra 1500 and standard on Sierra HD, an air-to-oil auxiliary cooling unit helps keep transmission temperatures in check—especially critical when trailering or plowing snow.

ALLISON 1000 SERIES 6-SPEED AUTOMATIC WITH OVERDRIVE
Designed by the same company that makes transmissions for military tanks, this transmission is the exclusive partner for the available Duramax Diesel engine in Sierra HD.

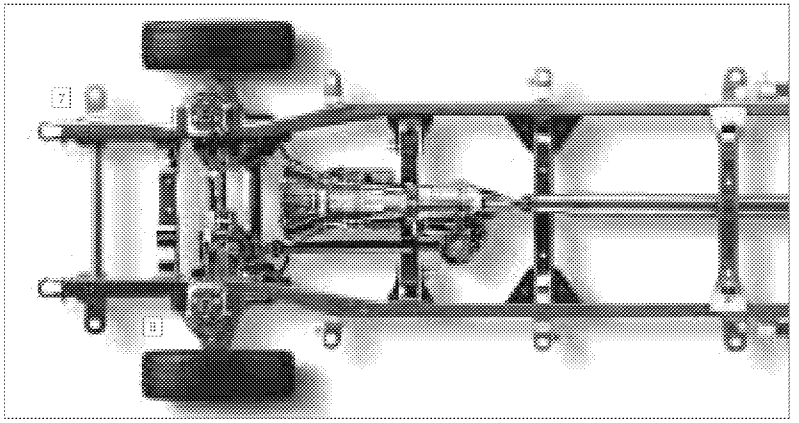


BRAKING [illegible] models, the 6-speed transmissions come with Automatic Engine Grade Braking. This feature adds brake assistance on downhill grades, automatically sensing when to slow your Sierra. When the conditions are met, it engages a Grade Braking shift schedule that selects the right gear to optimize engine braking.

[illegible] rear differential [illegible] use. Available on Sierra 1500 and Sierra 2500HD and standard on 3500HD, the Eaton Locker senses when there's a difference in rotational speed between left and right rear wheels of approximately 100 rpm. It then locks the differential to turn both rear wheels in unison for added traction.

CHASSIS / CONTROL SYSTEMS

There's a critical difference between just driving a truck and commanding a GMC Sierra. One fundamental source of that difference: the Sierra chassis and control systems. GMC engineers took the powerful drivetrains of Sierra and mounted them to strong, rigid frames—one for Sierra 1500 and another built for Sierra HD models. Then they gave each chassis advanced control systems designed to make driving Sierra and Sierra HD easier under heavy load. One example: StabiliTrak, a stability control system standard on all Single Rear Wheel (SRW) Sierra models. Sensing when your vehicle is not responding to your steering inputs, StabiliTrak adjusts engine speed and applies brake pressure to any individual wheel to help maintain directional control.



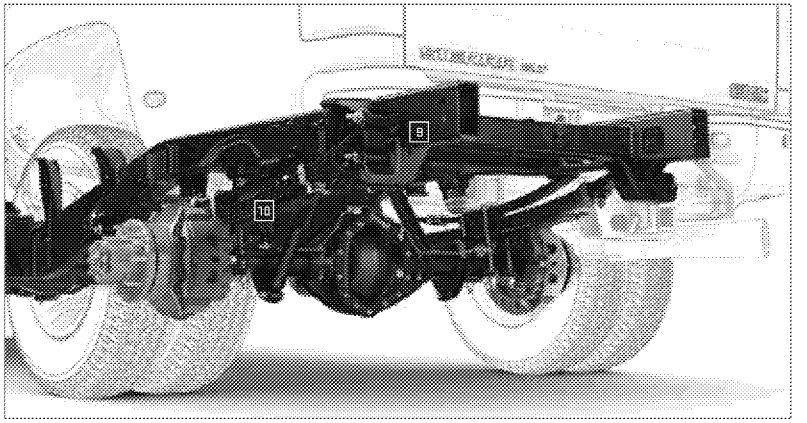
SIERRA 1500

SIERRA 1500 FRAME To help resist bending, twisting and shaking, Sierra 1500 frames feature a hydroformed front section and are fully boxed from the nose to the spare tire area. This construction technique essentially welds a frame inside a frame to create a closed "box" section that gives a strong, stable platform for the engine and cab.

FULLY INDEPENDENT FRONT SUSPENSION On Sierra 1500 models, our coil-over-shock front suspension delivers improved ride quality versus torsion-bar designs.

POWER RACK-AND-PINION STEERING Power rack-and-pinion steering provides Sierra 1500 models with a positive on-center feel at highway speeds, as well as extra low-speed assist for maneuvering in tight spaces.

STABILITRAK A stability control system that's standard on all Single Rear Wheel (SRW) Sierra models, StabiliTrak senses when your vehicle is not responding to your steering inputs and adjusts engine speed and applies brake pressure to any individual wheel to help maintain directional control.



SIERRA HD

SIERRA HD FRAME Not just a beefed-up light-duty frame, the Sierra HD frame is specifically engineered for HD use. Crafted from high-strength steel, the HD frame is fully boxed along its entire length, with fully welded (not riveted) brackets and cross-members. Tubular cross-members are through-rail welded for significantly added strength and resistance to twisting over rough surfaces.

INDEPENDENT FRONT SUSPENSION For ride comfort without sacrificing strength, Sierra HDs have an independent front suspension designed specifically for the constant punishment of heavy-duty use. With an available unsurpassed pick-up Gross Front Axle Rating of up to 8000 lbs,[1] this torsion-bar suspension design allows you to make seasonal ride-height adjustments in minutes, with a single wrench.

[1] Capabilities and weight ratings are dependent upon model, engine, transmission and GVWR combinations. See your GMC dealer for details.

MULTILEAF REAR SPRINGS The more load Sierra HD takes, the more its springs step up to the task. To handle heavy-duty payloads, GMC engineers specced out Sierra HD models with rear leaf springs that are 3 inches wide—two-stage for 2500HD models and three-stage for 3500HD models.

TORSION BAR DESIGN The Sierra HD frame uses torsion bar suspension. Pioneered for pickups by GMC, the torsion bar is designed to support different front axle loads and to retain proper trim height.

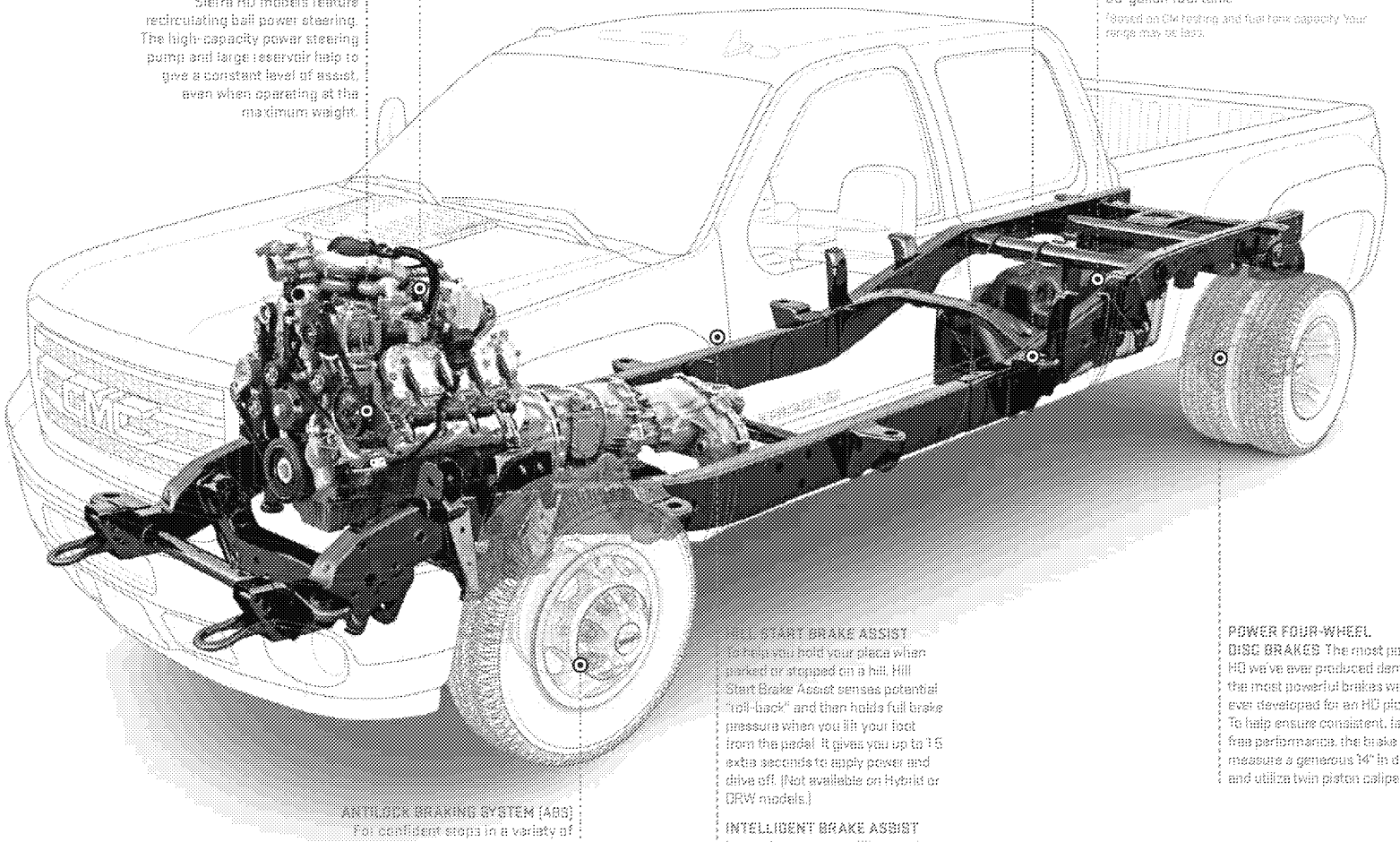
HEAVY-DUTY POWER STEERING Sierra HD models feature recirculating ball power steering. The high-capacity power steering pump and large reservoir help to give a constant level of assist, even when operating at the maximum weight.

DIESEL EXHAUST BRAKE To let you engage an extra measure of braking confidence on long grades, the diesel exhaust brake, included with the available Duramax Diesel engine, uses engine compression to create "negative torque" to help slow the vehicle. It is factory installed and calibrated to work with the rest of your Sierra HD's braking system.

HYDRAULIC BODY MOUNTS How do you balance the demand for a rigid frame with desire for cabin comfort? GMC engineers positioned the Sierra HD Extended and Crew Cab on rear mounts filled with hydraulic fluid, creating a smooth, quiet ride quality.

36-GALLON FUEL TANK (approx) When equipped with the available Duramax Diesel, Sierra HD has a highway range of up to 680 miles on a single tank of fuel,[1] thanks to its 36-gallon fuel tank.

[1]Based on EPA testing and fuel tank capacity. Your range may be less.



HILL START BRAKE ASSIST To help you hold your place when parked or stopped on a hill, Hill Start Brake Assist senses potential "roll-back" and then holds full brake pressure when you lift your foot from the pedal. It gives you up to 1.5 extra seconds to apply power and drive off. (Not available on Hybrid or DRW models.)

INTELLIGENT BRAKE ASSIST In an abrupt stop, milliseconds can be your margin of safety. That's why Sierra's Intelligent Brake Assist senses when you are making an emergency stop, then automatically applies full braking force before your foot can press the pedal all the way. Not available on Dual Rear Wheel (DRW) models.

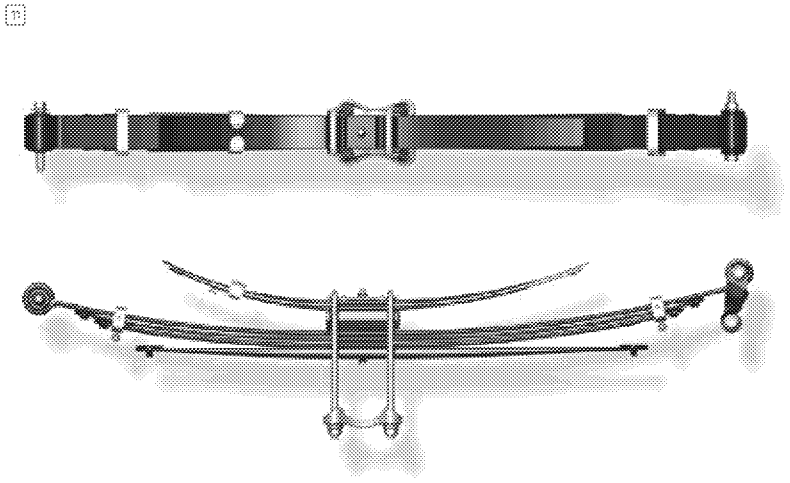
ANTILOCK BRAKING SYSTEM (ABS) For confident stops in a variety of conditions, every Sierra features four-channel antilock brakes. When the brakes are applied, ABS can detect impending wheel lock-up and then pulse that wheel's brake to prevent it. The system can activate any combination of vehicle brakes to maintain control.

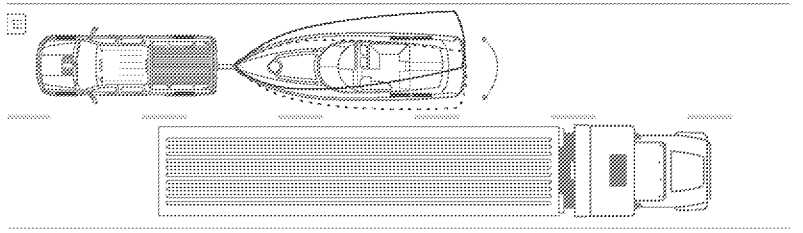
POWER FOUR-WHEEL DISC BRAKES The most powerful HD we've ever produced demanded the most powerful brakes we've ever developed for an HD pickup. To help ensure consistent, fade-free performance, the brake discs measure a generous 14" in diameter and utilize twin piston calipers.

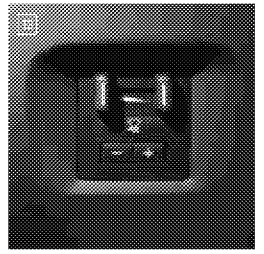
GMC

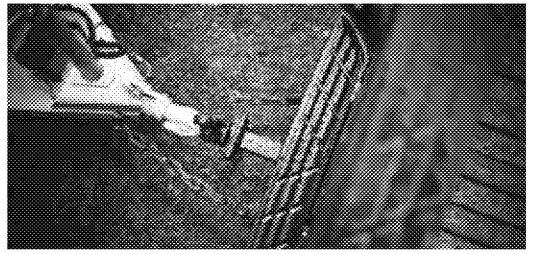
TRAILERING

GMC Sierra and Sierra HD are engineered to offer you professional-grade trailering capability. Whether you're headed out for work or recreation, Sierra offers a wide range of trailering capacities to meet your needs. Complete trailering ratings for Sierra 1500 are listed on page 39, and ratings for Sierra 2500HD and 3500HD models are listed on page 40.









MULTI-STAGE REAR LEAF SPRINGS For big capacity when you need it and a smoother ride when you don't. Sierra HD's 3"-wide multileaf rear springs engage progressively as the load in the bed or on the hitch increases. In 2500HD, it's a 2-stage progression, and on 3500HD, it's 3-stage for added load-bearing capacity.

TRAILER SWAY CONTROL Keep both you and your trailer heading in the proper direction, automatically. This system uses StabiliTrak sensors to detect the rocking of a swaying trailer, and then applies the vehicle's brakes and the trailer's brakes (if properly equipped) to help bring it back in line. The only thing you feel is confidence. (Trailer Sway Control not available on Hybrid or DRW models.)

TRAILER BRAKE CONTROLLER For fingertip control and easy monitoring of your trailer brakes, Sierra offers an integrated trailer brake controller. It is located close to the steering wheel for easy adjustments and displays the level of brake force or "gain" in the Driver Information Center. (Not available on Hybrid, standard on 3500HD models.)

FIFTH-WHEEL FRAME MOUNT PROVISIONS Sierra HD models offer easy installation of fifth-wheel and gooseneck hitches. GMC engineers added prepierced access holes to preserve frame integrity as well as a pair of extra cross-members for added strength in the hitch-mount location.

MAXIMUM TRAILER RATINGS[1]

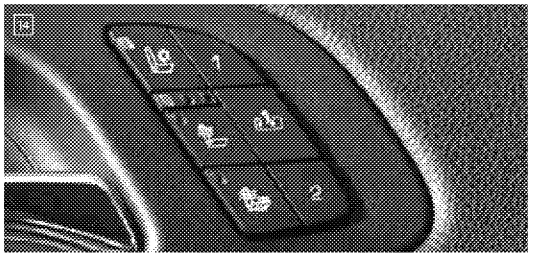
1500	up To	11,700 lbs
2500HD	up To	17,530 lbs
3500HD	up To	23,100 lbs

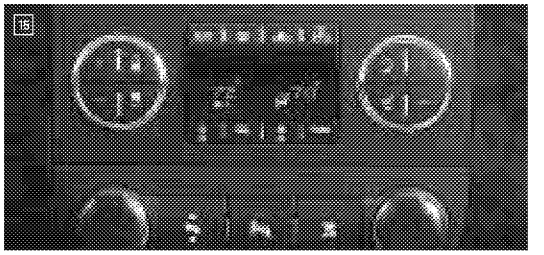
Complete trailering ratings for Sierra 1500 are listed on page 39, and ratings for Sierra 2500HD and 3500HD are listed on page 40.

[1]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any options (if necessary to achieve the rating), plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.

INTERIOR

Climb into the cab of a GMC Sierra and you'll quickly get the sense that everything that surrounds you has been purpose-built for your needs. From the integration of advanced technologies to the supportive seats to carefully calculated storage bins, Sierra's spacious interior is designed to put the driver in control and the passengers at ease.





HEATED AND COOLED FRONT SEATS The ultimate in all-weather comfort, these seats are appointed in a perforated leather that allows the cooling feature to circulate air between you and the seat surface. They are standard on Denali and available on SLT models.

POWER FRONT SEATING Get comfortable more easily with power-adjustable front seats. Power driver seat adjustment is available for 40/20/40 seating with select equipment packages, and power driver and passenger seats are included with all bucket seats in SLE (8-way), SLT (10-way) and Denali (12-way).

POWER-ADJUSTABLE PEDALS To help drivers of varying sizes sit at a comfortable distance from the steering wheel, adjustable pedals with memory are available on SLE and SLT models, and are standard in Denali.

HEATED STEERING WHEEL Exclusive to Denali, the leather-wrapped, heated steering wheel adds soothing warmth whenever the driver demands it.

CLIMATE CONTROL All Sierra models are equipped with air conditioning. Automatic dual-zone climate control with individual settings for the driver and right-front passenger is standard on SLT and Denali, and available on SLE.

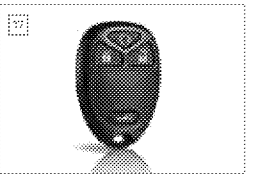
BLUETOOTH[87] FOR PHONE Extend your capabilities by activating the available Bluetooth feature. This lets your Bluetooth device work through the vehicle's controls and features already installed in your Sierra, including hands-free operation and dialing.

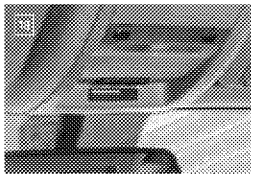
[87] Go to gmc.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle.

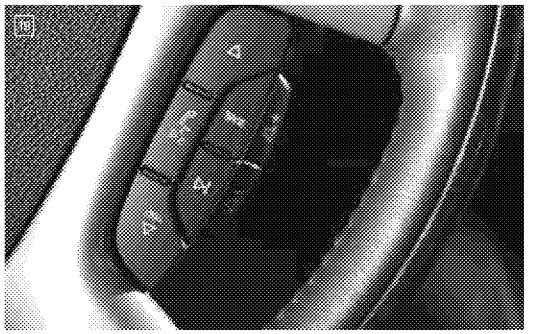
DRIVER INFORMATION CENTER Staying in touch with the most important vehicle information is as easy as pressing a button. The Driver Information Center includes the odometer and trip odometers, as well as a message center that keeps you informed about vital vehicle functions and driving conditions. SLE, SLT and Denali include a compass and outside temperature indicator.

CONVENIENCE

Available on GMC Sierra are a number of advanced features that enhance the level of convenience you can enjoy behind the wheel. Each helps transform ordinary tasks—starting the vehicle, searching for a song, reversing into a parking space—seamlessly integrating innovative technologies to create a truly exceptional driving experience.







REAR-VISION CAMERA SYSTEM Make it easier to back up to a trailer or negotiate a tight space. This available system places a monitor in your rearview mirror (or navigation screen, if equipped) to display a view of the area behind the vehicle. The rear-vision camera does not replace driver vision. Please use proper care when backing up.

REMOTE VEHICLE START This available feature lets you start your vehicle from up to 195 feet away. Your Sierra will run for up to 10 minutes. If equipped with the automatic climate control system, it will default to heating or cooling mode based on the outside temperature.

UNIVERSAL HOME REMOTE Never get locked out again. This available remote can be easily programmed to operate the majority of garage-door-opening systems, and has the benefit of never needing batteries.

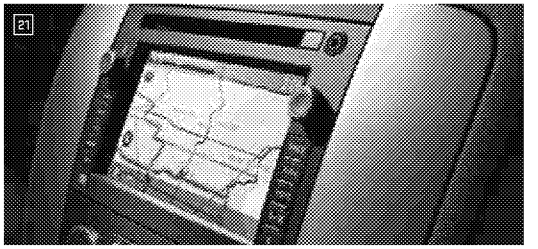
STEERING-WHEEL-MOUNTED RADIO CONTROLS Play your audio system with your fingertips, while you keep your eyes on the road. These available fingertip controls can also manage most music search features of compatible MP3 and iPod® players, as well as Bluetooth[1] for phone.

[1]Go to gmc.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle.

ULTRASONIC REAR PARKING ASSIST This available system sends out ultrasonic waves that act like rear bumper radar to alert you to the distance of objects up to 6 feet behind the vehicle. The system operates at speeds less than 5 mph. The closer you are, the faster it beeps, to give you a clear signal that can help you operate the vehicle with maximum care.

ENTERTAINMENT

Sierra is available with a range of entertainment technologies to enhance your experience. The quiet passenger cabin is the perfect starting point for you and your passengers to enjoy the available audio and DVD Rear-Seat Entertainment System. Information, music and video—it's all available via controls and touch-screen technology that make finding exactly what you want easy.



BOSE® AUDIO SYSTEMS Make the front seat of your Sierra sound like the front row of your favorite concert. Bose systems are engineered to give you the realism and presence of a live performance. Standard on SLT and available on SLE models, Bose Audio features steering-wheel-mounted radio controls and a premium speaker system, with a center console-mounted woofer for rich bass tones that give you a fuller listening experience.

BOSE CENTERPOINT® SOUND Denali models have standard Bose Centerpoint surround-sound system with SurroundStage® signal processing for the sensation of a live performance while you drive. This technology, along with AudioPilot® noise compensation, wraps you in sound, delivering five independent channels from existing two-channel recordings.

AUXILIARY INPUT This available feature accommodates most MP3 players and devices, including many smartphones. So you can bring the music and entertainment you love to your Sierra just by plugging in.

REAR-SEAT ENTERTAINMENT SYSTEM Let your rear-seat passengers enjoy the ride in your Sierra even more. Available in SLT and Denali Crew Cab models, this system includes a DVD player and 8" flip-down screen. It also comes with dual-play, which has a separate upper DVD slot in the radio to let front-seat passengers control the DVD or music playing behind them. The system is compatible with most popular video gaming systems.

DEALER-INSTALLED WI-FI[1] Connect up to 20 wireless users at one time and stay in touch with your life's vital information with the first wireless router designed just for automotive use. Ask your dealer for specific plans and prices for this available system.

[1]Monthly rates apply. Visit autoermobile.com for coverage map and details.

TOUCH-SCREEN NAVIGATION SYSTEM[2] For easy operation, the available system includes a large 7" in-dash touch-screen display, 2-D or 3-D map graphics and 3 months of NavTraffic.[2] OnStar subscribers can also use this system with OnStar Turn-by-Turn Navigation assistance (6 months standard). For your convenience, this screen also serves as a large, easily read monitor for the available Rear-Vision Camera System. Its sophisticated features include pause-and-play capability for live broadcasts that works like a DVR for your vehicle, a built-in hard drive, an available XM Weather subscription and improved display resolution for enhanced visibility and viewing.

Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [2]If you subscribe after your trial period, subscriptions continue until you call SiriusXM to cancel. See SiriusXM Customer Agreement for complete terms and geographic limitations at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change.

USB PORT[3] Plug your digital devices into the available USB port in the center console.

[3]Not compatible with all devices.

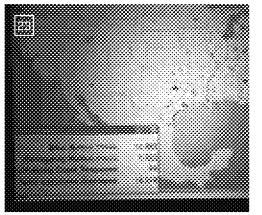
SiriusXM SATELLITE RADIO/ NAVTRAFFIC[2] Enjoy SiriusXM Satellite Radio in your Sierra with a 3-month trial subscription to the XMPremier Package. Only SiriusXM brings you more of what you love, all in one place. Get over 130 channels, including commercial-free music, plus the best sports, news, talk, comedy and entertainment. With NavTraffic, you'll get continuously updated traffic information as it occurs, right on your vehicle's available navigation system. Welcome to the world of SiriusXM. (Available on WT models.)

[2]If you subscribe after your trial period, subscriptions continue until you call SiriusXM to cancel. See SiriusXM Customer Agreement for complete terms and geographic limitations at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change.

ONSTAR

How do more than six million drivers stay safe on the road? With OnStar,[8] our integrated communications system that connects you to a variety of information—and to a real, live Advisor whenever you push the OnStar button on the overhead console. OnStar is technology designed to enhance your safety, security and peace of mind. A 6-month subscription to the OnStar Directions & Connections Plan is standard on most Sierra models (available on WT.)

*Visit onstar.com for coverage map, details and system limitations. OnStar acts as a link to existing emergency service providers. Services vary with conditions.



DIRECTIONS & CONNECTIONS PLAN[7] Success in today's fast-moving world means finding and focusing on the information that means the most to you. To put this capability at your fingertips, Sierra comes standard with a 6-month trial subscription to the OnStar Directions & Connections Plan. (Available on WT models.)

*Visit onstar.com for coverage map, details and system limitations. OnStar acts as a link to existing emergency service providers. Services vary with conditions.

HANDS-FREE CALLING[8] WITH VOICE-ACTIVATED DIALING Available OnStar Hands-Free Calling is built into your Sierra. Just push a button, call out the number and you're free to keep your eyes on the road. It's reliable, because it is specially designed for better connectivity and fewer dropped calls in areas with limited cellular reception.

*Visit onstar.com for coverage map, details and system limitations. OnStar Hands-Free Calling requires a hands-free calling-enabled vehicle, existing OnStar service contract and prepaid minutes. Not available in certain markets. Calls can be made in U.S. and Canada only.

TURN-BY-TURN NAVIGATION Drive with more confidence and certainty. OnStar Turn-By-Turn Navigation is built into OnStar-equipped Sierra models. It's simple—all you have to do is push one button and ask the OnStar Advisor to download directions to your vehicle. Turn-By-Turn is also smart, because an automated voice calls out every turn as you need it.

ONSTAR VEHICLE DIAGNOSTICS[8] The peace of mind that comes from knowing the condition of your Sierra's key systems is as easy as checking your e-mail. OnStar Vehicle Diagnostics is a service that is standard with your 6-month trial subscription to the Directions & Connections Plan and can run hundreds of checks of your Sierra's engine, transmission, antilock brakes and more, then organize the information in an easy-to-read monthly report. OnStar can also run a check of your vehicle as you drive, just press the blue button and ask the Advisor for an On-Demand Diagnostics check. That's peace of mind when you need it.

*Capabilities vary by model. Visit onstar.com for details and system limitations.

DESTINATION DOWNLOAD Looking for a destination in your screen-based navigation system? OnStar will do it for you. Simply press your blue OnStar button, and you will be connected with a trained Advisor who will download your directions to your Sierra's available screen-based navigation system. You can also have destinations downloaded on the go—no need to pull over to enter new addresses. It's an enhancement to navigation that makes screen-based navigation systems easier and faster to use.

STOLEN VEHICLE ASSISTANCE If your Sierra is ever stolen, OnStar can help locate it after verification with law enforcement. OnStar can use built-in GPS technology to help to locate it, prevent it from restarting with Remote Ignition Block or, if the vehicle is in use, engage the Stolen Vehicle Slow-down technology to help police recover it quickly and safely.

ROADSIDE ASSISTANCE[8] If the unexpected happens on the road—you're stranded, run out of gas or have a flat tire—one push of the OnStar button can immediately connect you to an Advisor, ready to help any hour of the day or night. OnStar can use GPS technology to pinpoint your location and connect you to a service provider. No guessing about where you are or what to do.

*Roadside service provided by Cross Country.

REMOTE DOOR UNLOCK It's happened to everyone. But there is an easy solution. If you get locked out of your Sierra, OnStar can help. After verifying your account, an OnStar Advisor can send a signal to your Sierra that usually unlocks the doors within minutes.[8]

*Requires power door locks. Services vary by model and conditions.

AUTOMATIC CRASH RESPONSE If your Sierra is in a crash, built-in sensors can automatically send an alert to OnStar. An OnStar Advisor is immediately connected to your vehicle to help you. Even if you aren't capable of responding, the Advisor can use GPS technology to locate you and request that emergency help is sent right away.

CRISIS ASSIST During severe weather or other natural disasters, OnStar can offer assistance and help you navigate your way to safety. Just push the red OnStar emergency button and our specially trained Crisis Assist Team moves quickly to help you. OnStar can pinpoint your location and provide up-to-date information from public safety authorities, request that help be sent to you or even contact family members or loved ones.

EMERGENCY SERVICES If someone in the vehicle needs emergency help, the OnStar emergency button gives you a priority connection to a specially trained Advisor at any time, day or night. OnStar uses GPS technology to pinpoint your location and can request police, fire or medical support be sent right away. The Advisor can also stay with you on the line until help arrives.

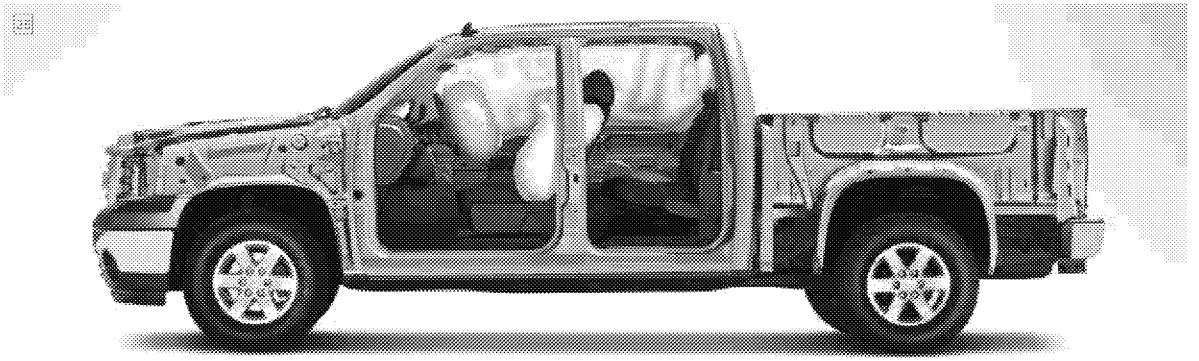
ONSTAR REMOTELINK APP[12] The OnStar RemoteLink app offers an amazing level of control and connection with your vehicle. After downloading and registering the app, GMC owners with an eligible vehicle can use their iPhone® or Android™-based mobile devices to control their vehicle from their phone and perform specific commands—like unlocking their doors—remotely.[8] You can lock/unlock your doors from any distance, start your vehicle remotely,[9] sound your horn and flash your lights to help locate your vehicle or contact an OnStar Advisor, Roadside Assistance or your preferred dealer. To learn all about all the great features available, go to onstar.com.

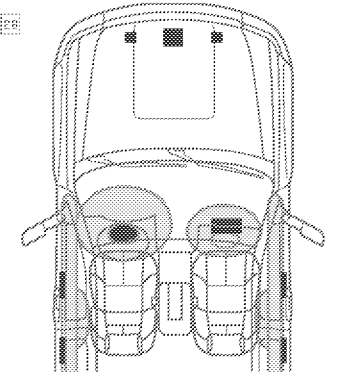
*Available on iPhone® since Android™ and Blackberry® platforms. Services vary by phone and conditions. **Requires power door locks. ***Requires factory-installed remote start.

SAFETY

Sierra is designed to help protect you before, during and after a collision. Advanced chassis control technologies help Sierra drivers avoid potential accidents. A system of air bag supplemental restraints[1] helps protect passengers during a collision. With the available OnStar Automatic Crash Response[2] (standard for 6 months), Sierra can even connect you to help in the critical moments immediately after you're involved in a crash.

[1]Air bag inflation can cause severe injury or death to anyone too close to the air bag when it deploys. Be sure every occupant is properly restrained. Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information. [2]Visit onstar.com for coverage map, details and system limitations. OnStar acts as a liaison to emergency service providers.





FRONTAL AIR BAGS[1] All Sierra models come with driver and front-passenger air bags. To help reduce the risk of injury to passengers, Light Duty models come standard with dual-stage frontal air bags that have sensors to gauge the severity of a crash, then determine whether to deploy one or two levels of inflation. Sierra Light Duty models also feature a Passenger Sensing System for the outboard front passenger that automatically turns off the air bag if the passenger is under the appropriate weight.

HEAD CURTAIN SIDE-IMPACT AIR BAGS[1] These air bags unfurl from the roof rail like a protective curtain for outboard passengers, and can be activated by either rollover sensors or side-impact sensors. They are available on select Heavy Duty models.

[1]Air bag inflation can cause severe injury or death to anyone too close to the air bag when it deploys. Be sure every occupant is properly restrained. Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information.

SEAT-MOUNTED SIDE-IMPACT AIR BAGS[1] To help protect the thorax and pelvic regions of the driver and outside front passenger in a side-impact collision, Sierra Light Duty and Heavy Duty Denali models include side-impact air bags mounted on the driver and outside front passenger seat. They are available on select Heavy Duty models.

LATCH CHILD SEAT ANCHORING SYSTEM Make it easier to properly install a child seat. LATCH stands for Lower Anchors and Top tethers for Children. A LATCH seat will install to specially designed retainer hooks in your Sierra with an audible "click." It also means that you can install a top tether strap that helps limit movement in a forward crash to help reduce the chance of injury.

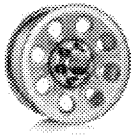
REINFORCED STEEL SAFETY CAGE DESIGN Sierra's robust body structure is engineered to help maintain the integrity of the passenger compartment in the event of a collision. All steel from wheel to wheel, the body is designed to crush in a controlled manner in the event of a collision, absorbing the energy of a crash as much as possible.

PASS-KEY III+ THEFT DETERRENT SYSTEM Preventing unauthorized starting attempts in your Sierra comes down to a tiny chip found in your ignition key. It functions as an electronic "fingerprint" that disables your starting system if it detects a theft attempt is underway.

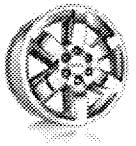
WHEELS

A selection of strong, stylish GMC wheels in a range of sizes is available to help you tailor your new Sierra precisely to your personal taste. Whether you choose painted steel, chrome-clad aluminum or forged polished aluminum, each wheel features a durable finish designed to withstand the test of time, and many are also available with matching lugs and GMC center caps.

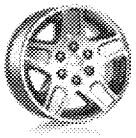
SIERRA/1500 WHEELS



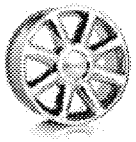
NX7
17" PAINTED STEEL
STANDARD: WT



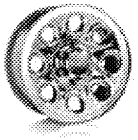
S86
20" CHROME-CLAD ALUMINUM
AVAILABLE: SLE AND SLT



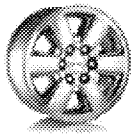
RZF
18" CHROME-CLAD ALUMINUM
STANDARD ALL-TERRAIN PACKAGE



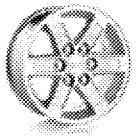
P41
20" CHROME ALUMINUM
STANDARD: DENALI



PV9
17" CHROME-STYLED STEEL
STANDARD: SLE AND SLT CREW CAB
AVAILABLE: WT REGULAR AND EXT CAB

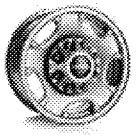


P08
18" CHROME-CLAD ALUMINUM
STANDARD: SLT AND HYBRID

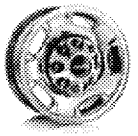


N88
17" POLISHED ALUMINUM SPORT
STANDARD: XFE
AVAILABLE: SLE AND SLT W/MAX TRAILERING PACKAGE

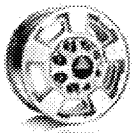
2500HD WHEELS



PVN
17" PAINTED STEEL
STANDARD: WT



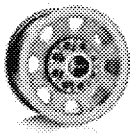
PVP
17" CHROME-CLAD STEEL
AVAILABLE: WT



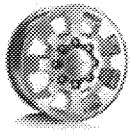
PVQ
17" CAST-ALUMINUM BRIGHT MACHINED
STANDARD: SLE

PVS
20" ALUMINUM
AVAILABLE: SLE AND SLT

2500HD/3500HD SRW WHEELS

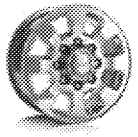


PVT
18" PAINTED STEEL
STANDARD: 3500HD WT
AVAILABLE: 2500HD WT



PVR
18" FORGED POLISHED ALUMINUM
STANDARD: 2500HD SLT, 3500HD SLE AND SLT
AVAILABLE: 2500HD SLE

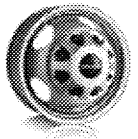
DENALI HD SRW WHEELS



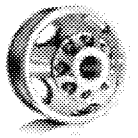
PVR
18" FORGED POLISHED ALUMINUM
STANDARD: 2500 AND 3500 DENALI HD

PVS
20" ALUMINUM
AVAILABLE: 2500 DENALI HD

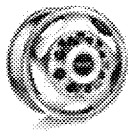
3500HD DRW WHEELS



PVW
17" PAINTED STEEL
STANDARD: WT



P08
17" CHROME SKINS AND CENTER CAPS
STANDARD: SLE AND SLT



RS7
17" FORGED POLISHED ALUMINUM
STANDARD: 3500 DENALI HD DRW
AVAILABLE: 3500HD SLE AND SLT DRW

EXTERIOR COLORS

SIERRA 1500 CREW CAB IN STEEL GRAY METALLIC shown with available equipment

ONYX BLACK[1]

SUMMIT WHITE[1]

SONOMA RED METALLIC[1]

DARK SILVER METALLIC

FIRE RED

WHITE DIAMOND TRICOAT[2]

STEEL GRAY METALLIC[1]

STEALTH GRAY METALLIC

HERITAGE BLUE METALLIC

MOCHA STEEL METALLIC

All colors are baked-on/clear-coat for high gloss and durable finish. See dealer for more details on paint and color availability.
[1]Available on Denali. [2]Available on Crew Cab and 1500 Denali.

INTERIOR COLORS

SIERRA INTERIOR IN LIGHT TITANIUM shown with available equipment.

VINYL
(Standard: WT)

DARK TITANIUM

*Very Dark Cashmere/Light Cashmere on SLT

CLOTH
(Standard: SLE, Available: WT)

DARK TITANIUM

*Not available on Denali.

PREMIUM CLOTH
(Standard: SLE, Hybrid and 4FE)

LIGHT CASHMERE

LIGHT TITANIUM

EBONY

LEATHER-APPOINTED
(Standard: SLT, Available: SLE, Hybrid and 4FE)

LIGHT CASHMERE

LIGHT TITANIUM

EBONY

SIERRA ALL-TERRAIN INTERIOR TRIM
Premium Cloth (Standard: SLE)

EBONY

Leather Appointed (Standard: SLT)

EBONY/LIGHT TITANIUM

EBONY

PERFORATED LEATHER-APPOINTED
(Standard: Denali, Available: SLT)

CACOA/LIGHT CASHMERE

LIGHT TITANIUM

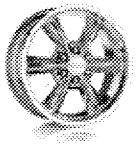
EBONY

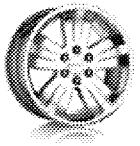
ACCESSORIES

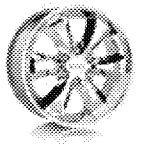
Engineered to the same standards as your Sierra, GMC Accessories range from functional enhancements like assist steps and bed management systems to a stylish array of accessory chrome wheels and accents. So go ahead, accessorize your Sierra exactly the way you want it.

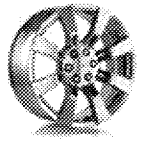
20" AND 22" CAST CHROME WHEELS[1]
Fill up your wheel wells and stand out from the crowd with these factory-engineered and approved wheels from GMC Accessories. Each wheel features a brilliant durable chrome finish and is available with matching lugs and GMC logo center caps.

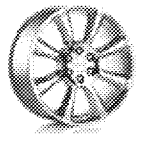
[1]Use only GM-approved tire and wheel combinations. Unapproved combinations may change the vehicle's performance characteristics. For approved tire and wheel combinations and other important information, go to gmaccessoriestore.com or see your GMC dealer for details.

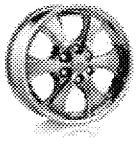

CK948 20" CHROME


CK961 20" CHROME

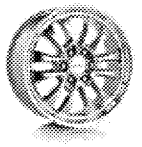

CK887 20" CHROME

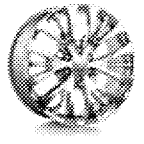

CK876 22" CHROME

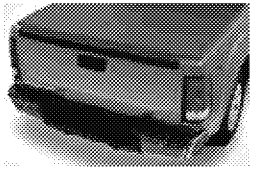

CK816 22" CHROME


CK870 20" CHROME

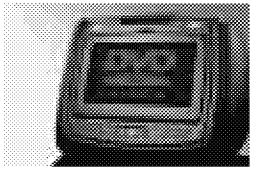
CK891 20" CHROME


CK945 20" CHROME

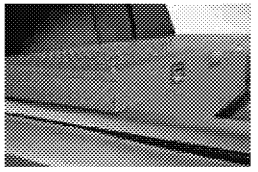

CK888 TRI-SPOKE 20" CHROME



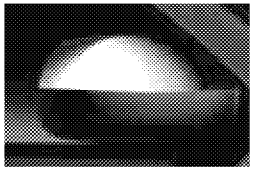
SOFT TONNEAU COVER
Roll-up design shields cargo, easily rolls up to allow full access to the bed and is constructed with integrated crossbows.



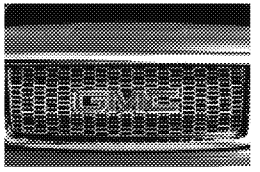
INTEGRATED DVD
A Dual-Player DVD System mounted in back of each front head restraint with wireless headphones gives rear-seat passengers personal entertainment. Single remote control included.



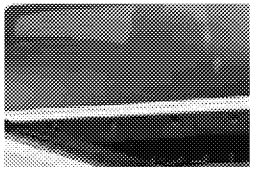
STATIONARY TOOLBOX
Diamond-patterned toolbox features dual gas shocks for smooth opening and closing and GMC logo.



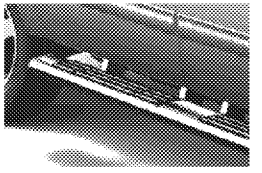
CHROME MIRROR COVER
Help your Sierra make a fashion statement with these chrome outside rearview mirror covers.



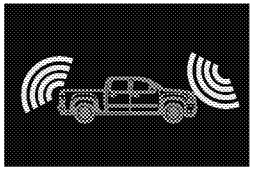
OVAL-PATTERN CHROME GRILLE
This sporty chrome grille features a chrome mesh center and surround. It replaces the existing grille.



BED RAIL CAPS Give the rails to your Sierra pickup's bed extra protection against wear and tear with these tough-as-nails rail caps.



ASSIST STEPS
Make it easier to get in and out of your truck with these stylish assist steps. Crafted from rust-resistant stainless steel, they are available in either chrome or black powder coat and in 6-inch oval or 3-inch round styles.



DEALER-INSTALLED AUTONET WIFI[1]
Turn your Sierra into a mobile hot spot with the first wireless router engineered specifically for automotive use. It can accommodate up to 10 wireless devices at one time, at a range of up to 150 feet, to help you stay connected, whether you're on the job or at your favorite hideaway.

[1]Monthly rates apply. Visit autonetmobile.com for coverage map and details.

SIERRA 1500 CREW CAB SLE IN QUICKSILVER METALLIC shown with available equipment and dealer-installed accessories.

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
CONFIGURATIONS					
Regular Cab	●	--	●	--	--
Extended Cab	●	●	●	●	--
Crew Cab	●	●	●	●	●
MECHANICAL SIERRA 1500					
ALL-WHEEL DRIVE Electronic automatic system	--	--	--	--	○
ALUMINIZED STAINLESS STEEL EXHAUST	●	●	●	●	●
AUXILIARY EXTERNAL TRANSMISSION OIL COOLER Heavy-duty air-to-oil. On WT models, requires Trailering Package, Snow Plow Prep Package or Heavy-Duty Cooling Package. On SL models, included with Trailering Package. On SLE models, requires Heavy-Duty Trailering Package, Snow Plow Prep Package and 6-speed automatic transmission	○	○	○	●	●
BATTERY Heavy-duty maintenance-free with 600 cold-cranking amps, rundown protection and retained accessory power	●	●	●	●	●
BRAKES Front disc/rear drum with 4-wheel antilock	●	●	●	●	--
4-wheel disc with 4-wheel antilock	--	--	○	○	●
EATON® HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL	○	○	○	●	●
ENGINE Vortec 4.3L V-6	●	--	--	--	--
Vortec 4.8L V-8 Variable Valve Timing (VVT) FlexFuel	○	●	●	--	--
Vortec 5.3L V-8 VVT FlexFuel with Active Fuel Management	○	--	○	●	--
Vortec 6.2L V-8 VVT FlexFuel	--	--	○	○	●
ENGINE BLOCK HEATER	○	○	○	○	○
EXTERNAL ENGINE OIL COOLER Heavy-duty air-to-oil, integral to driver side of radiator tank. On WT models, requires Heavy-Duty Trailering Package or Heavy-Duty Cooling Package. On SLE models, requires 6-speed automatic transmission.	○	--	○	●	●
FRAME Fully boxed to the spare tire area, with hydroformed front section	●	●	●	●	●
HEAVY-DUTY COOLING PACKAGE Includes external engine oil cooler, auxiliary external transmission oil cooler, electric fan and heavy-duty radiator. Only available with 6-speed transmission	○	--	○	●	●
STABILITRAK STABILITY CONTROL SYSTEM With proactive roll avoidance, Intelligent Brake Assist and traction control	●	●	●	●	●
SUSPENSION Coil-over-shock, independent front; semi-elliptical 2-stage multileaf springs rear	●	●	●	●	●
HEAVY-DUTY HANDLING/TRAILERING SUSPENSION Requires Heavy-Duty Trailering Package on WT models	○	●	●	●	--
Z71 OFF-ROAD SUSPENSION PACKAGE Includes off-road jounce bumpers, high-capacity air cleaner, Skid Plate Package and Z71 decals on rear quarters	--	--	○	○	--
HIGH-PERFORMANCE SUSPENSION PACKAGE Included with 20" chrome-clad aluminum wheels	--	--	○	○	●
TRANSMISSION 4-speed automatic, electronically controlled	●	●	●	--	--
6-speed automatic, electronically controlled	○	--	○	●	●
Transfer case: On WT and SL models, includes floor-mounted shifter. On SLE and SLT models, includes AutoTrac electronic case with rotary dial controls (4WD models). Electronic transfer case available on WT models.	●	●	●	●	--
TRAILERING Heavy-Duty Trailering Package. Includes trailering hitch platform and 2" receiver, 7-wire harness with independent fused running circuits mated to a 7-way sealed connector, wiring harness for aftermarket trailer brake controller (located in the instrument panel harness), single wire for center high-mounted stop lamp, heavy-duty automatic locking rear differential and external transmission oil cooler. On 1500 WT and SLE models equipped with 6-speed transmission, includes Heavy-Duty Cooling Package and external engine oil cooler.	○	○	○	●	●
Integrated trailer brake controller. Not available with Vortec 4.3L V-6. Requires Heavy-Duty Trailering Package.	○	○	○	○	○
TRAILER SWAY CONTROL With Hill Start Brake Assist. Not available on Sierra Hybrid.	●	●	●	●	●
MAX TRAILERING PACKAGE Includes Vortec 5.3L V-8, heavy-duty automatic locking rear differential, Heavy-Duty Handling/Trailering Suspension Package, 5.9" hybrid rear axle, 3.73 rear axle ratio, front and rear disc brakes, Heavy-Duty Trailering Package, fog lamps and 17" polished aluminum wheels. Available on Extended and Crew Cab models only.	--	--	○	○	--

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
MECHANICAL SIERRA 1500 continued					
POWER TECH PACKAGE Includes Vortec 5.3L V-8 SFI FlexFuel engine, heavy-duty automatic locking rear differential, Heavy-Duty Trailering Package, dual-zone automatic air conditioning, Bluetooth® for phone, steering-wheel-mounted audio controls, CD/MP3 player, driver 8-way power seat adjuster, front fog lamps, EZ-Lift locking tailgate and 17" aluminum wheels. Available on Extended and Crew Cab models only	--	--	○	--	--
SKID PLATE PACKAGE Frame-mounted shields, includes front underbody shield starting behind front bumper and running to first cross-member, protecting front underbody, oil pan, differential case and transfer case. Requires 4WD on WT models. Not available on 2WD SLE and SLT models unless Z71 Off-Road Suspension Package is ordered.	○	○	○	○	●
SNOW PLOW PREP PACKAGE Includes 10-amp power for back-up and roof emergency light, 160-amp alternator, high-flow front bumper, forward lamp wiring harness, provision for cab roof-mounted lamp/beacon, instrument panel jumper wiring harness for electronic tower brake controller, high-capacity air cleaner, auxiliary external transmission oil cooler and Skid Plate Package (4WD Regular Cab models only)	○	--	○	--	--
MECHANICAL SIERRA 2500HD/3500HD					
ALTERNATOR 125-amp	●	--	●	●	●
160-amp. Included with Snow Plow Prep Package when Vortec 6.0L SFI V-8 is ordered. Requires Vortec 6.0L SFI V-8.	○	--	○	○	○
Dual, 125 amps each. Included with Snow Plow Prep Package when Duramax Diesel 6.6L V-8 Turbo is ordered. Requires Duramax Diesel 6.6L V-8 Turbo engine.	○	--	○	○	○
BATTERY Heavy-duty, maintenance-free with 800 cold-cranking amps, rundown protection and retained accessory power	●	--	●	●	●
Auxiliary heavy-duty, maintenance-free with 800 cold-cranking amps. Not available with Duramax Diesel 6.6L V-8 Turbo engine.	○	--	○	○	○
Heavy-duty, 2 batteries, maintenance-free with 790 cold-cranking amps, with rundown protection and retained accessory power. Included and only available with Duramax Diesel 6.6L V-8 Turbo engine.	○	--	○	○	○
BRAKES Power 4-wheel disc, 4-wheel antilock	●	--	●	●	●
EATON HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL Included with Heavy-Duty Trailering Package. Standard on all 3500HD pickup models.	○	--	○	●	●
ENGINE Vortec 6.0L V-8 VVT FlexFuel with SFI	●	--	●	●	●
Vortec 8.1L V-8 Gaseous (CNG) with hardened valves and valve seats. Requires Extended Cab 2500HD models. Please see your dealer for more details.	○	--	○	○	--
Duramax Diesel 6.6L V-8 Turbo with direct injection and B20 biodiesel capability	○	--	○	○	○
ENGINE BLOCK HEATER	○	--	○	○	○
ENGINE OIL COOLER Heavy-duty external air-to-oil, integral to driver side of radiator tank.	●	--	●	●	●
EXHAUST Aluminized stainless steel	●	--	●	●	●
EXHAUST BRAKE Included with Duramax Diesel 6.6L V-8 Turbo engine only	○	--	○	○	○
FRAME Fully boxed with hydroformed front section	●	--	●	●	●
16,000-lb GVWR® package. Select Sierra 3500HD SRW models. See your dealer for details.	○	--	○	○	○
HIGH-CAPACITY AIR CLEANER	●	--	●	●	●
HIGH IDLE SWITCH	○	--	○	○	○
RADIATOR GRILLE AND FRONT BUMPER OPENINGS COVER For cold weather. Requires Duramax Diesel 6.6L V-8 Turbo engine.	○	--	○	○	○
REAR AXLE 3.73 ratio (except 3500HD 2WD Regular Cab SRW model)	●	--	●	●	●
4.10 ratio. Requires Vortec 6.0L V-8 engine.	○	--	○	○	○
SKID PLATE PACKAGE Frame-mounted shields. Includes front underbody shield starting behind front bumper and running to first cross-member, protecting front underbody, oil pan, differential case and transfer case. Requires 4WD on WT models. Not available on 2WD SLE and SLT models unless Z71 Off-Road Suspension Package is ordered.	○	--	○	○	●

KEY ● STANDARD ○ AVAILABLE -- NOT AVAILABLE SRW: Single Rear Wheels DRW: Dual Rear Wheels

TRIM LEVELS	WT	SLE	SLE	SLT	DENALI
MECHANICAL SIERRA 1500HD/3500HD continued					
SNOW PLOW PREP PACKAGE Includes 10-amp power for back-up and roof emergency light, 160-amp alternator (dual 125 amp included with Diesel), high-flow front bumper, forward lamp wiring harness, provision for cab roof-mounted lamp/beacon, instrument panel jumper wiring harness for electronic trailer brake controller, Skid Plate Package (4WD models only) and increased Front Gross Axle Weight Rating (FGAWR). See chart on page 38 for more details.	●	–	●	●	●
STABILITRAK Stability control system, includes electronic trailer sway control, Intelligent Brake Assist and Hill Start Brake Assist (SRW models only).	●	–	●	●	●
STEERING Power, recirculating ball	●	–	●	●	●
SUSPENSION Front independent with torsion bar	●	–	●	●	●
Rear multileaf springs, semi-elliptic with urethane jounce bumpers	●	–	●	●	●
HEAVY-DUTY HANDLING/TRAILERING SUSPENSION PACKAGE	●	–	●	●	●
Z71 OFF-ROAD SUSPENSION PACKAGE Includes off-road jounce bumpers, Skid Plate Package and Z71 decals on rear quarters	–	–	○	○	○
HEAVY-DUTY TRAILERING PACKAGE Includes trailering hitch platform and 2.5" receiver with 2" adapter, 7-wire harness with independent fused trailering circuits mated to a 7-way sealed connector, wiring harness for aftermarket trailer brake controller (located in the instrument panel harness) and integrated trailer brake controller. Standard on all 3500HD models	○	–	○	●	●
Integrated trailer brake controller. Requires Heavy-Duty Trailering Package. Standard on all 3500HD models.	○	–	○	●	●
Trailering wiring provisions for camper, fifth-wheel and gooseneck trailers; includes additional 9-way wiring harness routed to front of pickup box. Requires Heavy-Duty Trailering Package.	○	–	○	○	○
TRAILER SWAY CONTROL SRW models only	●	–	●	●	●
TRANSFER CASE With floor-mounted shifter (4WD models)	●	–	–	–	–
Electronic shift with rotary dial control (4WD models)	–	–	●	●	●
TRANSMISSIONS RLS9-E 6-speed automatic. Standard and only available with Vortec 6.0L V-8.	●	–	●	●	●
Allison 1000 Series 6-speed automatic. Included and only available with Duramax Diesel 6.6L V-8 Turbo.	○	–	○	○	○
TRANSMISSION OIL COOLER Auxiliary external heavy-duty air-to-oil	●	–	●	●	●
SEATING – ALL MODELS					
SEATS 40/20/40 front split-bench with driver and front-passenger manual recline and center fold-down armrest with storage	●	●	–	–	–
40/20/40 front split-bench with driver and front-passenger manual recline. Center fold-down armrest and lockable storage compartment in seat cushion (includes auxiliary power outlet). Adjustable outboard head restraints on Extended and Crew Cab models.	–	–	●	–	–
Front buckets with 6-way power seat adjusters, manual recline, manual lumbar and adjustable head restraints. Requires Extended or Crew Cab models	–	–	○	–	–
Front buckets with 10-way power seat adjusters (SLE) or 12-way (Denali) including power lumbar control, heated seat cushions and seatbacks, 2-position driver memory (does not apply to lumbar adjuster on SLE) and adjustable head restraints. Includes floor console and storage pockets	–	–	–	●	●
Heated and cooled perforated leather-appointed seating with 12-way seat adjuster for driver and front passenger, includes seat-mounted side-impact air bags[2] on SLE and Denali HD SRW models	–	–	–	○	●
Driver-side manual seat adjuster with lumbar control. On WT models, included and only available with Dark Titanium Cloth seat trim.	○	●	●	–	–
Folding rear bench, full width. Extended Cab models only	●	●	–	–	–
60/40 folding rear bench. WT and SL require Crew Cab models. SLE requires Extended or Crew Cab models. Not available on Sierra Hybrid.	●	●	●	●	●

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
SEATING – ALL MODELS continued					
SEAT TRIM Dark Titanium vinyl with Graphite-colored rubberized vinyl floor covering	●	–	–	–	–
Dark Titanium Cloth	○	●	–	–	–
Premium Cloth	–	–	●	–	–
Front leather-appointed seating, includes 8-way power driver seat adjuster on SLE models. Not available on Regular Cab models.	–	–	○	●	–
Premium front leather-appointed seating, Nutmeg	–	–	–	–	●
INSTRUMENTATION AND CONTROLS – ALL MODELS					
CRUISE CONTROL	●	●	●	●	●
INSTRUMENTATION Analog cluster with speedometer, fuel level, engine temperature and tachometer. On SLE, SLT and Denali models, includes voltmeter and oil pressure indicators.	●	●	●	●	●
Driver Information Center with odometer, trip odometer and message center. On SLE, SLT and Denali models, includes compass and outside temperature.	●	●	●	●	●
POWER-ADJUSTABLE PEDALS Requires Convenience Package	–	–	○	○	●
REAR-VISION CAMERA SYSTEM With inside rearview mirror display; if Touch-Screen Navigation is ordered, camera display is on 8-in screen. Requires locking tailgate. On SLE models, also requires SLE Preferred Package. Not available on Regular Cab models.	–	–	○	○	●
STEERING WHEEL Tilt-wheel adjustable steering column with brake/transmission shift interlock	●	●	●	●	●
Leather-wrapped (color-keyed on Denali). On WT and SL models, requires Bluetooth.[1]	○	○	●	●	●
Steering wheel-mounted audio controls. On WT and SL models, requires Bluetooth.[1] On SLE models, requires Preferred Package.	○	○	○	●	●
Heated, leather-wrapped and color-keyed	–	–	–	–	●
ULTRASONIC REAR PARKING ASSIST With audible warning. Requires Extended or Crew Cab models. Requires Convenience Package.	–	–	○	○	●
INTERIOR DETAILS – ALL MODELS					
CARPETING Color-keyed with rubberized vinyl floor mats. Extended and Crew Cab models also include rear floor mats; WT models require Dark Titanium Cloth seat trim.	○	●	●	●	–
Color-keyed with removable carpeted floor mats for first and second rows	–	–	–	–	●
CLIMATE CONTROL Single-zone manual air conditioning	●	●	●	–	–
Dual-zone automatic air conditioning with individual settings for driver and right-front passenger, not available with Regular Cab models. Requires Preferred Package	–	–	○	●	●
DEFOGGER Rear window. Not available with power-sliding rear window.	○	○	○	●	●
FLOOR COVERING Rubberized vinyl	●	○	○	–	–
REARVIEW MIRROR With manual day/night adjustment	●	●	●	–	–
Auto-dimming. Standard on SLE 3500HD models.	–	–	○	●	●
SUNROOF Power with express-open. Includes Universal Home Remote. Crew Cab models only.	–	–	–	○	○
WINDOWS Power with driver express-down. SLT and Denali models include front passenger express-down.	–	●	●	●	●
Rear access-door, power. Requires Extended Cab models.	–	–	●	●	–
Rear, power-sliding. Not available on Regular Cab models or with rear window defogger	–	–	○	○	○

[1]Go to gm.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [2]When properly equipped, includes weight of vehicle, passengers, cargo and equipment. [3]Always use a safety belt and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active front air bag. See your Vehicle Owner's Manual and child safety seat instructions for more safety information.

TRIM LEVELS	WT	SLE	SLT	DENALI
OPTION PACKAGES - SIERRA 1500				
WORK TRUCK PREFERRED PACKAGE Includes power door locks, remote keyless entry, EZ-Lift locking tailgate and Solar-Ray dark-tinted glass. Requires Regular or Extended Cab models.	○	–	–	–	–
WORK TRUCK PLUS PACKAGE Includes 17" chrome-styled steel wheels, chrome surround grille and fog lamps. Requires 1500 Regular or Extended Cab models. On 2WD models, also includes front frame-mounted recovery hooks.	○	–	–	–	–
SLE CONVENIENCE PACKAGE Includes power-adjustable pedals, Universal Home Remote, remote vehicle starter system, Ultrasonic Rear Parking Assist and rear-window defogger. Requires Extended or Crew Cab models.	–	–	○	–	–
SLE PREFERRED PACKAGE (REGULAR CAB) Includes remote vehicle starter system, steering-wheel-mounted controls, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps, EZ-Lift locking tailgate and 17" polished aluminum wheels.	–	–	○	–	–
SLE PREFERRED PACKAGE (EXTENDED OR CREW CAB) Includes steering-wheel-mounted controls, dual-zone automatic air conditioning, 8-way power driver seat adjuster, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate.	–	–	○	–	–
SLE WHITE DIAMOND EDITION (CREW CAB ONLY) Includes White Diamond Tricoat exterior color, factory-installed chrome mirror caps and door handles (except tailgate) and bodyside moldings with chrome accent. Not available with outside heated power-adjustable vertical bumper mirrors. Body-Color All-Terrain Package, Chrome Essentials Package or All-Terrain Package.	–	–	○	–	–
SLT WHITE DIAMOND EDITION (CREW CAB ONLY) Includes White Diamond Tricoat exterior color, High-Performance Suspension Package, 20" chrome-clad aluminum wheels (SBG),[2] chrome recovery hooks, highly polished exhaust tip, factory-installed chrome mirror caps and door handles (except tailgate) and bodyside moldings with chrome accent. Not available with outside heated power-adjustable vertical bumper mirrors, Z71 Off-Road Suspension Package, Max Trailering Package, Body-Color All-Terrain Package, Chrome Essentials Package or All-Terrain Package.	–	–	–	○	–
ALL-TERRAIN PACKAGE Includes: Z71 Off-Road Suspension Package, Heavy-Duty Trailering Package, inside rearview auto-dimming mirror, 18" x 8" chrome-clad aluminum wheels, P265/65R18 on-/off-road blackwall tires, outside heated power-adjustable power-folding body-colored mirrors, fog lamps, Rancho® brand shocks, body-colored side moldings with chrome accents, unique 4-bar horizontal grille insert with chrome surround, "All-Terrain" badging on the front fenders, carpeted floor mats with embroidered "All-Terrain" logo, unique sill plates, unique instrument cluster with Z71 logo and mechanical brushed aluminum accents for instrument panel, center console and switch trim plates. Requires Extended or Crew Cab models.	–	–	○	○	–
BODY-COLOR ALL-TERRAIN PACKAGE Includes All-Terrain Package content, plus body-color 4-bar horizontal grille and surround, body-color door handles, mirror caps, front and rear painted bumpers and 20" chrome-clad aluminum wheels (SBG).[2] Requires Extended or Crew Cab models.	–	–	○	○	–
CHROME ESSENTIALS PACKAGE Includes 6" chromed tubular oval assist steps, polished exhaust tip, chrome recovery hooks, chrome door handles and mirror caps and 18" chrome-clad aluminum wheels. Not available on Long Box Extended Cab models.	–	–	○	○	–
OPTION PACKAGES - SIERRA 2500HD/3500HD					
WORK TRUCK PREFERRED PACKAGE Includes Solar-Ray deep-tinted glass and fog lamps. On 2500HD models, includes 17" chrome-clad steel wheels.	○	–	–	–	–
SLE PREFERRED PACKAGE (REGULAR CAB) Includes remote vehicle starter system, steering-wheel-mounted controls, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate.	–	–	○	–	–
SLE PREFERRED PACKAGE (EXTENDED OR CREW CAB) Includes steering-wheel-mounted controls, dual-zone automatic air conditioning, 8-way power driver seat adjuster, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate.	–	–	○	–	–
SLE PREMIUM PACKAGE (EXTENDED OR CREW CAB) Includes: 20" forged polished aluminum wheels, outside heated power-adjustable vertical bumper mirrors, heavy-duty trailering equipment, heavy-duty automatic locking rear differential, dual-zone automatic air conditioning, Bluetooth[1] for your cell phone, steering-wheel-mounted audio controls, AM/FM stereo with CD player and MP3 playback, driver 8-way power seat adjuster, front fog lamps, EZ-Lift locking tailgate, inside rearview auto-dimming mirror, 6" oval chromed tubular assist steps, bodyside moldings with chrome accents and chrome door handles. Not available with SLE Preferred Package.	–	–	○	–	–
SLE CONVENIENCE PACKAGE Includes power-adjustable pedals, Universal Home Remote, remote vehicle starter system, rear window defogger and Ultrasonic Rear Parking Assist.	–	–	○	–	–
SLT CONVENIENCE PACKAGE Includes Universal Home Remote, power-adjustable pedals, EZ-Lift locking tailgate, Ultrasonic Rear Parking Assist and rear wheelhouse liner (dealer installed).	–	–	–	○	–

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
ENTERTAINMENT/COMMUNICATION/NAVIGATION - ALL MODELS					
AM/FM STEREO With seek-and-scan and digital clock	●	–	–	–	–
With MP3-compatible CD player	○	●	●	–	–
With CD player and MP3 playback, USB port[3] and auxiliary input jack. On SLE models, requires SLE Preferred Package.	–	–	○	●	–
With MP3-compatible 6-disc CD player, USB port[3] and auxiliary input jack	–	–	–	○	●
With MP3-compatible CD/DVD player and USB port[3] On SLT models, requires Crew Cab model and Rear-Seat Entertainment Package. On Denali models, requires Rear-Seat Entertainment Package.	–	–	–	○	○
TOUCH-SCREEN NAVIGATION[4] With CD or DVD player and MP3 playback, color touch-screen display, enhanced HDD-based navigation with voice recognition, memory available for music storage, USB port[3] Radio Data System (RDS)[5] and camera/play room. Touch-Screen Navigation with DVD player requires Rear-Seat Entertainment Package.	–	–	–	○	○
BOSE® AUDIO PREMIUM SPEAKER SYSTEM WITH SUBWOOFER On SLE models, requires front bucket seats and SLE Preferred Package or Power Tech Package on 1500 models.	–	–	○	●	●
Centerpoint® Surround Sound System	–	–	–	–	●
REAR-SEAT ENTERTAINMENT PACKAGE Rear-seat DVD player with LCD display and 2 sets of wireless headphones. Includes rear audio controls. Requires Crew Cab models. On SLT models, includes CD/DVD player. Upgradable to CD/DVD player with navigation. On Denali models, requires CD/DVD player or CD/DVD player and HDD-based navigation.	–	–	–	○	○
SIRIUSXM SATELLITE RADIO[6] Including 3 trial months of service	○	●	●	●	●
NAVTRAFFIC[7] Including 3 trial months of service. Included and only available with Touch-Screen Navigation.[4]	–	–	–	○	○
BLUETOOTH FOR PHONE[1] Personal cell-phone connectivity to vehicle audio system allowing hands-free calling	○	○	○	●	●
ONSTAR Directions & Connections Plan,[8] 6-month subscription.	○	●	●	●	●
CONVENIENCE FEATURES - ALL MODELS					
POWER DOOR LOCKS With remote keyless entry (2 transmitters, panic button and content theft alarm). Remote keyless entry does not lock/unlock tailgate. Standard on Crew Cab models.	○	●	●	●	●
REMOTE START With remote keyless entry	–	–	○	●	●
UNIVERSAL HOME REMOTE	–	–	○	○	●
EXTERIOR STYLING AND FUNCTIONALITY - ALL MODELS					
BODYSIDE MOLDINGS Body-colored. Chrome insert on Denali models. Not available on Regular Cab DRW models.	–	●	●	●	●
BUMPERS Chrome. On Sierra 1500 WT models, includes black bumper top caps. On SL, SLE and SLT models, includes body-color bumper top caps.	●	●	●	●	–
Front, body-colored	–	–	–	–	●
Rear, chrome step-style with pad	●	●	●	●	–
Rear, body-colored step-style with pad	–	–	–	–	●
DOOR HANDLES Chrome	–	–	–	–	●
EZ-LIFT LOCKING TAILGATE	○	○	○	○	●
FRONT LICENSE PLATE BRACKET Included in all states that require a front license plate	○	○	○	○	○
GLASS Solar-Ray deep-tinted	○	●	●	●	●
GRILLE SURROUND Black. 1500 WT models only.	●	–	–	–	–
Chrome grille surround with black horizontal bars. 2500HD and 3500HD WT models only.	●	–	–	–	–
Chrome grille surround with chrome horizontal bars. On WT models, requires Work Truck Plus Package. On Denali models, includes unique chrome upper and lower.	○	●	●	●	●
LIGHTS Halogen front fog lamps. On WT and SLE models, requires Preferred Package.	○	–	○	●	●
Dual cargo area lamps	●	●	●	●	●
RECOVERY HOOKS Front, frame-mounted; standard on 1500 4WD and Denali models. Standard on HD models. Requires All-Terrain Package on 2WD 1500 models.	●	●	●	●	●
Chrome (1500 models only). Requires Chrome Essentials Package	–	–	○	○	–
SPRAY-IN BEDLINER Available on 2500HD and 3500HD Crew Cab Standard and Long Box models only. Available 4th quarter 2012. See your dealer for details.	○	–	○	○	○
TIRE CARRIER Outside spare, winch-type	●	●	●	●	●
WIPERS Variable-time front intermittent	●	●	●	●	●

KEY ● STANDARD ○ AVAILABLE – NOT AVAILABLE SRW: Single Rear Wheels DRW: Dual Rear Wheels

TRIM LEVELS	WT	SLE	SLE	SLT	DENALI
OUTSIDE MIRRORS – ALL MODELS					
Manual-folding, black (1500 and 2500HD models)	●	–	–	–	–
Heated power-adjustable, manual-folding, black (1500 and 2500HD models only)	○	●	●	–	–
Heated power-adjustable/power-folding, with integrated turn signal indicators and driver-side auto-dimming, body-color. Not available on 2500HD SLE models. On Light Duty SLE models, requires All-Terrain Package	–	–	○	●	●
VERTICAL DAMPER Manual-folding with lower convex spotter glass. Standard on 3500HD models. Available on 1500 and 2500HD models.	○	–	–	–	–
Heated, power-adjustable with integrated turn signal indicators, manual-folding/extension; black (convex glass is not heated or power adjustable). SLE 1500 and 2500HD models require inside rearview auto-dimming mirror or inside rearview auto-dimming mirror with camera display. Standard on 3500HD SLE, SLT and Denali models. Not available on Denali 1500 models	–	–	○	○	○
SAFETY					
AIR BAGS[6] Frontal, includes Passenger Sensing System. On 2500HD and 3500HD models, standard with front driver and passenger single-stage air bag	●	●	●	●	●
Head curtain, front and rear, side-impact					
1500 models	●	●	●	●	●
2500HD models	○	–	○	○	●
3500HD models (SRW only)	○	–	○	○	●
Seat-mounted, thorax and pelvis, side-impact for driver and outboard front-passenger					
1500 models	●	●	●	●	●
2500HD models	○	–	○	○	●
3500HD models (SRW only)	○	–	○	○	●
TIRE PRESSURE MONITORING SYSTEM (Does not monitor spare tire.) Standard on 3500HD models with GVWR[8] less than 10,000 lbs.	●	●	●	●	●
DAYTIME RUNNING LAMPS With automatic lamp control	●	●	●	●	●

SIERRA 1500 XFE FEATURES AND SPECIFICATIONS

Includes SLE standard content with the following changes/requirements:

ALUMINUM BLOCK Vortec 5.3L V-8 VVT Flex fuel

AUTOMATIC TRANSMISSION 6-speed with heavy-duty cooling

REAR AXLE 3.08 ratio

ALUMINUM WHEELS N96[17]

LOW ROLLING-RESISTANCE TIRES

ALUMINUM LOWER CONTROL ARMS AND SPARE WHEEL

TONNEAU COVER Soft

EXTENDED AIR DAM AND OTHER AERO IMPROVEMENTS

EATON HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL

HEAVY-DUTY TRAILERING PACKAGE

FUEL ECONOMY	
EPA-estimated mpg	15 city/20 hwy
Max. Trailering[9]	7600 lbs
Max. Payload[10]	1940 lbs
GVWR	6700 lbs
GCWR[11]	11,200 lbs

MOST SLE CREW CAB OPTIONS ARE AVAILABLE ON THE SIERRA XFE (CEP) FOR:
20" WHEELS
ALL-TERRAIN PACKAGE
MAX TRAILERING PACKAGE
Z71 OFF-ROAD SUSPENSION PACKAGE
POWER TECH EDITION

	SLE	SLE
SIERRA 1500 HYBRID MECHANICAL		
VORTEC 6.0L V-8 VVT HYBRID With Active Fuel Management, hybrid 2-mode Electronically Variable Transmission and 300-volt DC battery pack	●	●
AUXILIARY POWER MODULE To convert 300-volt battery power to 12-volt	●	●
HYBRID-SPECIFIC COOLING DESIGN Includes a separate powertrain electronics coolant circuit to keep the high-voltage hybrid content cool	●	●
COMBINATION TRANSMISSION COOLER Increases transmission cooling capacity	●	●
EATON HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL	●	●
3.08 AXLE RATIO For optimum highway fuel economy	●	●
HEAVY-DUTY TRAILERING EQUIPMENT	●	●
4-WHEEL DISC BRAKES With 4-wheel Antilock Brake System (4-ABS) and Stabilitrak	●	●
REGENERATIVE BRAKING SYSTEM Uses hybrid motors in the transmission acting as generators to decelerate the vehicle, while capturing energy for the 300-volt battery pack	●	●
ELECTRIC POWER RACK-AND-PINION STEERING For improved fuel economy and on-center feel	●	●
EXTERIOR		
EZ-LIFT LOCKING TAILGATE	●	●
18" CHROME-CLAD ALUMINUM WHEELS	●	●
MIRRORS Outside heated power-adjustable, black, manual-folding	●	–
Outside heated power-adjustable, power-folding and driver-side auto-dimming, body-color, with integrated turn signal indicators	–	●
FOG LAMPS	–	●
REAR-WINDOW DEFOGGER	–	●
POWER SUNROOF	–	○
TONNEAU COVER 1-piece soft cover	●	–
3-piece hard cover	–	●
ULTRASONIC REAR PARKING ASSIST	–	●

[1]Go to gm.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [2]Use only GM-approved tire and wheel combinations. For approved tire and wheel combinations and other important information, go to gmaccessoryzone.com or see your dealer for details. [3]Not compatible with all devices. [4]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [5]RDS functions only when a station broadcasts RDS information. [6]If you subscribe after your trial period, *subscriptions are continuous until you call SiriusXM to cancel.* See SiriusXM Customer Agreement for complete terms at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change. For more information about NavTraffic, visit siriusxm.com/navtraffic. For more information about Travel Link, visit siriusxm.com/travellink. XM satellite service is available only to those in the 48 contiguous U.S. and DC. [7]Visit siriusxm.com for details and system limitations. [8]Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active front air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information. [9]When properly equipped; includes weight of vehicle, passengers, cargo and equipment. [10]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any optional equipment necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [11]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [12]When properly equipped; includes weight of vehicle and trailer combination, including the weight of driver, passengers, fuel, optional equipment and cargo in the vehicle and trailer.

SIERRA 1500 HYBRID continued

TRIM LEVELS	3HA	3HB
INTERIOR		
40/20/40 SPLIT-BENCH FRONT SEATS Premium Cloth with manual recline with outboard head restraints and center fold-down armrest with storage	●	--
LEATHER-APPOINTED FRONT BUCKET SEATS With driver and passenger 6-way power adjusters	--	●
FOLDING REAR BENCH 3-passenger, full width	●	●
AUTO-DIMMING INSIDE REARVIEW MIRROR	--	●
POWER-ADJUSTABLE PEDALS	--	●
UNIQUE HVAC SYSTEM Features a 300-volt electric air conditioning compressor and electric heater coolant pump. Compressor and pump use no belts, operate even when engine is in Autostop and operate as needed.	●	●
SPECIALLY DESIGNED INSTRUMENTATION Features Autostop/Off indicators and economy gauge	●	●
DRIVER INFORMATION CENTER Includes messages for Hybrid System status	●	●
BOSE AUDIO AND REAR-SEAT AUDIO	--	●
TOUCH-SCREEN NAVIGATION[1] With unique hybrid power flow display	--	●
BATTERY BEAUTY COVER Provides a flat load floor and inhibits access to the battery	●	●
DUAL-ZONE AUTOMATIC AIR CONDITIONING	●	●
BLUETOOTH FOR PHONE[2]	●	●
REAR-VISION CAMERA SYSTEM	--	●
SAFETY		
AIR BAGS[3] Frontal, includes Passenger Sensing System	●	●
Head curtain, front and rear, side-impact with rollover sensor	●	●
Seat-mounted, thorax and pelvic, side-impact for driver and outboard front-passenger	●	●
DAYTIME RUNNING LAMPS With automatic lamp control	●	●
TIRE PRESSURE MONITORING SYSTEM (Does not monitor spare tire)	●	●

ENGINE SPECIFICATIONS

VORTEC 6.0L V-8 VVT HYBRID	
HP @ RPM	332 @ 5700
LB-FT TORQUE @ RPM	367 @ 4400
ACTIVE FUEL MANAGEMENT	

TRAILER RATING[4]

2WD	6500 lbs
4WD	5800 lbs

MAX. PAYLOAD RATINGS[5]

2WD	1,127 lbs
4WD	1,008 lbs

FUEL ECONOMY

2WD (EPA-est. mpg)	20 city / 23 hwy
4WD (EPA-est. mpg)	20 city / 23 hwy

SIERRA 1500 SPECIFICATIONS

ENGINES

	VORTEC 4.3L V-6 (L35)	VORTEC 4.8L V-8 VVT FlexFuel (L20)	VORTEC 5.3L V-8 VVT AFM/FlexFuel Iron Block (L83)	VORTEC 5.3L V-8 VVT AFM/FlexFuel Alum Block (L33)	VORTEC 6.2L V-8 VVT FlexFuel (L86)
CAPACITY	4.3 liters (262 cu. in.)	4.8 liters (293 cu. in.)	5.3 liters (325 cu. in.)	5.3 liters (325 cu. in.)	6.2 liters (376 cu. in.)
SAE NET HORSEPOWER @ RPM	195 @ 4600	302 @ 5600	326 @ 5200 100% gas 315 @ 5200 gasoline or gasoline-E85 mix	326 @ 5200 100% gas 315 @ 5200 gasoline or gasoline-E85 mix	403 @ 5700
SAE NET TORQUE @ RPM (LB-FT)	250 @ 2900	305 @ 4800	340 @ 4400 100% gas 335 @ 4000 gasoline or gasoline-E85 mix	340 @ 4400 100% gas 335 @ 4000 gasoline or gasoline-E85 mix	417 @ 4000
ENGINE / MODEL AVAILABILITY					
Regular Cab, Standard Box	●	○	○	--	--
Regular Cab, Long Box	●	○	○	--	--
Extended Cab, Standard Box	● (2WD)	● (4WD)	○ (2WD)	○ (4WD)	--
Extended Cab, Long Box	--	--	●	--	--
Crew Cab, Short Box	--	●	● (2WD)	○ (4WD) - ● on XFE	○
Crew Cab, Short Box (Base E)	--	--	--	--	●
FUEL ECONOMY (city/hwy/mpg)					
2WD	15/20	14/19	15/21	15/21 (15/21 XFE)	13/18
4WD	14/18	13/16	13/21	13/21	12/16

TRANSMISSIONS: 4-speed automatic with manual shift and Tow/Haul mode in conjunction 4.3L V-6 and 4.8L V-8. Electronically controlled 6-speed automatic transmission with overdrive, electronic engine speed control and Tow/Haul mode. Tow/Haul mode is also available on 5.3L V-8 and 6.2L V-8. Electronically controlled 6-speed automatic transmission with overdrive, electronic engine speed control and Tow/Haul mode.

KEY ● STANDARD ○ AVAILABLE -- NOT AVAILABLE

SIERRA 1500 SPECIFICATIONS (continued)

FRONT SUSPENSION[2]: COIL-OVER-SHOCK

FRONT AXLE CAPACITY (Short/Standard/Long Box)	2WD	4WD (Denali: AWD)
Regular Cab (lbs)	--/3300/3800	--/3800/3950
Extended Cab (lbs)	--/3800/3700	--/3950/3950
Crew Cab (lbs)	3800/--/--	3950/--/--
Crew Cab Denali (lbs)	3950/--/--	3950/--/--
FRONT SPRING CAPACITY		
Regular Cab (lbs)	--/3300/3800	--/3950/3950
Extended Cab (lbs)	--/3800/3700	--/3950/3950
Crew Cab (lbs)	3950/--/--	3950/--/--
Crew Cab Denali (lbs)	3950/--/--	3950/--/--

REAR SUSPENSION[2]: SEMI-ELLIPTICAL 5-STAGE MULTILEAF SPRINGS

REAR AXLE CAPACITY (Short/Standard/Long Box)	2WD	4WD (Denali: AWD)
Regular Cab (lbs)	--/3750/3750	--/3750/3800
Extended Cab (lbs)	--/3750/3850	--/3950/3950
Extended Cab with Max Trailering Package (lbs)	--/4000/--	--/4000/--
Crew Cab (lbs)	3950/--/--	3950/--/--
Crew Cab Denali (lbs)	4000/--/--	4000/--/--
REAR SPRING CAPACITY		
Regular Cab (lbs)	--/3750/3750	--/3750/4000
Extended Cab (lbs)	--/3750/3850	--/3950/3950
Crew Cab (lbs)	3950/--/--	3950/--/--
Crew Cab with Max Trailering Package (lbs)	4200/--/--	4200/--/--
Crew Cab Denali (lbs)	3950/--/--	3950/--/--

CARGO DIMENSIONS[5]	SHORT BOX	STANDARD BOX	LONG BOX
Cargo Volume	53.9 cu. ft.	60.7 cu. ft.	75.5 cu. ft.
Inside Width at Floor	62.4"	62.4"	62.4"
Box Length at Floor	68.3"	78.3"	97.8"

EXTERIOR DIMENSIONS	REGULAR CAB	EXTENDED CAB	CREW CAB
Height	73.6"-73.8"	73.6"-73.8"	73.7"-73.8"
Overall Length			
Short Box	--	--	230.9"
Standard Box	205.8"	230.9"	--
Long Box	224.8"	249.9"	--

WHEELBASE	REGULAR CAB	EXTENDED CAB	CREW CAB
Short Box	--	--	143.5"
Standard Box	119.0"	143.5"	--
Long Box	133.0"	157.5"	--

STANDARD TECHNICAL DATA

	All models: Power 4-wheel anti-lock braking system		
Series / Drive Type	1500/2WD	1500/4WD	DENALI 2WD/AWD
BRAKES	Front disc / rear drum	Front disc / rear drum	4-wheel disc
STEERING	Power rack-and-pinion		
FUEL TANK CAPACITY (Approx gals: Short/Standard/Long Box)	26.0/26.0/34.0	26.0/26.0/34.0	26.0
ALTERNATOR (amps)	145	145	145
GVWR[8] (Gross Vehicle Weight Rating)			
Regular Cab (lbs)	6400	6400-6600	--
Extended Cab (lbs)	6400-7000	7000-7200	--
Crew Cab (lbs)	6800-7000	7000-7200	6800-7000

MAXIMUM PAYLOAD[9]

SELECT RATINGS: All capacities in lbs	2WD/4WD		2WD	AWD (Denali: AWD)
Regular Cab Standard Box	1840/1914	Regular Cab Standard Box	8700 with 5.3L / 3.42 axle	8000 with 5.3L / 3.42 axle
Regular Cab Long Box	1804/1877	Regular Cab Long Box	10,300 with 5.3L / 3.42 axle	9800 with 5.3L / 3.42 axle
Extended Cab Standard Box	1615/1633	Extended Cab Standard Box	10,700 with 5.3L / 3.73 axle	10,400 with 5.3L / 3.73 axle
Extended Cab Long Box	1647/1663	Extended Cab Long Box	9600 with 5.3L / 3.42 axle	9300 with 5.3L / 3.42 axle
Crew Cab 1500	1664/1715	Crew Cab 1500	9600 with 5.3L / 3.42 axle	9130 with 5.3L / 3.42 axle
Crew Cab 1500 Max Trailering Package	1637/1688	Crew Cab 1500 Max Trailering Package	10,300 with 5.3L / 3.73 axle	10,400 with 5.3L / 3.73 axle
Crew Cab 1500 X-FE	1648/--	Crew Cab 1500 X-FE	7000 with 5.3L / 3.08 axle	--
Crew Cab Denali	1586/1603	Crew Cab Denali	9600 with 5.3L / 3.42 axle	9400 with 5.3L / 3.42 axle
Hybrid	1637/1688	Hybrid	8100 with 5.3L / 3.08 axle	8030 with 5.3L / 3.08 axle

MAXIMUM CONVENTIONAL TRAILERING[4]

SIERRA GAS RATINGS AND PLOW WEIGHTS

FRONT GROSS AXLE WEIGHT RATING (FGAWR) WITH SNOW PLOW PREP PACKAGE (4WD MODELS ONLY)

BODY	ENGINE RPO	ENGINE TYPE	1500	2500HD	3500HD SRW	3500HD DRW
Regular Cab	L20	Gas	3950	--	--	--
	LM8	Gas	3950	--	--	--
	L96	Gas	--	5000	5000	5000
	LML	Diesel	--	6000	6000	6000
Extended Cab Standard Box	L96	Gas	--	5000	--	--
	LML	Diesel	--	6000	--	--
Extended Cab Long Box	L96	Gas	--	5000	5000	5000
	LML	Diesel	--	6000	6000	6000
Crew Cab Standard Box (includes Denali)	L96	Gas	--	5200	5500	--
	LML	Diesel	--	6000	6000	--
Crew Cab Long Box (includes Denali)	L96	Gas	--	5000	5000	5000
	LML	Diesel	--	6000	6000	6000

MAXIMUM PLOW WEIGHTS (2WD MODELS ONLY)

BODY	ENGINE RPO	ENGINE TYPE	1500	2500HD	3500HD SRW	3500HD DRW
Regular Cab	L20	Gas	40/550[9]	--	--	--
	LM8	Gas	40/550[9]	--	--	--
	L96	Gas	--	100/855	100/1000	100/1000
	LML	Diesel	--	100/1000	100/875	100/875
Extended Cab Standard Box	L96	Gas	--	100/875	--	--
	LML	Diesel	--	100/925	--	--
Extended Cab Long Box	L96	Gas	--	100/1000	100/1000	100/950
	LML	Diesel	--	100/875	100/825	100/775
Crew Cab Standard Box (includes Denali)	L96	Gas	--	100/850	100/1000	--
	LML	Diesel	--	100/1000	100/875	--
Crew Cab Long Box (includes Denali)	L96	Gas	--	100/1000	100/1000	100/875
	LML	Diesel	--	100/855	100/775	100/700

SRW=Single Rear Wheel DRW=Dual Rear Wheel 2GV/xxx=100 lbs maximum of permanently attached snow plow mounting hardware/xxx lbs maximum of removable snow plow blade and blade hardware. Maximum plow weights based on a vehicle with average manufacturer option content, and 150 lbs each for driver and one additional front seat occupant. Additional equipment and occupants will reduce maximum plow weight. Rear compensating weight may be required to maintain front axle weight below 65% of total vehicle weight when equipped with snow plow. Consult your snow plow manufacturer for specific compensating weight recommendation.

[1]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [2]Go to gmc.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [3]Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See your vehicle Owner's Manual and child safety seat instructions for more safety information. [4]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any optional recession to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [5]Maximum payload capacity includes weight of driver, passenger, optional equipment and cargo. [6]Capacities and weight ratings are dependent on model, engine, transmission and GVWR combinations. See your GMC dealer for details. [7]Cargo and load capacity limited by weight and distribution. [8]When properly equipped, includes weight of vehicle, passengers, cargo and equipment. [9]Long box models: 475 lbs.

SIERRA HD SPECIFICATIONS

ENGINES

	VORTEC 6.0L V-8 VVT [L96]	DURAMAX DIESEL 6.6L V-8 TURBO [LML]
FUEL TYPE	Gasoline [FlexFuel]	Diesel [B20 biodiesel capable]
CAPACITY	6.0 liters [360 cu. in.]	6.6 liters [400 cu. in.]
SAE NET HORSEPOWER @ RPM	360 @ 5400 [+10,000-lb GVWR] 322 @ 4800 [-10,000-lb GVWR]	397 @ 3000
SAE NET TORQUE @ RPM [LB-FT]	380 @ 4200	765 @ 1800
TRANSMISSIONS	Electronically controlled 6-speed heavy-duty automatic transmission with overdrive, electronic engine grade braking and Tow/Haul mode	Electronically controlled Allison 1000 Series 6-speed automatic transmission with overdrive, electronic engine grade braking and Tow/Haul mode

STANDARD TECHNICAL DATA

	All models: Power 4-wheel anti-lock braking system	
Series/Drive Type	2WD	4WD
BRAKES	14" dia. 4-wheel disc	14" dia. 4-wheel disc
STEERING	Power rack-and-pinion	Power rack-and-pinion
FUEL TANK CAPACITY (Approx. gals. Standard/Long Box)	36.0	36.0
ALTERNATOR (Amps)	105	105

MAXIMUM GVWR[1] (GROSS VEHICLE WEIGHT RATING) VORTEC 6.0L V-8/DURAMAX DIESEL 6.6L V-8 TURBO

	REGULAR CAB	EXTENDED CAB	CREW CAB
2500HD			
Standard Box	-- / --	9600 / 10,000	9600 / 10,000
Long Box	9,000 / 9600	9600 / 10,000	9600 / 10,000
3500HD			
SRW	10,700 / 11,400	11,000 / 11,600	11,000 / 11,600
DRW	13,400 / 15,025	13,025 / 15,025	13,025 / 15,025

CARGO DIMENSIONS[2]

	STANDARD BOX	LONG BOX
Cargo Volume	50.7 cu. ft.	75.5 cu. ft.
Inside Width at Floor	64.46"	64.46" - 64.70"
Box Length at Floor	78.8"	97.88"

EXTERIOR DIMENSIONS

	REGULAR CAB	EXTENDED CAB	CREW CAB
Height	77.60" - 77.60"	77.60" - 77.88"	78.10" - 78.30"
Overall Length			
Standard Box	--	230.60"	246.80"
Long Box	226.0"	248.10"	258.10"

WHEELBASE

	REGULAR CAB	EXTENDED CAB	CREW CAB
Standard Box	--	144.20"	160.70"
Long Box	133.7"	158.20"	167.70"

FRONT SUSPENSIONS[3]
INDEPENDENT TORSION BAR - 2500HD/3500HD

STANDARD FRONT AXLE CAPACITY	2WD	4WD
Regular Cab (lbs)	4400 / 4400	4400 / 4400
Extended Cab (lbs)	4400 / 4400	4400 / 4800
Crew Cab (lbs)	4400 / 4400	4800 / 4800
STANDARD FRONT SPRING CAPACITY		
Regular Cab (lbs)	4400 / 4400	4400 / 4400
Extended Cab (lbs)	4400 / 4400	4800 / 4800
Crew Cab (lbs)	4400 / 4400	4800 / 4800

REAR SUSPENSIONS[3]
SEMI-ELLIPTICAL MULTILEAF - 2500HD/3500HD-SRW/3500HD-DRW

REAR AXLE CAPACITY	2WD
Regular Cab (lbs)	6200 / 7050 / 8375
Extended Cab (lbs)	6200 / 7050 / 8375
Crew Cab (lbs)	6200 / 7050 / 8375
REAR SPRING CAPACITY	
Regular Cab (lbs)	6200 / 7050 / 8375
Extended Cab (lbs)	6200 / 7050 / 8375
Crew Cab (lbs)	6200 / 7050 / 8375
REAR AXLE CAPACITY	4WD
Regular Cab (lbs)	6200 / 7050 / 8375
Extended Cab (lbs)	6200 / 7050 / 8375
Crew Cab (lbs)	6200 / 7050 / 8375
REAR SPRING CAPACITY	
Regular Cab (lbs)	6200 / 7050 / 8375
Extended Cab (lbs)	6200 / 7050 / 8375
Crew Cab (lbs)	6200 / 7050 / 8375

[1]When properly equipped, includes weight of vehicle, passengers, cargo and equipment. [2]Cargo and load capacity limited by weight and distribution. [3]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [4]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any equipment necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. [5]Capacities and weight ratings are dependent on model, engine, transmission and GVWR combinations. See your GMC dealer for details.

SELECT RATINGS (All capacities in lbs)		MAXIMUM PAYLOAD[5]	MAXIMUM TRAILERING[4] BALL HITCH		MAXIMUM TRAILERING[4] FIFTH-WHEEL OR GOOSENECK	
			Vortec 6.0L V-8 / Duramax Diesel 6.6L V-8 Turbo		Vortec 6.0L V-8 / Duramax Diesel 6.6L V-8 Turbo	
2500HD		2WD / 4WD	2WD	4WD	2WD	4WD
Regular Cab Long Box		4210/3930	10,000 / 10,000	10,000 / 10,000	14,200 / 17,600	14,400/17,600
Extended Cab Standard Box		3475/3930	10,000 / 10,000	10,000 / 10,000	14,300 / 17,600	14,600/18,400
Extended Cab Long Box		3305/3275	10,000 / 10,000	10,000 / 10,000	14,300 / 17,400	15,000/15,700
Crew Cab Standard Box		3347/3360	10,000 / 10,000	10,000 / 10,000	14,200 / 17,400	15,000/15,900
Deluxe Crew Cab Standard Box		3369/3398	10,000 / 10,000	10,000 / 10,000	14,000 / 16,800	15,700/14,700
Crew Cab Long Box		3247/3365	10,000 / 10,000	10,000 / 10,000	14,000 / 16,700	15,000/14,700
3500HD						
Regular Cab	SRW	4815/4630	10,000 / --	10,000 / 10,000	14,000/--	14,400/17,400
	DRW	7192/6975	14,000 / --	13,000 / 16,000	14,000/--	18,000 / 23,100
Extended Cab	SRW	4458/4445	10,000 / 10,000	10,000 / 10,000	14,000 / 17,300	15,700 / 16,900
	DRW	10148/10008	10,000/10,000	10,400 / 10,000	13,700 / 22,100	13,400 / 23,100
Crew Cab	SRW Standard Box	4187/4190	10,000 / 10,000	10,000 / 10,000	14,000 / 17,300	15,700 / 17,000
	DRW Long Box	4038 / 4036	10,000 / 10,000	10,000 / 10,000	13,800 / 17,300	13,600 / 16,300
	Diesel SRW	4100/4075	10,000 / 10,000	10,000 / 10,000	13,500 / 17,300	15,000/16,300
	DRW	6245/6214	13,500 / 16,500	13,200 / 18,000	13,600 / 22,800	13,000 / 22,100
	Diesel DRW	6114/6100	10,000 / 10,000	10,000 / 10,000	13,400 / 22,000	13,100 / 22,000

IMPORTANT WORDS

COMMITMENT PLUS

From the owner orientation—and full tank of gas—you receive when you take possession of your Sierra to the **24-Hour Roadside Assistance, Courtesy Transportation** and **Travel Benefits**, Commitment Plus is a portfolio of owner privileges that lasts throughout your warranty. For expert product information, Roadside Assistance or other services, call 1-800-GMC-8782.

TRAVEL BENEFITS AND ROADSIDE ASSISTANCE Available around the clock: trip routing service, a program for reimbursement for trip interruption due to necessary warranty repairs, towing, flat tire change, jump-starts and more for 5 years or 100,000 miles (whichever comes first).

COURTESY TRANSPORTATION Available at participating dealers: shuttle service, reimbursement of certain public transportation or fuel expenses for overnight warranty repairs, and courtesy rental for overnight work repairs. See your dealer for details.

GMC OWNER CENTER A complimentary, one-stop resource to enhance your GMC ownership experience. It's easy to sign up. Just go to gm.com/gmcownercenter/gmc.

ONSTAR

OnStar is a core asset of your Sierra. Benefiting from more than a decade of innovative development, it is both a highly advanced technology—fully integrated within the vehicle—and a warm human service. Standard on all Sierra models (except WT models) are 6 months of the OnStar Directions & Connections Plan, including the convenience of available Hands-Free Calling. It also includes Automatic Crash Response, Stolen Vehicle Assistance, link to Emergency Services, Roadside Assistance, Remote Door Unlock, OnStar Vehicle Diagnostics, Crisis Assist and Remote Horn and Lights. OnStar services require vehicle electrical system (including battery), wireless service and GPS satellite signals to be available and operating for features to function properly. OnStar acts as a link to existing emergency service providers. Visit onstar.com for coverage maps, details and system limitations. Services vary with conditions.

HANDS-FREE CALLING

Available OnStar Hands-Free Calling capability is built into your Sierra. It's there when your cell phone is unavailable, its battery is low, you can't reach it easily or you left it at home or in the office. Your Hands-Free Calling system is the right choice whenever you need an easy way to make and receive calls—at the touch of the phone icon on the rearview mirror or the steering-wheel-mounted controls. Voice-activated dialing is convenient because you don't have to dial when you are at the wheel. And Hands-Free Calling is reliable because it's specially designed for better reception and fewer dropped calls in areas of limited cellular reception.

ONSTAR TURN-BY-TURN NAVIGATION

Standard on all Sierra models (except WT models) are 6 months of the OnStar Directions & Connections Plan that adds innovative, easy-to-use Turn-by-Turn Navigation plus Information and Convenience Services and Driving Directions. With Turn-by-Turn Navigation, you simply tell the OnStar Advisor your intended destination, and directions will automatically be sent to your Sierra. If you drive off course, the system can reroute you to your intended destination. An automated voice then guides you turn-by-turn until you arrive at your destination. Turn-by-Turn Navigation is further enhanced with eNAV, allowing you to send MapQuest™ directions directly to your vehicle. No need to print out directions; just call them up with simple voice commands.

SIRIUSXM SATELLITE RADIO

SiriusXM Satellite Radio[1] is standard on all Sierra models (except WT). It includes 3 trial months of service. SiriusXM Satellite Radio makes your drive come alive with commercial-free music channels from virtually every genre, artist-dedicated channels, live performances and more. Tune in to live play-by-play from the biggest sports, exclusive entertainment from top personalities, compelling talk, hilarious comedy, world-class news, local traffic and weather and family-friendly programming. Welcome to the world of satellite radio. Visit siriusxm.com for details.

GMC CERTIFIED SERVICE

Certified Service To help your Sierra live up to its performance promise, GMC Certified Service—found exclusively at your GMC dealer—is there. With all the engineering excellence in Sierra, GM-trained technicians have the expertise to care for all of it.

A NOTE ON CHILD SAFETY Always use safety belts and the correct child restraint for your child's age and size, even with air bags. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with an active frontal air bag. See the Owner's Manual and child safety seat instructions for more safety information.

ADDITIONAL NOTES

TRAILERING AND OFF-ROAD INFORMATION Please carefully review the Owner's Manual for important safety information about trailering or off-road driving in your vehicle.

IMPORTANT WORDS ABOUT THIS CATALOG We have tried to make this catalog comprehensive and factual. We reserve the right, however, to make changes at any time, without notice, in prices, colors, materials, equipment, specifications, models and availability. Specifications, dimensions, measurements, ratings and other numbers in this catalog and other printed materials provided at the dealership or affixed to vehicles are approximates based upon design and engineering drawings and prototypes and laboratory tests. Your vehicle may differ due to variations in manufacture and equipment. Since some information may have been updated since the time of printing, please check with your GMC dealer for complete details. GMC reserves the right to lengthen or shorten the model year for any product for any reason, or to start and end model years at different times.

FLEET ORDERS Some standard content may be deleted with fleet orders. See dealer for details.

ENGINES GMC products are equipped with engines produced by GM Powertrain or other suppliers to GM worldwide. The engines in GMC products may also be used in other GM makes and models.

GMC.COM See more of Sierra on our Web site, gmc.com/sierra. More photos and information; hot links to related subjects; convenient dealer location pricing guide, spec out your own vehicle. Or call 1-800-GMC-8782.

AN IMPORTANT NOTE ABOUT ALTERATIONS AND WARRANTIES Installations or alterations to the original equipment vehicle (or chassis) as distributed by General Motors are not covered by the General Motors New-Vehicle Limited Warranty. The special body company, assembler, equipment installer or upfitter is solely responsible for warranties on the body or equipment and any alterations (or any effect of the alterations) to any of the parts, components, systems or assemblies installed by GM. General Motors is not responsible for the safety or quality of design features, materials or workmanship of any alterations by such suppliers.

NEW-VEHICLE LIMITED WARRANTY All GMC light-duty vehicles come with a fully transferable, no-deductible 5-year/100,000-mile (whichever comes first) Powertrain Limited Warranty. GM vehicles registered in the U.S.A. are also covered for 3 years or 36,000 miles (whichever comes first). Coverage includes tires and towing to your nearest GMC dealership. Repairs will be made to correct any vehicle defect and most warranty repairs will be made at no charge. In addition, rust-through corrosion will be covered for 6 years or 100,000 miles (whichever comes first). See dealer for details.

ASSEMBLY GMC vehicles and their components are assembled or produced by different operating units of General Motors, its subsidiaries or suppliers to GM worldwide. We sometimes find it necessary to produce GMC vehicles with different or differently sourced components than originally scheduled. Since some options may be unavailable when your vehicle is assembled, we suggest that you verify that your vehicle includes the equipment you ordered or, if there are changes, that they are acceptable to you.

GMMOBILITY.COM (1-800-323-9935) GM Mobility offers financial assistance for eligible adaptive equipment to make automotive travel easier for persons with disabilities or special transportation needs. To learn more about special GM Mobility offers, visit gmmobility.com.

GMCARDMEMBERSERVICES.COM Did you know about the family of reward credit cards that can help you get a great deal on a new GM car, light-duty truck, SUV or crossover? With a GM reward card, you accrue earnings on every credit card purchase to use toward the purchase or lease of an eligible new GM vehicle. With three cards to choose from, you're sure to find one that suits you.

[1] If you subscribe after your trial period, *subscriptions are continuous until you call SiriusXM to cancel.* See SiriusXM Customer Agreement for complete terms at siriusxm.com. Other fees and taxes will apply. All fees and programming subject to change. For more information about NavTraffic, visit siriusxm.com/nav-traffic. For more information about Travel Link, visit siriusxm.com/travellink. XM satellite service is available only to those in the 48 contiguous USA and DC.

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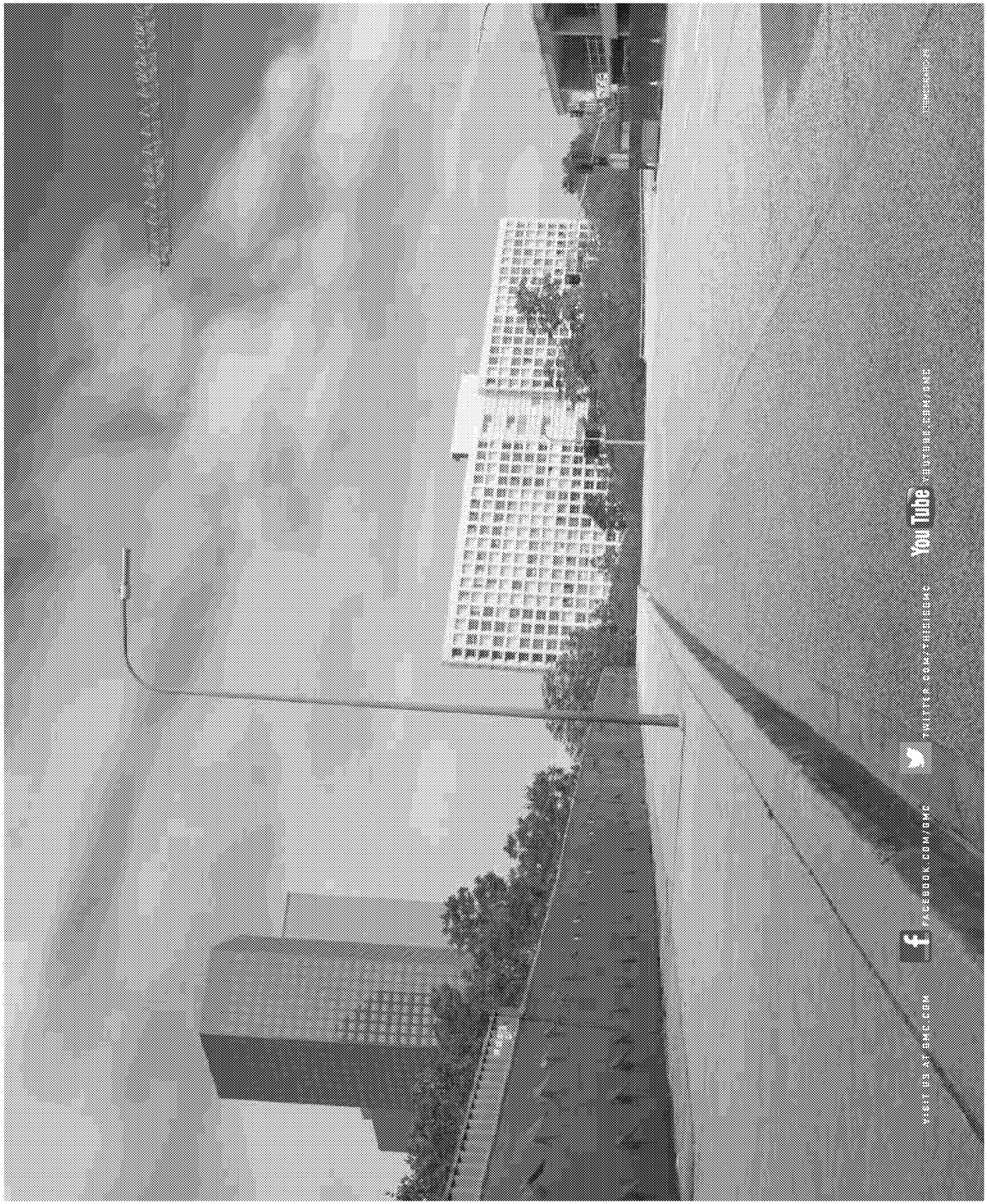
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EXHIBIT 11

2012 CATALOG
ENGINEERING A BETTER COMMUNITY

GMC SIERRA

SCULPTURE IN THE PARK | WILD HORSE SANCTUARY | HISTORIC-SHIP REBUILDING | COMMUNITY-SUPPORTED AGRICULTURE

REAL LIFE. REAL PROJECTS. Making a real difference. GMC vehicles aren't made to sit in the showroom. They're designed, engineered and built to get things done, to defy the impossible and to never say the job is over until you've overachieved. This is why GMC has joined with the people and organizations you're about to meet. People who are making a difference in their communities and effecting real change. From advancing the arts to providing safe haven to an American icon, helping a community learn the value of locally grown produce or restoring an historic treasure, GMC is proud to present these stories of what can really happen in life when you never say never.

GMC. WE ARE PROFESSIONAL GRADE.

SIERRA 2500HD CREW CAB SLT IN ONYX BLACK Sierra is engineered to keep any task under control, with Trailer Sway Control and Hill Start Assist standard on all models. (Excluding Hybrid and Dual Rear Wheel (DRW) models.)

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GMC COMMUNITY PROJECTS

SCULPTURE IN THE PARK, 2
WILD HORSE SANCTUARY, 8
HISTORIC-SHIP REBUILDING, 14
COMMUNITY-SUPPORTED AGRICULTURE, 20

Learn about the organizations and individuals GMC is partnering with who are committing their innovative spirit and uncompromising attitude to projects that make a long-lasting impact on their communities

26 - 31 PART 2

FEATURES AND THEIR BENEFITS

The what, the where and the how of professional-grade engineering. It's everything you need to know about the 2012 GMC Sierra, from its bold styling to the 23,000 lbs of maximum fifth-wheel trailering capacity.[1]

32 - 40 PART 3

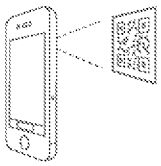
SPEC YOUR MODEL

Compare all the options, check out the accessories and customize your own 2012 GMC Sierra.

QR CODES

HOW TO SCAN A QR CODE

Use your smartphone to scan the QR codes shown throughout the catalog. After scanning the code, your smartphone will be directed to a mobile site for more information on each project. If you do not have a QR code reader, simply download a free reader through the app store on your smartphone device.



HOW TO USE THE URL IF YOU DON'T HAVE A SMARTPHONE

If you don't have a smartphone, you can still experience all the extra content by logging on to the Web and entering the Web address found next to the QR code.

[1]Based on Sierra 2500HD DRW 4WD with available 6.6L V-8 engine and fifth-wheel hitch. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any optional necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. Vehicle shown with available equipment. Offer available fourth quarter 2011.

PROJECT
SCULPTURE IN THE PARK—BROOKLYN, NY

THE ART OF ENGINEERING ART.

Sculptor Robert Lobe is a quiet man, but his vision speaks volumes. Like the nature that inspires him, Lobe believes the meaning of art can't be restrained. It can't be confined to a canvas or seen only in a museum. To Lobe, the idea of art is bigger than a gallery or an exhibition. It happens every day and it happens all around us.

So he set out to put art where the people are.

A New York-based artist, Lobe uses items like rocks and trees to shape sculptures that highlight the random beauty of life itself. Although his work has been displayed around the world, for his latest series, "Nature in Nature," he wanted to bring it a little closer to home, namely Brooklyn's own Prospect Park. But how do you move half-ton sculptures from a studio in New Jersey to the heart of New York City? You start by never saying never. With GMC's help, Lobe had the power to haul his three half-ton sculptures to the site, the capability to navigate works of art through the hustle of the city and the bold thinking to see the project through to completion.

BUT WHAT CAN THE IDEA OF PUBLIC ART SAY ABOUT THE THINKING BEHIND THE GMC SIERRA?

It says that true inspiration will always make an impact, and great ideas should never be confined by convention. Which is why Sierra HD offers something no other competitor can: a best-in-class 1-ton maximum fifth-wheel trailer weight rating of up to 23,000 lbs.[1]

It says that compromise should never have a place in art or engineering. Which is why Sierra HD offers the only available fully automatic locking rear differential in its class. And it makes it all the more obvious that with professional grade, even everyday life can be like a work of art. **GMC SIERRA.**

FOR MORE OF THE STORY, SCAN THE QR CODE WITH YOUR SMARTPHONE OR VISIT GMC.COM/SIERRA_SCULPTURE

SIERRA 3500 DENALI HD DRW, FOLLOWED BY SIERRA 2500 DENALI HD, BOTH IN ONYX BLACK The widest selection of V-8 power and up to 23,000 lbs of fifth-wheel trailering capacity[1] mean no matter what job you're planning, a Sierra truck is your blueprint for success.

PART 1: SCULPTURE IN THE PARK-BROOKLYN, NY

VEHICLES SHOWN: SIERRA 3500 DENALI HD DRW AND SIERRA 2500 DENALI HD

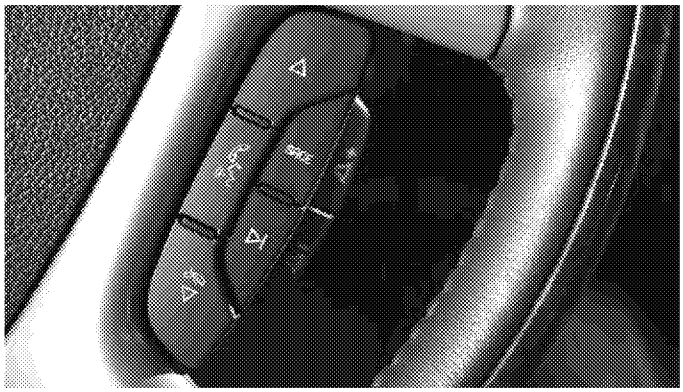
FEATURES: SEE PAGES 20-28 FOR MORE DETAILED INFORMATION ON POWERTRAIN

[1]Sierra 3500HD Regular Cab DRW 4WD with available 6.6L V-8 engine and fifth-wheel hitch. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. Vehicles shown with available equipment. Shifts available fourth quarter 2017.

↑ **SIERRA DENALI INTERIOR IN EBONY**
Sierra Denali's remarkably quiet interior adds to the premium comfort of its refined ride.

↓ Sierra Denali's standard Tow/Haul mode is easily controlled from the steering wheel gear shift, giving you more control of your power, whether you're going uphill or coming down.

↓ Sierra Denali's steering-wheel-mounted controls allow convenient access to radio volume and Bluetooth[27] phone, without taking your eyes off the road.



[27] Go to gmc.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle.

Sierra Denali keeps any trip comfortable with heated and cooled front seats that are easily controlled by a push of a button.

Perforated leather-appointed seating comes standard in Sierra Denali.

Vehicle shown with available equipment.

↑ **SIERRA DENALI, SIERRA 2500 DENALI HD AND SIERRA 3500 DENALI HD DRW, ALL IN ONYX BLACK** Sierra Denali's iconic front grille makes a striking statement wherever it goes.

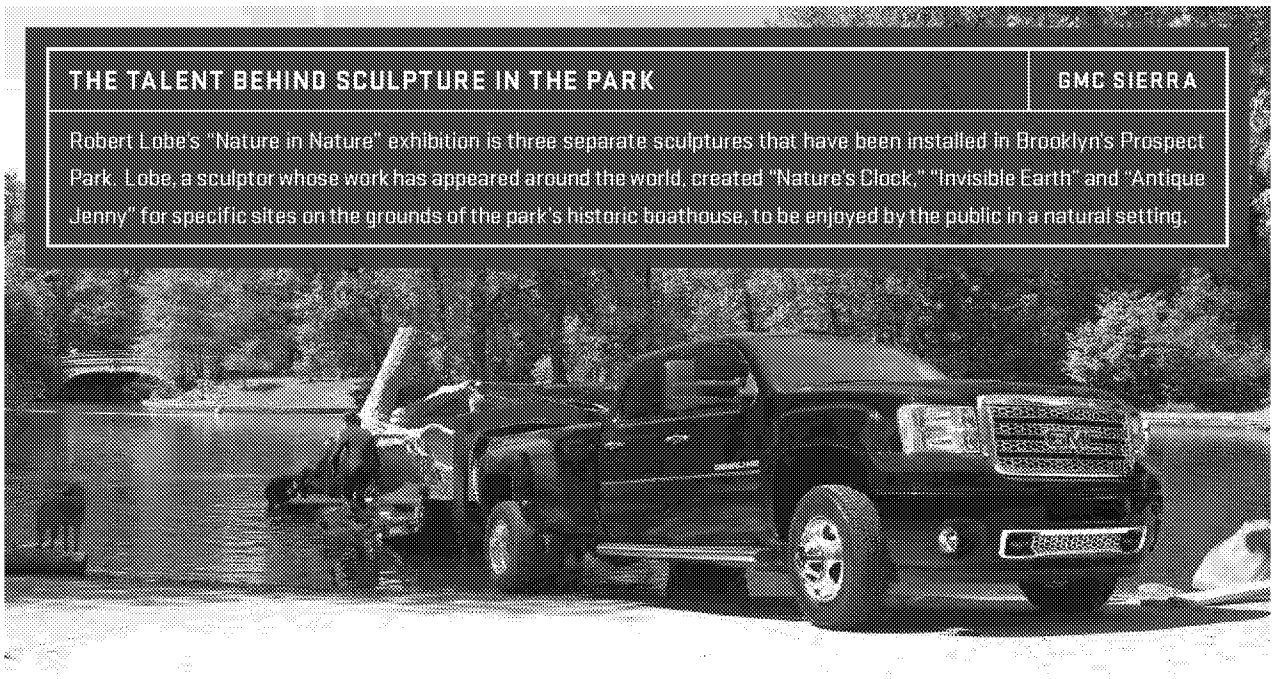
↓ Our strongest, most powerful, most capable Sierra HD pickups ever.

PART 1: SCULPTURE IN THE PARK—BROOKLYN, NY

THE TALENT BEHIND SCULPTURE IN THE PARK

GMC SIERRA

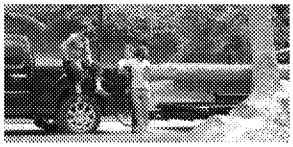
Robert Lobe's "Nature in Nature" exhibition is three separate sculptures that have been installed in Brooklyn's Prospect Park. Lobe, a sculptor whose work has appeared around the world, created "Nature's Clock," "Invisible Earth" and "Antique Jenny" for specific sites on the grounds of the park's historic boathouse, to be enjoyed by the public in a natural setting.



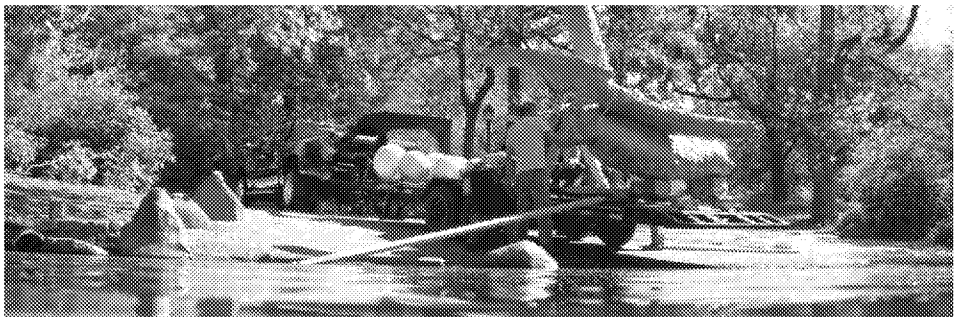
↓ Artist Robert Lobe.
↓↓ Assistants wait for final instructions.

↓ Lobe makes a final inspection before transporting "Invisible Earth" to Brooklyn.

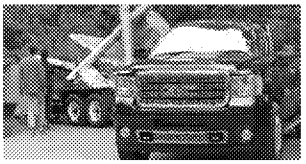
↑ "Invisible Earth" begins its move into place in the Lullwater around the boathouse.



↓ The team guides the trailer containing "Invisible Earth" into the water.



↓ Three Sierra Denalis were used to transport the sculptures to the park.



To join the conversation about these projects, or to learn how people are making a difference, visit facebook.com/gmc and look for "Community Projects."

Vehicles shown with available equipment.

VEHICLE SHOWN: SIERRA DENALI

FEATURES: SEE PAGE 30 FOR MORE DETAILED INFORMATION ON EXTERIOR STYLING

PROJECT
WILD HORSE SANCTUARY—LOMPOC, CA

THE BIGGEST JOBS DEMAND BOLDER THINKING.

There's an American symbol that's about to disappear.

After years of eroding habitat and destructive policies, the wild horses of the western landscape are rapidly fading away. But nestled in California's Jalama Valley is a place that refuses to let that happen. It's a place that never says never.

The Return to Freedom Sanctuary has rescued over 1000 wild horses and burros, preserving entire herd groups. The animals have room to roam and run free, and genetic bloodlines are kept intact. With GMC's help, Return to Freedom was able to complete much needed maintenance and improvements to the ranch's land and infrastructure, providing a safer and more secure environment and helping advance the mission of the sanctuary itself: to protect the freedom, diversity and habitat of America's wild horses for generations to come.

IT'S A BIG JOB. BUT THEY KNOW THEY'RE UP FOR THE CHALLENGE. GMC SIERRA WAS BUILT WITH THAT SAME CONFIDENCE.

Designed to see big challenges as bigger opportunities, Sierra was engineered to exceed. Heavy-duty trailering equipment, chrome-clad 18-inch aluminum wheels and distinctive badging set Sierra All-Terrain apart from the rest. The famed Z71 Off-Road Suspension, Rancho Tenneco shocks and an Eaton® automatic locking rear differential mean no matter how far away the job takes you, you're bound to make it back.

Sierra Heavy Duty was built on the strongest HD pickup frame GMC has ever constructed. With an available Duramax Diesel engine that produces 397 hp and 765 lb-ft of torque, it makes it the most powerful GMC HD pickup ever. It's what gives you the confidence to know you can carry the weight, the self-reliance that comes from shouldering the load and is the difference between just driving a truck and commanding a Heavy Duty. **GMC SIERRA.**

FOR MORE OF THE STORY, SCAN THE QR CODE WITH YOUR SMARTPHONE OR VISIT GMC.COM/SIERRA.SANCTUARY

SIERRA ALL-TERRAIN IN QUICKSILVER METALLIC
A four-bar horizontal chrome grille, chrome-accented molding and bold All-Terrain badging set this Sierra apart from the rest.

Vehicle shown with available equipment.

PART 1: WILD HORSE SANCTUARY–LOMPOC, CA

VEHICLE SHOWN: SIERRA ALL-TERRAIN

FEATURES: SEE PAGE 34 FOR MORE DETAILED INFORMATION ON SIERRA ALL-TERRAIN

↑ **SIERRA BODY-COLOR ALL-TERRAIN IN SUMMIT WHITE** Sierra's Body-Color Package with its 20" chrome-clad wheels[1] give this All-Terrain a unique presence, on the road and off.

↓ An available two-toned interior, unique sill plates and brushed aluminum accents are just a few of the highlights of the All-Terrain's interior.

[1]Use only GM-approved tire and wheel combinations. For approved tire and wheel combinations and other important information, go to gmvcoassociatezone.com or see your dealer for details.

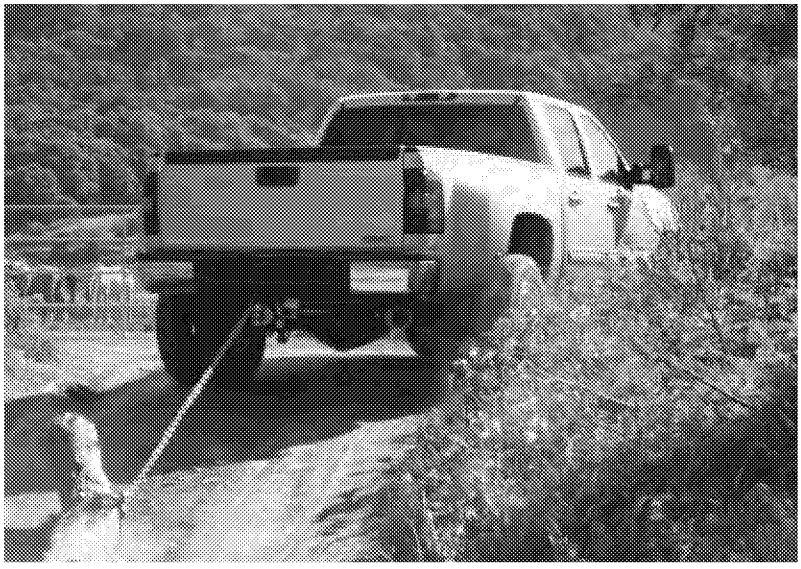
Sierra's All-Terrain Packages are available on ½-ton 2WD or 4WD Extended or Crew Cab models with either the 5.3L V-8 VVT or 6.2L V-8 VVT and the legendary Z71 Off-Road Suspension.

Vehicles shown with available equipment.

↑ **SIERRA 3500HD CREW CAB SLT DRW IN QUICKSILVER METALLIC** For maximum strength, Sierra HD's fully boxed frame features high-strength alloy steel to resist sagging and bending, giving it the strongest frame we've ever built into an HD pickup.

↓ Sierra is up for the challenge of hauling more in every load, with select models offering up to 7216 lbs of maximum payload capacity.[1]

↓ The Sierra HD lineup offers up to 23,000 lbs maximum fifth-wheel trailering[2] and a best-in-class weight carrying hitch capability of up to 18,000 lbs,[3] so it's ready, willing and capable to take on any task.

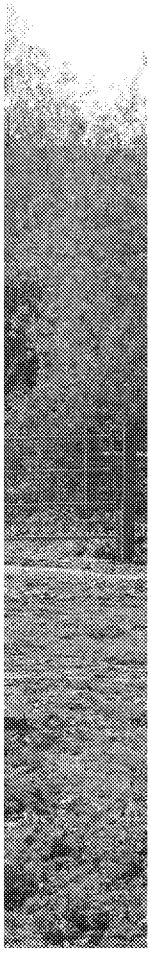


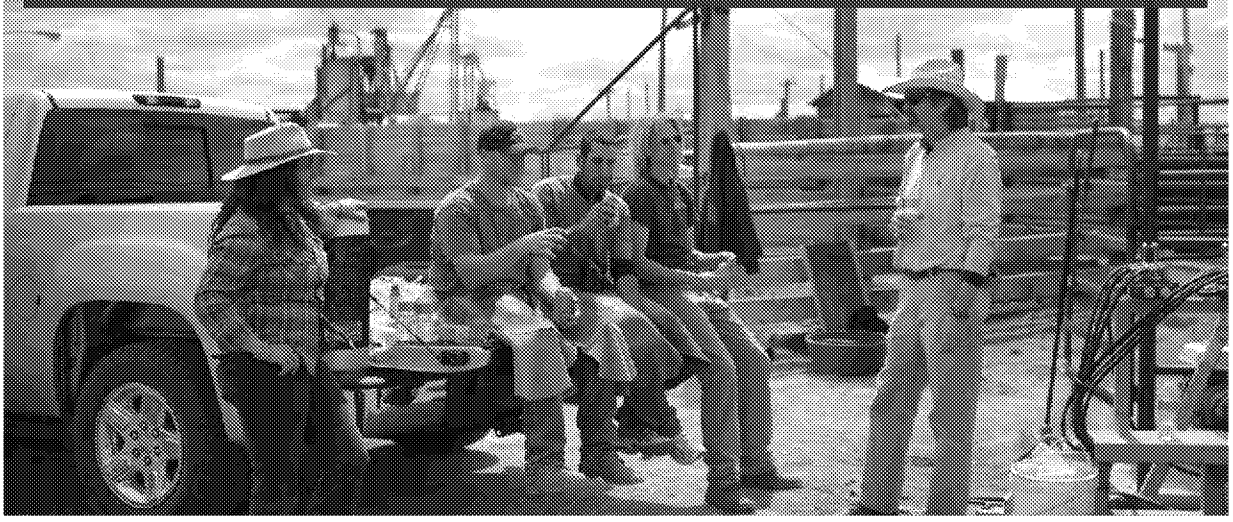
[1]Sierra 3500HD Regular Cab DRW with 6.6L V-8 engine. Maximum payload capacity includes weight of driver, passengers, optional equipment and range. [2]Sierra 3500HD Regular Cab DRW 4WD with available 6.6L V-8 engine. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [3]Capacity available fourth quarter 2011. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.

THE STORY BEHIND RETURN TO FREEDOM

GMC SIERRA

Return to Freedom is a nonprofit wild horse sanctuary founded in 1997 by Neda DeMayo. The realization of her life-long dream, the sanctuary's mission is to protect the freedom, diversity and natural lifestyle of America's free-range wild horses, becoming the first sanctuary to focus on rescuing entire family bands of wild horses.

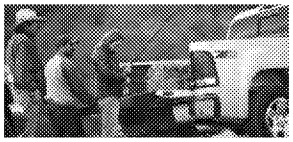




↓ Loading supplies for fence repair.

↓↓ Unloading hay for the morning feed.

↑ Neda DeMayo, Founder of Return to Freedom; Aaron Thayne, natural hoof care practitioner; Albert Villasevil Florensa, Veterinarian; Daniel Reader, Association for the Advancement of Natural Horse Care Practices – Apprentice and Peter Wright, Return to Freedom Ranch Manager, planning the next round of vaccinations and hoof trimming at the wild horse holding facility in Fallon, NV.



↓ Albert Villasevil Florensa (left) and Aaron Thayne trimming hooves at the Fallon Cattle and Feed facility in Fallon, NV.

↓ Neda Demayo and her parents, William and Stella, next to an authentic 1968 GMC Model 101.

↓ One of the natural herd groups successfully rescued by the sanctuary.

To join the conversation about these projects, or to learn how people are making a difference, visit facebook.com/gmc and look for "Community Projects."

Vehicles shown with available equipment.

FEATURES: SEE PAGE 36 FOR MORE DETAILED INFORMATION ON SIERRA HEAVY DUTY SPECIFICATIONS

PROJECT
HISTORIC-SHIP REBUILDING – ALBANY, NY

CRAFTSMANSHIP COUNTS. IN THE 17TH CENTURY OR THE 21ST.

Can you rebuild a 400-year-old Dutch sailing vessel by hand, with only the help of volunteers? You can if you never say never.

When a group of New York Capital District residents wanted to educate people about the historic contribution the Dutch made to North America, they realized the best way to teach something is to do something. So they set out to reconstruct the Onrust (Dutch for "Restless"), the first trading ship built in America, and use it as a living and floating classroom.

Over the span of 3 years, using authentic 17th-century Dutch building techniques and a healthy dose of determined perseverance, they rebuilt the ship to its authentic 1614 specifications, and brought an important part of American history back to life.

SO WHAT DOES 17TH-CENTURY SHIPBUILDING SAY ABOUT THE ENGINEERING OF THE GMC SIERRA?

That true craftsmanship is timeless. That it's in the details where you find the difference. And no matter what the task, the biggest challenges can always be conquered if you have the right plan. That's the same attitude that's built into every Sierra. It's why Sierra offers you over 300 horsepower and 22 EPA-estimated highway miles per gallon in the same engine—V-8 fuel economy that no other competitor can beat. It's why Sierra offers advanced technology like Active Fuel Management, maximizing your engine's performance to give you power and efficiency as you need it.

And it's why it's as true today as it was back then: When you need to rely on something to keep your life on course, there is no substitute for professional-grade engineering. **GMC SIERRA.**

FOR MORE OF THE STORY, SCAN THE QR CODE WITH YOUR SMARTPHONE OR VISIT GMC.COM/SIERRA_SHIP

SIERRA 1500 CREW CAB SLT IN QUICKSILVER METALLIC
No competitor has better V-8 fuel economy than Sierra, with the XFE model offering an EPA-estimated 22 hwy mpg in addition to 315 hp.

PART 1: HISTORIC-SHIP REBUILDING-ALBANY, NY

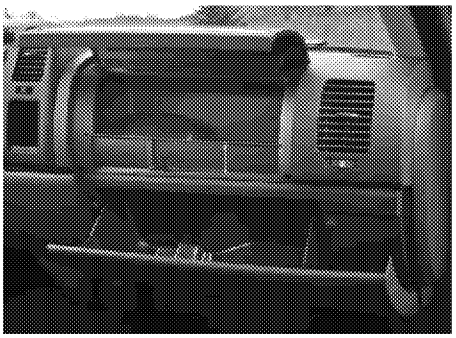
FEATURES: SEE PAGES 28-29 FOR MORE DETAILED INFORMATION ON CHASSIS AND SUSPENSION

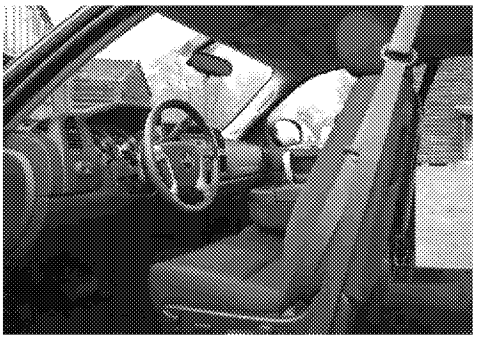
Vehicle shown with available equipment.

SIERRA 1500 CREW CAB SLT INTERIOR IN EBONY
Sierra's organized and easy-to-reach instrumentation and controls highlight the smart, driver-oriented layout of its interior.

SIERRA 1500 CREW CAB SLT INTERIOR IN EBONY
Sierra's attention to detail is evident in the leather-appointed front seats and spacious center console.

Vehicle shown with available equipment.





↑↑ **SIERRA 1500 EXTENDED CAB SLE IN FIRE RED** (also below)

↑ The available multifunctional center console offers surprising storage and convenience, plus access to a lockable storage compartment underneath with room for notebooks and electronic devices, as well as an auxiliary power outlet.

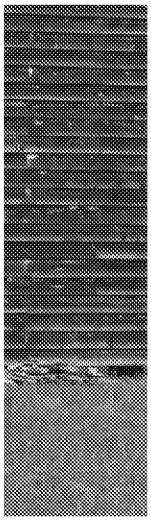
↑ The dual-level glove box provides plenty of space for a wide range of necessities, letting you organize everything for quick access and secure storage.

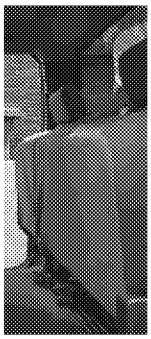
↑ **SIERRA 1500 EXTENDED CAB SLE INTERIOR IN DARK TITANIUM CLOTH** Sierra's interior is designed for optimal comfort and convenience, keeping you connected and focused on the task at hand.

THE PEOPLE BEHIND THE ONRUST PROJECT

GMC SIERRA

Contributing skills, time and hard work, over 250 volunteers came together to help reconstruct America's first Dutch trading ship, the Onrust. Utilizing recently rediscovered authentic Dutch shipbuilding techniques, the reconstruction isn't merely a replica but an actual working 17th-century Dutch ship, built the same way the original was some 400 years ago.





↓ Volunteers work to build some of the remaining pieces of the Onrust.
↓↓ Greta Wagle, Project Director of the Onrust Project.
↓↓ Don Pittner, President of the Onrust Project, straightening the sails.

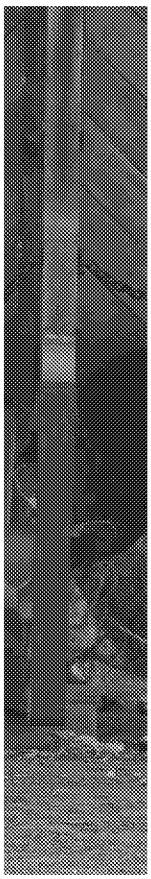
↓ The Onrust setting sail on the Hudson River, Albany, NY.

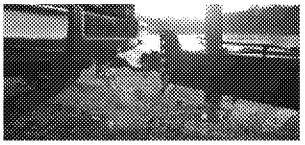
↑ Two proud vessels stand side by side as Sierra is parked in front of the Onrust.

↓ Sierra stands ready to haul some of the white oak lumber used to construct the Onrust.

↓ Woodworking materials.

↓ GMC trucks also helped trailer wood for the Onrust.





To join the conversation about these projects, or to learn how people are making a difference, visit facebook.com/gmc and look for "Community Projects."

Vehicles shown with available equipment.

FEATURES: SEE PAGES 30-31 FOR MORE DETAILED INFORMATION ON EXTERIOR AND INTERIOR

PROJECT
COMMUNITY-SUPPORTED AGRICULTURE—BRADENTON, FL

USING TECHNOLOGY TO PULL A COMMUNITY FORWARD.

In Bradenton, FL, there's a group of people with a never-say-never attitude and a bold idea for community farming: that the community is just as important as the farming. To them, the job is bigger than just growing food: it's about growing the health of the entire area. Geraldson Community Farm uses the latest sustainable growing methods to produce healthy, safe food for their members and the surrounding area, donating nearly 1000 pounds of excess food to the local food bank last year alone.

With GMC's help, the farm finished installing the cisterns for their water retention system and constructing their community barn, both projects being key steps toward accomplishing their goal of a zero carbon footprint and educating the public on the benefits of locally grown food. Using the farm as both a working classroom and library, they provide the community with the resources they need to learn the best, most efficient ways to farm for themselves.

BUT WHAT DOES COMMUNITY-SUPPORTED AGRICULTURE HAVE TO DO WITH ENGINEERING TRUCKS?

It's using technology to work more efficiently, just like the engineering behind Sierra Hybrid. America's first two-mode Hybrid on a full-size pickup, Sierra Hybrid was built to take the best of both gas and electric propulsion to provide the most efficient power in any given driving situation. With multiple fuel-saving technologies working together to make it the most advanced full-size pickup available, Sierra Hybrid gives you up to 66 percent better city fuel economy than anyone else in its class.[1] It's conservation without any compromise. It's engineering that stays ahead of tomorrow by setting the pace today. And it's what sets Sierra apart from all the rest. **GMC SIERRA.**

FOR MORE OF THE STORY, SCAN THE QR CODE WITH YOUR SMARTPHONE OR VISIT GMC.COM/SIERRA/PRODUCE

[1]Based on GM Large Pickup segment. Excludes other GM vehicles. EPA-estimated 20 city/25 hwy mpg for Sierra Hybrid

SIERRA HYBRID CREW CAB IN QUICKSILVER METALLIC
With the power of Sierra Hybrid's standard automatic locking rear differential on your side, you can be confident the job gets done, even in some of the roughest conditions.

Vehicle shown with available equipment.

SIERRA HYBRID IN QUICKSILVER METALLIC The strength of 332 horsepower combined with the efficiency of an EPA-estimated 20 city/23 hwy mpg means Sierra Hybrid truly gives you conservation without compromise.

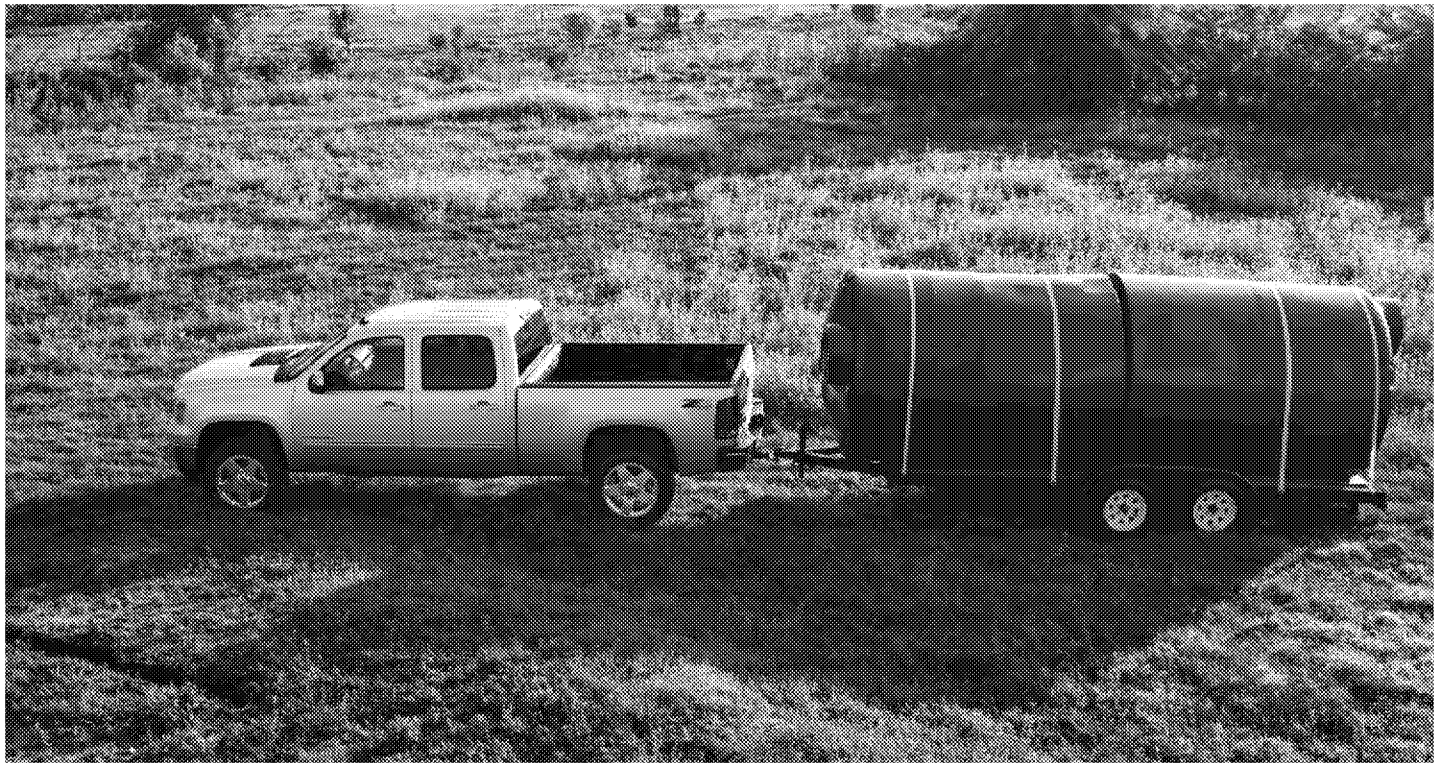
PART I: COMMUNITY-SUPPORTED AGRICULTURE-BRADENTON, FL

VEHICLE SHOWN: SIERRA HYBRID

FEATURES: SEE PAGE 27 FOR MORE DETAILED INFORMATION ON HYBRID POWERTRAIN

↑ **SIERRA CREW CAB SLT INTERIOR IN LIGHT TITANIUM** Available touch-screen navigation,[1] easy-to-read gauge cluster and durable, well-thought-out interior amenities make even the toughest jobs a little more comfortable.

↓ **SIERRA 2500HD CREW CAB SLT IN QUICKSILVER METALLIC** With up to 17,800 lbs of ¾-ton max fifth-wheel trailering,[2] hauling water cisterns is just another job for Sierra HD.



[1]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [2]Sierra 2500HD Regular Cab 2WD with available 6.6L V-8 engine and fifth-wheel hitch. Maximum trailer weight ratings are calculated assuming a base vehicle, except for any optional equipment, necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details.

THE PEOPLE BEHIND THE GERALDSON COMMUNITY FARM

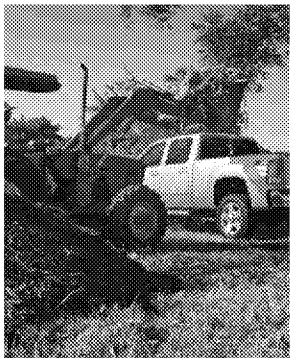
GMC SIERRA

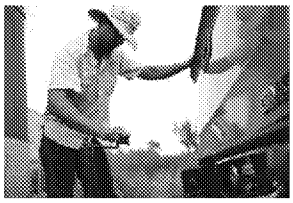
Since 2005, the Geraldson Community Farm has operated as a community-supported agriculture program, an innovative way to connect local consumers with local farmers. Paying for seeds, equipment and labor, 180 members have invested financially in the farm. Each week they come to the farm to receive a portion of that week's harvest.

↓ Farm hands load the Sierra's bed with wood chips.

↓ On the road in Bradenton, FL.

↑ Jacob Leech is the Farm Manager at Geraldson

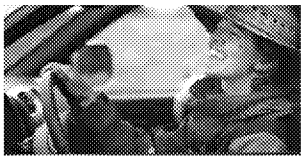




↑ Lee Clarkson, Farm Apprentice, hitches the refrigeration trailer to the Sierra.

↓ Lee Clarkson uses Sierra's capability to good advantage on the farm.

↓ Claudia Babineaux, Farm Apprentice, and with the help of Geraldson's entrepreneur program, a future farmer herself.



To join the conversation about these projects, or to learn how people are making a difference, visit facebook.com/gmc and look for "Community Projects."

Vehicles shown with available equipment.

FEATURES: SEE PAGES 37-50 FOR MORE DETAILED INFORMATION ON HEAVY DUTY SPECIFICATIONS

POWERTRAIN

1500 ENGINES

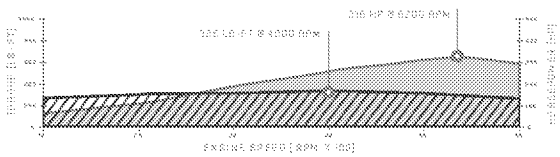
VORTEC ENGINES To give you uncompromised power and torque for confident daily driving, passing and trailering, look no further than the Vortec engine family. Each model uses innovative "vortex technology" to swirl and tumble the incoming air and fuel for optimum power and response.

Vortec 4.3L V-6 [LU3]
HORSEPOWER: 195 hp @ 4600 rpm TORQUE: 260 lb-ft @ 2800 rpm

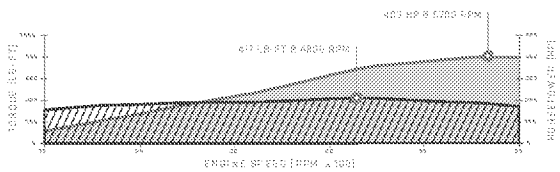
Vortec 4.8L V-8 VVT [L20]
HORSEPOWER: 302 hp @ 5600 rpm TORQUE: 305 lb-ft @ 4600 rpm
FlexFuel Capable

Vortec 5.3L V-8 VVT [L59]
HORSEPOWER: 315 hp @ 5200 rpm TORQUE: 335 lb-ft @ 4000 rpm
Active Fuel Management/FlexFuel Capable

Vortec 5.3L V-8 VVT [LC9]
HORSEPOWER: 315 hp @ 5200 rpm TORQUE: 335 lb-ft @ 4000 rpm
Active Fuel Management/FlexFuel Capable

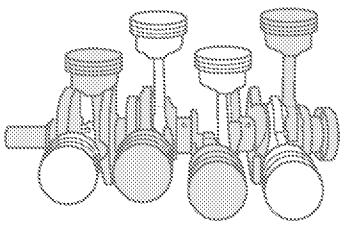


Vortec 6.2L V-8 VVT [L9H]
HORSEPOWER: 403 hp @ 5700 rpm TORQUE: 417 lb-ft @ 4300 rpm
FlexFuel Capable



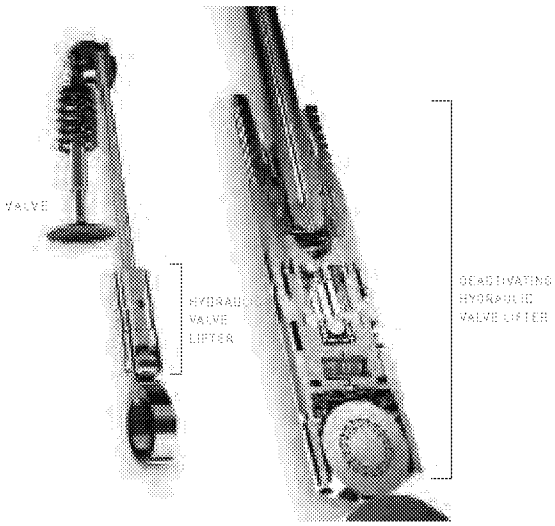
VARIABLE VALVE TIMING (VVT) For easy responsiveness in low-speed city driving and bold power for open-road passing or trailering, many Vortec engines feature VVT. It monitors and changes valve open and close points for near-peak levels of torque across the entire range of engine speeds.

ACTIVE FUEL MANAGEMENT (AFM) For maximum fuel economy when your load is light, and maximum V-8 power when it isn't, Sierra 5.3L and 6.0L V-8 engines use the advanced technology of Active Fuel Management. This available system senses load and demand then seamlessly activates or deactivates four of the engine's eight cylinders (below). In the Sierra XFE model, this technology results in best-in-class V-8 EPA-estimated highway fuel economy of 22 mpg.



One of the key components of AFM is a specially designed valve lifter (above right). Under low-load conditions, pressurization of the valve lifter's switching mechanism deactivates the cylinder. Under high-demand conditions, the switching mechanism is depressurized, reengaging the cylinder and restoring full power as you need it, without ever noticing the transition.

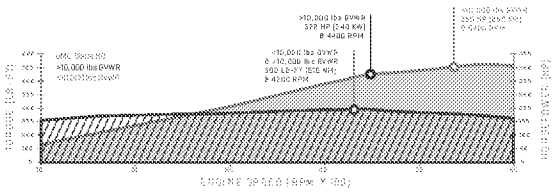
POWERTRAIN



HEAVY DUTY ENGINES

VORTEC 6.0L V-8 VVT [L96] For strong, steady power at a standstill to bold acceleration on the highway, the 6.0L V-8 is up to the task and then some. Thanks to VVT technology, the engine can dig in at low speed to move a cabin cruiser up a boat ramp without complaint. It can just as easily apply its full power for safe highway passing or offer up the muscle to conquer a steep grade.

Vortec 6.0L V-8 VVT [L96]
HORSEPOWER: 350 hp @ 5400 rpm TORQUE: 380 lb-ft @ 4200 rpm
FlexFuel Capable



E85 FLEXFUEL CAPABILITY* To give you more choices at the pump for 2012, the 6.0L V-8 [L96] is capable of running on E85 ethanol. This advanced biofuel is a mostly renewable fuel that burns cleaner than gasoline and helps to reduce the need for imported oil.

DURAMAX DIESEL 6.6L V-8 TURBO For off-the-chart horsepower and torque with off-the-map range, the choice is Duramax. With advanced diesel direct-injection technology that helps it start in as little as 3.0 seconds at -40°F and a sophisticated Allison transmission with overdrive, this available powertrain can give you a maximum highway range of up to 660 miles on a single fill-up, thanks to its extra-large 36-gallon fuel tank.

Duramax Diesel 6.6L V-8 Turbo
HORSEPOWER: 397 hp @ 3000 rpm TORQUE: 765 lb-ft @ 1800 rpm

DURAMAX B20 BIODIESEL CAPABILITY To reduce carbon-dioxide emissions and stretch your fuel budget further the Duramax 6.6L is engineered to operate on B20 biodiesel, a mixture of 20 percent biodiesel produced from domestic, renewable resources, and 80 percent petroleum diesel.

DURAMAX HIGH-PRESSURE DIRECT INJECTION For fast starts in cold weather, quieter operation and maximum efficiency, the direct injection system operates at nearly 30,000 psi to turn heavy diesel fuel into a fine mist, burning clean and fast with lower emissions and greater power than the previous model.

*Based on GM 2011 Large Pickup segment. *E85 is a blend of 85 percent ethanol and 15 percent regular gasoline. Visit gmc.com and search E85 for more information on E85 as an alternative fuel.

POWERTRAIN

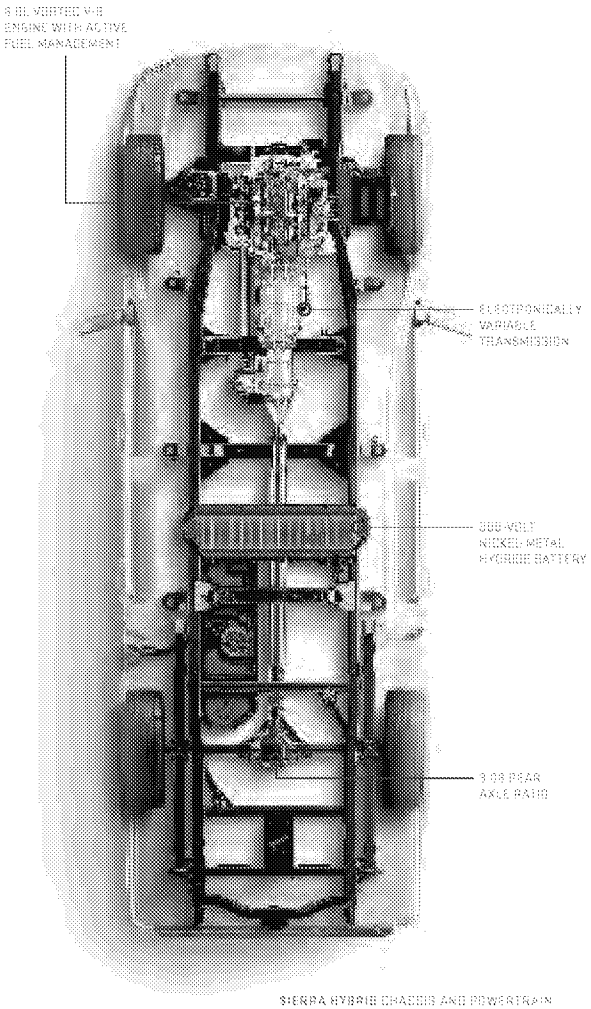
PROPULSION

HYBRID 2-MODE ELECTRONICALLY VARIABLE TRANSMISSION To conserve fuel at low speeds or under light loads, this transmission has two integral electronic motors that engage to give you smooth, effortless power. At higher loads and speeds with the 6.0L V-8 engaged, it acts as a normal automatic transmission.

HYBRID-ONLY VORTEC 6.0L V-8 VVT (LZ1) WITH ACTIVE FUEL MANAGEMENT To deliver outstanding economy with no compromise in torque or horsepower, the 6.0L V-8 VVT is engineered with Active Fuel Management technology to deactivate four of its eight cylinders under light loads and low speeds. At highway speeds, the cylinders reactivate in an instant to give you full engine power.

Vortec 6.0L V-8 VVT (LZ1) with Active Fuel Management
HORSEPOWER: 332 hp @ 5100 rpm TORQUE: 367 lb-ft @ 4100 rpm
EPA-est. mpg (city/highway): 20/23

300-VOLT NIMH BATTERY PACK Nickel-Metal Hydride battery technology can store a lot of energy in a small space. In fact, the 300-volt battery pack is strong enough to propel your Sierra for miles, yet small enough to fit under the rear seat. This leaves your cargo space and passenger capacity unchanged from other Sierras.

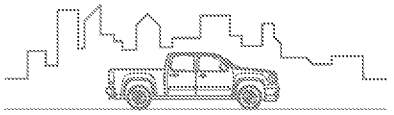


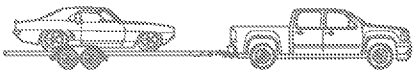
SIERRA HYBRID CHASSIS AND POWERTRAIN

POWERTRAIN

REGENERATIVE BRAKING SYSTEM During normal stops, regenerative braking uses the motors in the hybrid transmission as generators to decelerate the vehicle by applying resistance in the motors rather than brake friction. At the same time, the motors are capturing that energy as electricity in the 300-volt battery pack, electricity that is available for the next acceleration cycle.

SIERRA HYBRID EPA-ESTIMATED 23 MPG HWY





SIERRA HYBRID 6100 LBS MAX TRAILERING[1]

ALL SIERRA ENGINES

OIL LIFE MONITOR For long life and durability, nothing is more important than changing your oil at the right time. GMC engineered the mystery out of this essential service with the Oil Life Monitor. It calculates how much life your oil has left, based on when and how you drive. Then it updates you with a telltale on your Driver Information Center.

ONSTAR VEHICLE DIAGNOSTICS* The peace of mind that comes from knowing the condition of your Sierra's key systems is as easy as checking your e-mail. The OnStar Vehicle Diagnostics service that comes standard with your 6-month trial subscription to OnStar can run hundreds of checks of your engine, transmission, antilock brakes and more, then organize the information into an easy-to-read monthly report. OnStar can also run a check of your vehicle as you drive just by pressing the blue button and asking the Advisor for an On-Demand Diagnostics check. That's peace of mind when you need it.

TRACTION CONTROL SYSTEM To make the most of available traction on many road surfaces, traction control measures and compares the speed of your wheels. If it senses one or more wheels starting to spin, such as on a slippery surface, the system applies individual brakes and manages engine power to slow the wheel down and maintain traction so you can move forward with a better sense of control.

1500 TRANSMISSIONS

4-SPEED AUTOMATIC OVERDRIVE TRANSMISSION Proven in millions of Sierras, this transmission gives you smooth, almost imperceptible shifts with the strength of millions of miles of experience. It's engineered for durability and control, with Tow/Haul mode to handle maximum loads with ease.

6-SPEED AUTOMATIC OVERDRIVE TRANSMISSION Engineered for control and confidence in a wide variety of situations, the 6L80-E 6-speed automatic is an ideal partner for Vortec power. Filled with innovative technology, this transmission can help you cut steep climbs, long grades and heavy loads down to size.

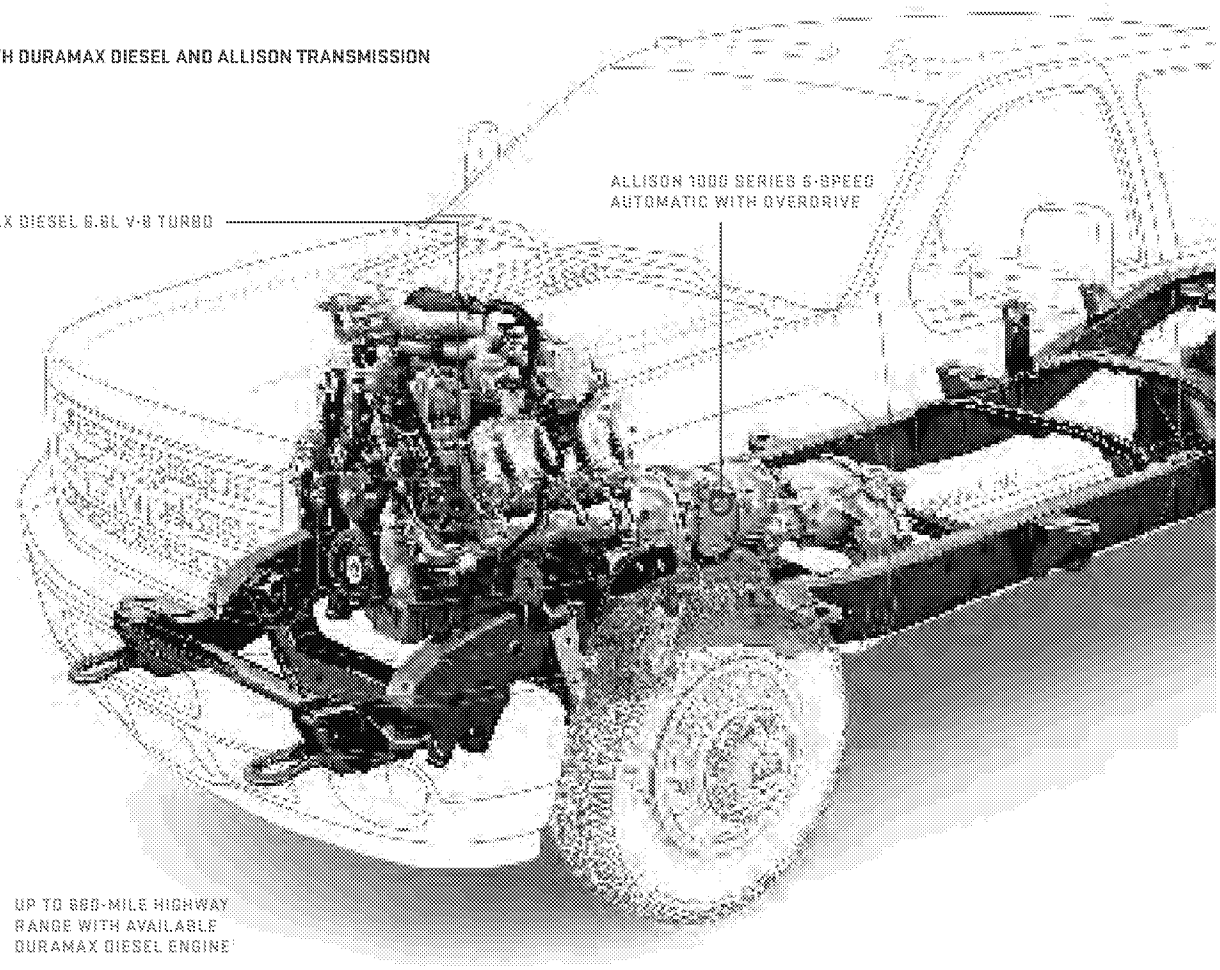
DRIVER SHIFT CONTROL Move through the gears like a manual, with the convenience of an automatic. Move the shift lever to "M," and you get fingertip "tap up/down" control of transmission gear selection, included with 6-speed automatic transmission.

HEAVY DUTY TRANSMISSION

6-SPEED AUTOMATIC WITH OVERDRIVE This transmission is a sophisticated tool that helps you use the full potential of your Sierra HD with confidence. It gives you smooth, almost imperceptible shifts at virtually every speed. It also features the confidence of Tow/Haul mode that automatically selects the best shift points for your load and road conditions, as well as Driver Shift Control and Automatic Grade Braking.

[1]Maximum trailer weight ratings are calculated assuming a base vehicle, subject to any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. *Visit onstar.com for details and system limitations.

SIERRA 3500HD WITH DURAMAX DIESEL AND ALLISON TRANSMISSION



POWERTRAIN

ALLISON 1000 SERIES 6-SPEED AUTOMATIC WITH OVERDRIVE Produced by the same company that makes transmissions for the U.S. Army M1 tank, this transmission is the exclusive partner for the available Duramax Diesel engine. It has many features that help to handle the most challenging drives with ease.

ALL SIERRA TRANSMISSIONS

AUTOMATIC GRADE BRAKING Activated in Tow/Haul mode, Grade Braking automatically senses when you want to slow your Sierra, and when the conditions are met, engages a Grade Braking shift schedule that helps you maintain your desired speed.

TOW/HAUL MODE To give you more power to accelerate, Tow/Haul mode raises transmission up-shift points. This feature also helps you slow your Sierra by raising downshift points, which helps you to use engine compression to slow your Sierra with less noise and harshness.

CHASSIS

1500 CHASSIS AND SUSPENSION

EATON® HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL No other competitor in its class offers an available fully automatic locking rear differential for on- or off-road use. When the Eaton Locker senses a difference in speed between left and right rear wheels of approximately 100 rpm, it locks to turn both rear wheels in unison for added traction.

CHASSIS AND SUSPENSION

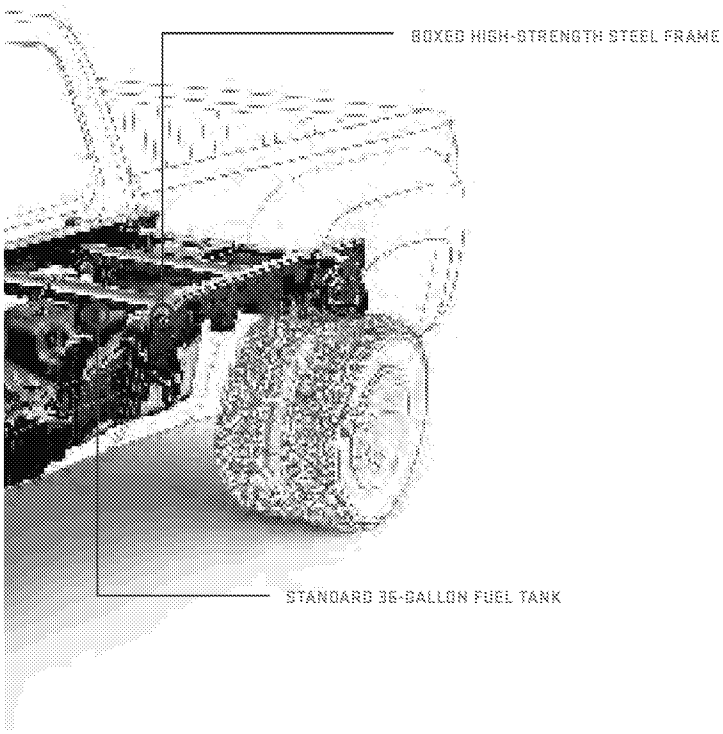
BOXED HIGH-STRENGTH STEEL FRAME For resistance to bending, twisting and shaking, the GMC Sierra has a fully boxed frame from the nose to the spare tire area. This construction technique essentially welds a frame inside a frame to create a closed "box" section that gives a strong, stable platform for the engine and cab.

FULLY INDEPENDENT FRONT SUSPENSION Our coil-over-shock front suspension delivers improved ride quality versus torsion-bar designs.

STABILITRAK STABILITY CONTROL SYSTEM The StabiliTrak stability control system helps you stay on the path you are steering in bad weather or on uneven road surfaces. The system senses when your vehicle is not responding to your steering inputs, then adjusts engine speed and braking pressure to any individual wheel to help maintain directional control.

MULTILEAF REAR SPRINGS For big capacity when you need it and a smoother ride when you don't, Sierra's multileaf rear springs engage progressively as the load in the bed or on the hitch increases.

[1]Based on GM testing.

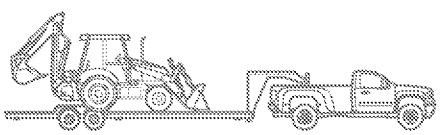


CHASSIS AND SUSPENSION

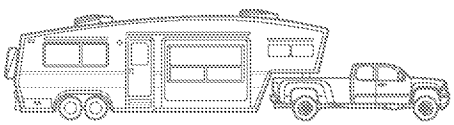
HEAVY DUTY CHASSIS AND SUSPENSION

FULLY BOXED HIGH-STRENGTH STEEL FRAME Not just a beefed-up light-duty frame, the Sierra HD frame is specifically engineered for HD use. Crafted from high-strength steel, the HD frame is fully boxed along its entire length, with fully welded (not riveted) brackets and cross-members. Tubular cross-members are through-rail welded for significantly added strength and resistance to twisting over rough or uneven surfaces.

FIFTH-WHEEL FRAME MOUNT PROVISIONS Easier, faster installation of fifth-wheel and gooseneck hitches is possible because GMC engineers planned it that way. They added prepierced access holes to preserve frame integrity as well as a pair of extra cross-members for added strength in the hitch-mount location.



2500HD 4WD REG. CAB, DURAMAX 23,000 LBS (MAX) TRAILERING CAPACITY*



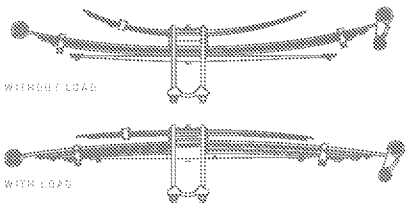
3500HD 2WD EXT. CAB, DURAMAX 22,100 LBS (MAX) TRAILERING CAPACITY*

3500HD 4WD CREW CAB, DURAMAX 22,800 LBS (MAX) TRAILERING CAPACITY*

CHASSIS AND SUSPENSION

INDEPENDENT FRONT SUSPENSION For ride comfort with no sacrifice to strength, Sierra HDs have an independent front suspension designed specifically for the constant punishment of HD use. With an available unsurpassed pickup Gross Front Axle Rating of up to 6000 lbs,[1] this torsion-bar suspension design allows you to make seasonal ride-height adjustments in minutes, with a single wrench.

MULTI-STAGE REAR LEAF SPRINGS The more load your HD takes, the more its springs step up to the challenge. Rear leaf springs are 3 inches wide—two-stage for 2500HD models and three-stage for 3500HD models.



TORSION BAR DESIGN Pioneered for pickups by GMC over half a century ago, the torsion bar is designed to support different front axle loads and to retain proper trim height.

CONTROL AND RESPONSE

1500 BRAKING

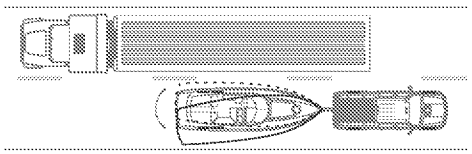
ANTILOCK BRAKING SYSTEM (ABS) For confident stops in a variety of conditions, every Sierra features four-channel antilock brakes. When the brakes are applied, ABS can detect impending wheel lock-up and then pulse that wheel's brake to prevent it. The system can activate any combination of vehicle brakes to maintain control.

HILL START ASSIST To help you hold your place when parked on a hill, Hill Start Assist senses potential "roll-back" and then holds full brake pressure when you lift your foot from the pedal. It gives you up to 1.5 extra seconds to apply power and drive off. (Not available on Hybrid or DRW models.)

INTELLIGENT BRAKE ASSIST In an abrupt stop, milliseconds can be your margin of safety. That's why Sierra's Intelligent Brake Assist senses when you are making an emergency stop, then automatically applies full braking force before your foot can press the pedal all the way. (Not available on DRW models.)

TRAILER BRAKE CONTROLLER For fingertip control and easy monitoring of your trailer brakes, Sierra offers an integrated trailer brake controller. It is located close to the steering wheel for easy adjustments and displays the level of brake force or "gain" in the Driver Information Center.

TRAILER SWAY CONTROL Keep both you and your trailer heading in the proper direction, automatically. This system uses StabiliTrak sensors to detect the rocking of a swaying trailer, and then applies the vehicle's brakes to bring it back in line. The only thing you feel is the confidence. (Not available on Hybrid or DRW models.)



1500 STEERING

POWER RACK-AND-PINION STEERING Provides a positive on-center feel at highway speeds, as well as extra low-speed assist for maneuvering in tight spaces.

*Maximum trailer weight ratings are calculated assuming a base vehicle, except for any optional necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [1]Capacities and weight ratings are dependent upon model, engine, transmission and GVWR combinations. See your GMC dealer for details.

FEATURES AND THEIR BENEFITS (CONTINUED)

CONTROL AND RESPONSE

HEAVY DUTY STEERING

POWER STEERING Sierra HD models feature recirculating ball power steering. The high-capacity power steering pump and large reservoir help to give a constant level of assist, even when operating at the maximum weight.

HEAVY DUTY BRAKING

DIESEL EXHAUST BRAKE To let you engage an extra measure of braking confidence on long grades, the diesel exhaust brake, included with the available Duramax Diesel engine, uses engine compression to create "negative torque" to help slow the vehicle. It is factory installed and calibrated to work with the rest of your Sierra HD's braking system.

POWER FOUR-WHEEL DISC BRAKES The most powerful HD we've ever produced demanded the most powerful brakes we've ever developed for an HD pickup. They measure a generous 14" in diameter and utilize twin piston calipers.

EXTERIOR

STYLING AND FUNCTIONALITY

ASSIST STEPS Gain a more secure foothold for easier entry. GMC Sierra pickups are available with sturdy rust-resistant assist steps. They are available in chrome or powder black finishes.

HEATED POWER RETRACTABLE MIRRORS These available mirrors are heated to remove snow, frost and fogging, and feature integrated turn indicators that signal your intentions to other drivers. The driver's side mirror dims automatically to deflect glare away from your line of sight. Both mirrors fold back for extra clearance in close parking situations or to help prevent damage in automatic car washes.

VERTICAL CAMPER-STYLE MIRRORS Available manual-folding mirrors (standard on 3500HD models) come with a lower convex spotter glass for wider visibility. Available heated, power-adjustable mirrors feature integrated turn signal indicators and manually fold or extend out from the vehicle. The lower convex mirror is not heated.

INTERIOR

COMFORT AND CONVENIENCE

BLUETOOTH®[1] FOR PHONE Extend your capabilities just by activating the available Bluetooth feature on your phone or portable device. This lets your Bluetooth device work through the controls and features already installed in your Sierra, including hands-free operation and dialing.

CLIMATE CONTROL All Sierra models are equipped with air conditioning. SLT and Denali models have automatic dual-zone climate controls with individual settings for the driver and right-front passenger.

DRIVER INFORMATION CENTER Staying in touch with the most important vehicle information is as easy as pressing a button. The Driver Information Center includes the odometer and trip odometers, as well as a message center that keeps you informed about vital vehicle functions and driving conditions. SLE, SLT and Denali include a compass and outside temperature indicator.

HEATED FRONT SEATS Feel warmer faster in cold weather. These available seats allow you to select from three heat settings.

HEATED AND COOLED FRONT SEATS The ultimate in all-weather comfort, these seats are appointed in a perforated leather that allows the cooling feature to circulate air between you and the seat surface. They are standard on Denali and available on SLT models.

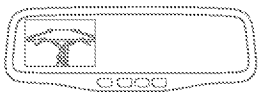
POWER-ADJUSTABLE PEDALS To help drivers of varying sizes sit at a comfortable distance from the steering wheel, adjustable pedals with memory are available in SLT and SLE models, and are standard in Denali.

POWER FRONT SEATING Get comfortable more easily with power-adjustable front seats. Power driver seat adjustment is available for 40/20/40 seating with select equipment packages, and power driver and passenger seats are included with all bucket seats in SLE (6-way), SLT (10-way) and Denali (12-way).

REMOTE VEHICLE START This available feature lets you start your vehicle from up to 195 feet away. Your Sierra will run for up to 10 minutes. If equipped with the automatic climate control system, it will default to heating or cooling mode based on the outside temperature.

INTERIOR

REAR-VISION CAMERA SYSTEM Make it easier to back up to a trailer or negotiate a tight space. This available system places a monitor in your rearview mirror (or navigation screen, if equipped) to display a view of the area behind the vehicle. The rear-vision camera does not replace driver vision. Please use proper care when backing up.



STEERING-WHEEL-MOUNTED RADIO CONTROLS Play your audio system with your fingertips, while you keep your eyes on the road. These available fingertip controls can also manage most music search features of compatible MP3 and iPod® players, as well as Bluetooth[1] for phone.

ULTRASONIC REAR PARKING ASSIST This available system sends out ultrasonic waves that act like rear bumper radar to alert you to the distance of objects up to 6 feet behind the vehicle. The system operates at speeds less than 5 mph. The closer you are, the faster it beeps, to give you a clear signal that can help you operate the vehicle with maximum care.

UNIVERSAL HOME REMOTE Never get locked out again. This available remote can be easily programmed to operate the majority of garage-door-opening systems, and has the benefit of never needing batteries.

ENTERTAINMENT

BOSE® AUDIO SYSTEMS Make the front seat of your Sierra sound like the front row of your favorite concert. Bose systems are engineered to give you the realism and presence of a live performance. Standard on SLT and available on SLE models. Bose Audio features steering-wheel-mounted radio controls and a premium speaker system, with a center console-mounted woofer for rich bass tones that give you a fuller listening experience.

BOSE CENTERPOINT® SOUND For the sensation of a live performance while you drive, Denali models have standard Bose Centerpoint surround-sound system with SurroundStage® signal processing. This technology, along with AudioPilot® noise compensation, wraps you in sound, delivering five independent channels from existing two-channel recordings.

DEALER-INSTALLED WI-FI[2] Connect up to 20 wireless users at one time and stay in touch with your life's vital information with the first wireless router designed just for automotive use. Ask your dealer for specific plans and prices for this available system.

MP3 PLAYBACK CAPABILITY Bring the music and entertainment you love to your Sierra just by plugging in this available playback cable. Accommodates most MP3 players and devices, including iPod® and many smartphones.

REAR-SEAT ENTERTAINMENT SYSTEM Let your rear-seat passengers enjoy the ride in your Sierra even more. Available in SLT and Denali Crew Cab models, this system includes a DVD player and 8" flip-down screen. It also comes with dual-play, which has a separate upper DVD slot in the radio to let front-seat passengers control the DVD or music playing behind them. The system is compatible with most popular video gaming systems.

SiriusXM SATELLITE RADIO[3]/NAVTRAFFIC[4] Enjoy SiriusXM Satellite Radio in your Sierra with a 3-month trial subscription to the XMPremier Package. Only SiriusXM brings you more of what you love, all in one place. Get over 130 channels, including commercial-free music, plus the best sports, news, talk, comedy and entertainment. With NavTraffic,[4] you'll get continuously updated traffic information as it occurs, right on your vehicle's available navigation system. Welcome to the world of SiriusXM. (Available on WT models.)

TOUCH-SCREEN NAVIGATION SYSTEM[5] For easy operation, the available system includes a large 7" in-dash touch-screen display, 2-D or 3-D map graphics and 3 months of NavTraffic.[4] OnStar subscribers can also use this system with OnStar Turn-by-Turn Navigation assistance. For your convenience, this screen also serves as a large, easily read monitor for the available Rear-Vision Camera System. Its sophisticated new features include pause-and-play capability for live broadcasts that works like a DVR for your vehicle, a built-in hard drive, an available XMWeather subscription and improved display resolution for enhanced visibility and viewing.

[1]Go to gmc.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [2]Security rules apply. Visit autoenthusiasts.com for coverage map and details. [3]Requires a subscription, sold separately by SiriusXM after the trial period. SiriusXM Radio service only available in the 48 contiguous United States and the District of Columbia. For more information and to view Customer Agreement, visit siriusxm.com. [4]NavTraffic requires a monthly subscription after introductory trial service, sold separately by SiriusXM. NavTraffic only available in select markets. For more information, visit siriusxm.com/navtraffic. [5]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada.

USB CONNECTIVITY[8] Make your Sierra a powerful MP3 device. Plug into the available USB port, and you can control most of your Android™-based, iPod® or MP3 music player's functions, including playlists and song selection from your convenient steering-wheel-mounted radio controls.

ONSTAR

DIRECTIONS & CONNECTIONS

DIRECTIONS & CONNECTIONS PLAN[7] Success in today's fast-moving world means finding and focusing on the information that means the most to you. To put this capability at your fingertips, Sierra comes standard with a 6-month trial subscription to the OnStar Directions & Connections Plan. (Available on WT models.)

HANDS-FREE CALLING WITH VOICE-ACTIVATED DIALING Available OnStar Hands-Free Calling is built into your Sierra. Just push a button, call out the number and you're free to keep your eyes on the road. It's reliable, because it is specially designed for better connectivity and fewer dropped calls in areas with limited cellular reception.

TURN-BY-TURN NAVIGATION Drive with more confidence and certainty. OnStar Turn-By-Turn Navigation is built into OnStar-equipped Sierra models. It's simple—all you have to do is push one button and ask the OnStar Advisor to download directions to your vehicle. Turn-By-Turn is also smart, because an automated voice calls out every turn as you need it.

ONSTAR eNAV WITH GOOGLE™ MAPS AND ONSTAR eNAV WITH MAPQUEST.COM™ Want to get a head start on a trip? Start by checking out your destination on Google Maps or mapquest.com. With OnStar eNav just click the "Send" link on the Web site, and it will be sent to your vehicle. When you're ready to head out, simply retrieve the destination and directions will be downloaded to your vehicle based on your location, with nothing to type on the screen and no maps to hold.

DESTINATION DOWNLOAD Looking for a destination in your screen-based navigation system? OnStar will do it for you. Simply press your blue OnStar button, and you will be connected with a trained Advisor who will download your directions to your Sierra's available screen-based navigation system. You can also have destinations downloaded on the go—no need to pull over to enter new addresses. It's an enhancement to navigation that makes screen-based navigation systems easier and faster to use.

VEHICLE SECURITY

STOLEN VEHICLE ASSISTANCE If your Sierra is ever stolen, OnStar can help locate it after verification with law enforcement. OnStar can use built-in GPS technology to help to locate it, prevent it from restarting with Remote Ignition Block or, if the vehicle is in use, engage the Stolen Vehicle Slowdown technology to help police recover it quickly and safely.

ROADSIDE ASSISTANCE[6] If the unexpected happens on the road—you're stranded, run out of gas or have a flat tire—one push of the OnStar button can immediately connect you to an Advisor, ready to help any hour of the day or night. OnStar can use GPS technology to pinpoint your location and connect you to a service provider. No guessing about where you are or what to do.

REMOTE DOOR UNLOCK It's happened to everyone. But there is an easy solution. If you get locked out of your Sierra, OnStar can help. After verifying your account, an OnStar Advisor can send a signal to your Sierra that usually unlocks the doors within minutes.[7]

DRIVER CONFIDENCE

AUTOMATIC CRASH RESPONSE If your Sierra is in a crash, built-in sensors can automatically send an alert to OnStar. An OnStar Advisor is immediately connected to your vehicle to help you. Even if you aren't capable of responding, the Advisor can use GPS technology to locate you and request that emergency help is sent right away.

CRISIS ASSIST During severe weather or other natural disasters, OnStar can offer assistance and help you navigate your way to safety. Just push the red OnStar emergency button and our specially trained Crisis Assist Team moves quickly to help you. OnStar can pinpoint your location and provide up-to-date information from public safety authorities, request that help be sent to you or even contact family members or loved ones.

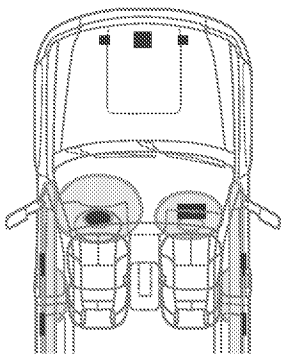
ONSTAR

EMERGENCY SERVICES If someone in the vehicle needs emergency help, the OnStar emergency button gives you a priority connection to a specially trained Advisor at any time, day or night. OnStar uses GPS technology to pinpoint your location and can request police, fire or medical support be sent right away. The Advisor can also stay with you on the line until help arrives.

ONSTAR REMOTELINK APP The OnStar RemoteLink app offers an amazing level of control and connection with your vehicle. After downloading and registering the app, GMC owners with an eligible vehicle can use their iPhone® or Android™-based mobile devices to control their vehicle from their phone and perform specific commands—like unlocking their doors—remotely.[6] You can lock/unlock your doors from any distance, start your vehicle remotely,[6] sound your horn and flash your lights to help locate your vehicle or contact an OnStar Advisor, Roadside Assistance or your preferred dealer. To learn all about all the great features available, go to onstar.com.

SAFETY

FRONTAL AIR BAGS[9] All Sierra models come with driver and front-passenger air bags. To help reduce the risk of injury to passengers, Light Duty models come standard with dual-stage frontal air bags that have sensors to gauge the severity of a crash, then determine whether to deploy one or two levels of inflation. Sierra Light Duty models also feature a Passenger Sensing System for the outboard front passenger that automatically turns off the air bag if the passenger is under the appropriate weight.



HEAD CURTAIN SIDE-IMPACT AIR BAGS[9] These air bags unfurl from the roof rail like a protective curtain for outboard passengers, and can be activated by either rollover sensors or side-impact sensors.

SEAT-MOUNTED SIDE-IMPACT AIR BAGS[9] To help protect the thorax and pelvic regions of the driver and outside front passenger in a side-impact collision, Sierra Light Duty and Heavy Duty Denali models include side-impact air bags mounted on the driver and outside front passenger seat. They are available on select Heavy Duty models.

LATCH CHILD SEAT ANCHORING SYSTEM Make it easier to properly install a child seat. LATCH stands for Lower Anchors and Top tethers for CHildren. A LATCH seat will install to specially designed retainer hooks in your Sierra with an audible "click." It also means that you can install a top tether strap that helps limit movement in a forward crash to help reduce the chance of injury.

REINFORCED STEEL SAFETY CAGE DESIGN Sierra's robust body structure is engineered to help maintain the integrity of the passenger compartment in the event of a collision. All steel from wheel to wheel, the body is designed to crush in a controlled manner in the event of a collision, absorbing the energy of a crash as much as possible.

PASS-KEY III+ THEFT DETERRENT SYSTEM Preventing unauthorized starting attempts in your Sierra comes down to a tiny chip found in your ignition key. It functions as an electronic "fingerprint" that disables your starting system if it detects a theft attempt is underway.

[8]Not compatible with all devices. [7]Visit onstar.com for coverage map, details and system limitations. OnStar acts as a link to existing emergency service providers. Services vary with conditions. [6]Roadside service, provided by Cross Country. [5]Requires power door locks. [4]Requires factory installed remote start. [9]Air bag inflation can cause serious injury or death to anyone too close to the air bag when it deploys. Be sure every occupant is properly restrained. Always use safety belts and the correct restraint for your child's age and size. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with a passenger air bag. See the Owner's Manual and child safety seat instructions for more safety information.

PART 3
SPEC YOUR MODEL

GMC.COM/EXPLORESIERRA

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
CONFIGURATIONS					
Regular Cab	•	--	•	--	--
Extended Cab	•	•	•	•	--
Crew Cab	•	•	•	•	•
MECHANICAL SIERRA 1500					
ALL-WHEEL DRIVE Electronic automatic system	--	--	--	--	A
ALUMINIZED STAINLESS STEEL EXHAUST	S	S	S	S	S
AUXILIARY EXTERNAL TRANSMISSION OIL COOLER Heavy-duty air-to-oil. On WT models, requires Trailering Package, Snow Plow Prep Package or Heavy-Duty Cooling Package. On SL models, included with Trailering Package. On SLE models, requires Heavy-Duty Trailering Package, Snow Plow Prep Package and 6-speed automatic transmission.	A	A	A	S	S
BATTERY Heavy-duty maintenance-free with 600 cold-cranking amps, rundown protection and retained accessory power	S	S	S	S	S
BRAKES Front disc/rear drum with 4-wheel antilock	S	S	S	S	--
4-wheel disc with 4-wheel antilock	--	--	A	A	S
EATON® HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL	A	A	A	S	S
ENGINE Vortec 4.3L V-6	S	--	--	--	--
Vortec 4.8L V-8 Variable Valve Timing (VVT) FlexFuel	A	S	S	--	--
Vortec 5.3L V-8 VVT FlexFuel with Active Fuel Management	A	--	A	S	--
Vortec 6.2L V-8 VVT FlexFuel	--	--	A	A	S
ENGINE BLOCK HEATER	A	A	A	A	A
EXTERNAL ENGINE OIL COOLER Heavy-duty air-to-oil. Integral to driver side of radiator tank. On WT models, requires Heavy-Duty Trailering Package or Heavy-Duty Cooling Package. On SLE models, requires 6-speed automatic transmission.	A	--	A	S	S
FRAME Fully boxed to the spare tire area, with hydroformed front section	S	S	S	S	S
HEAVY-DUTY COOLING PACKAGE Includes external engine oil cooler, auxiliary external transmission oil cooler, electric fan and heavy-duty radiator. Only available with 6-speed transmission.	A	--	A	S	S
STABILITRAK STABILITY CONTROL SYSTEM With proactive roll avoidance and traction control	S	S	S	S	S
SUSPENSION Coil-over-shock independent front; semi-elliptical 2-stage multileaf springs rear	S	S	S	S	S
HEAVY-DUTY HANDLING/TRAILERING SUSPENSION Requires Heavy-Duty Trailering Package on WT models	A	S	S	S	--
Z71 OFF-ROAD SUSPENSION PACKAGE Includes off-road jounce bumpers, high-capacity air cleaner, Skid Plate Package and Z71 decals on rear quarters	--	--	A	A	--
HIGH-PERFORMANCE SUSPENSION PACKAGE Included with 20" chrome-clad aluminum wheels	--	--	A	A	S
TRANSMISSION 4-speed automatic, electronically controlled	S	S	S	--	--
6-speed automatic, electronically controlled	A	--	A	S	S
Transfer case. On WT and SL models, includes floor-mounted shifter. On SLE and SLT models, includes Autotrac electronic case with rotary dial controls (4WD models).	S	S	S	S	--
TRAILERING Heavy-Duty Trailering Package. Includes trailering hitch platform and 2" receiver, 7-wire harness with independent fused trailering circuits mated to a 7-way sealed connector; wiring harness for aftermarket trailer brake controller (located in the instrument panel harness), single wire for center high-mounted stop lamp, heavy-duty automatic locking rear differential and external transmission oil cooler. On 1500 WT and SLE models equipped with 6-speed transmission, includes Heavy-Duty Cooling Package and external engine oil cooler.	A	A	A	S	S
Integrated trailer brake controller. Not available with Vortec 4.3L V-6. Requires Heavy-Duty Trailering Package.	A	A	A	A	A
TRAILER SWAY CONTROL With Hill Start Brake Assist. Not available on Sierra Hybrid.	S	S	S	S	S

A-Available S-Standard -- -Not Available
SRW-Single Rear Wheel DRW-Dual Rear Wheel

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
MAX TRAILERING PACKAGE Includes Vortec 6.2L V-8, heavy-duty automatic locking rear differential, Heavy-Duty Handling/Trailering Suspension Package, 8.5" hybrid rear axle, 3.73 rear axle ratio, front and rear disc brakes, Heavy-Duty Trailering Package, fog lamps and 17" polished aluminum wheels. Available on Extended and Crew Cab models only.	--	--	A	A	--
POWER TECH PACKAGE Includes Vortec 5.3L V-8 SFI FlexFuel engine, heavy-duty automatic locking rear differential, Heavy-Duty Trailering Package, dual-zone automatic air conditioning, Bluetooth™ for phone, steering-wheel-mounted audio controls, CD/MP3 player, driver 8-way power seat adjuster, front fog lamps, EZ-Lift locking tailgate and 17" aluminum wheels. Available on Extended and Crew Cab models only.	--	--	A	--	--
SKID PLATE PACKAGE Frame-mounted shields. Includes front underbody shield starting behind front bumper and running to first cross-member, protecting front underbody, oil pan, differential case and transfer case. Requires 4WD on WT models. Not available on 2WD SLE and SLT models unless Z71 Off-Road Suspension Package is ordered.	A	A	A	A	S
SNOW PLOW PREP PACKAGE Includes 10-amp power for back-up and roof emergency light, 160-amp alternator, high-flow front bumper, forward lamp wiring harness, provision for cab roof-mounted lamp/beacon, instrument panel jumper wiring harness for electronic trailer brake controller, high-capacity air cleaner, auxiliary external transmission oil cooler and Skid Plate Package (4WD Regular Cab models only)	A	--	A	--	--
MECHANICAL SIERRA 2500HD/3500HD					
ALTERNATOR 125-amp	S	--	S	S	S
160-amp. Included with Snow Plow Prep Package when Vortec 6.0L SFI V-8 is ordered. Requires Vortec 6.0L SFI V-8.	A	--	A	A	A
Dual, 125 amps each, included with Snow Plow Prep Package when Duramax Diesel 6.6L V-8 Turbo is ordered. Requires Duramax Diesel 6.6L V-8 Turbo engine.	A	--	A	A	A
BATTERY Heavy-duty, maintenance-free with 600 cold-cranking amps, rundown protection and retained accessory power	S	--	S	S	S
Auxiliary heavy-duty, maintenance-free with 600 cold-cranking amps. Not available with Duramax Diesel 6.6L V-8 Turbo engine.	A	--	A	A	A
Heavy-duty, 2 batteries, maintenance-free with 730 cold-cranking amps, with rundown protection and retained accessory power, included and only available with Duramax Diesel 6.6L V-8 Turbo engine.	A	--	A	A	A
BRAKES Power 4-wheel disc, 4-wheel antilock	S	--	S	S	S
EATON HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL Included with Heavy-Duty Trailering Package. Standard on all 3500HD pickup models.	A	--	A	S	S
ENGINE Vortec 6.0L V-8 VVT FlexFuel with SFI	S	--	S	S	S
Duramax Diesel 6.6L V-8 Turbo with direct injection and B20 biodiesel capability	A	--	A	A	A
ENGINE BLOCK HEATER	A	--	A	A	A
ENGINE OIL COOLER Heavy-duty external air-to-oil. Integral to driver side of radiator tank.	S	--	S	S	S
EXHAUST Aluminized stainless steel	S	--	S	S	S
EXHAUST BRAKE Included with Duramax Diesel 6.6L V-8 Turbo engine only	A	--	A	A	A
FRAME Fully boxed with hydroformed front section	S	--	S	S	S
10,000-lb GVWR[2] package. Select Sierra 3500HD SRW models. See your dealer for details.	A	--	A	A	A
HIGH-CAPACITY AIR CLEANER	S	--	S	S	S
HIGH IDLE SWITCH	A	--	A	A	A
RADIATOR GRILLE AND FRONT BUMPER OPENINGS COVER For cold weather. Requires Duramax Diesel 6.6L V-8 Turbo engine.	A	--	A	A	A
REAR AXLE 3.73 ratio (except 3500HD 2WD Regular Cab SRW model)	S	--	S	S	S
4.10 ratio. Requires Vortec 6.0L V-8 engine.	A	--	A	A	A

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
SKID PLATE PACKAGE Frame-mounted shields. Includes front underbody shield starting behind front bumper and running to first cross-member, protecting front underbody, oil pan, differential case and transfer case. Requires 4WD on WT models. Not available on 2WD SLE and SLT models unless Z71 Off-Road Suspension Package is ordered.	A	--	A	A	S
SNOW PLOW PREP PACKAGE Includes 10-amp power for back-up and roof emergency light, 160-amp alternator (dual 125 amp included with Diesel), high-flow front bumper, forward lamp wiring harness, provision for cab roof-mounted lamp/beacon, instrument panel jumper wiring harness for electronic trailer brake controller, Skid Plate Package (4WD models only) and increased Front Gross Axle Weight Rating (FGAWR). See chart on page 37 for more details.	A	--	A	A	A
STABILITRAK Stability control system includes electronic trailer sway control, Intelligent Brake Assist and Hill Start Assist (SRW models only)	S	--	S	S	S
STEERING Power, recirculating ball	S	--	S	S	S
SUSPENSION Front independent with torsion bar	S	--	S	S	S
Rear multileaf springs, semi-elliptic, with urethane jounce bumpers	S	--	S	S	S
HEAVY-DUTY HANDLING/TRAILERING SUSPENSION PACKAGE	S	--	S	S	S
Z71 Off-Road Suspension Package. Includes off-road jounce bumpers, Skid Plate Package and Z71 decals on rear quarters.	--	--	A	A	A
HEAVY-DUTY TRAILERING PACKAGE Includes trailering hitch platform and 2.5" receiver with 2" adapter, 7-wire harness with independent fused trailering circuits mated to a 7-way sealed connector, wiring harness for aftermarket trailer brake controller (located in the instrument panel harness) and integrated trailer brake controller. Standard on all 3500HD models.	A	--	A	S	S
Integrated trailer brake controller. Requires Heavy-Duty Trailering Package. Standard on all 3500HD models.	A	--	A	S	S
Trailering wiring provisions for camper, fifth-wheel and gooseneck trailers; includes additional 6-way wiring harness routed to front of pickup box. Requires Heavy-Duty Trailering Package.	A	--	A	A	A
TRAILER SWAY CONTROL SRW models only	S	--	S	S	S
TRANSFER CASE With floor-mounted shifter (4WD models)	S	--	--	--	--
Electronic shift with rotary dial controls (4WD models)	--	--	S	S	S
TRANSMISSIONS 6L90-E 6-speed automatic. Standard and only available with Vortec 6.0L V-8.	S	--	S	S	S
Allison 1000 Series 6-speed automatic. Included and only available with Duramax Diesel 6.6L V-8 Turbo.	A	--	A	A	A
TRANSMISSION OIL COOLER Auxiliary external heavy-duty air-to-oil	S	--	S	S	S

SEATING – ALL MODELS

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
SEATS 40/20/40 front split-bench with driver and front-passenger manual recline and center fold-down armrest with storage	S	S	--	--	--
40/20/40 front split-bench with driver and front-passenger manual recline. Center fold-down armrest and lockable storage compartment in seat cushion (includes auxiliary power outlet). Adjustable outboard head restraints on Extended and Crew Cab models.	--	--	S	--	--
Front buckets with 8-way power seat adjusters, manual recline, manual lumbar and adjustable head restraints. Requires Extended or Crew Cab models.	--	--	A	--	--
Front buckets with 10-way power seat adjusters (SLT) or 12-way (Denali) including power lumbar control, heated seat cushions and seatbacks, 2-position driver memory (does not apply to lumbar adjuster on SLT) and adjustable head restraints. Includes floor console and storage pockets.	--	--	--	S	S
Heated and cooled perforated leather-appointed seating with 12-way seat adjuster for driver and front passenger. Includes seat-mounted side-impact air bags[2] on SLT and Denali HD SRW models.	--	--	--	A	S
Driver-side manual seat adjuster with lumbar control. On WT models, included and only available with Dark Titanium Cloth seat trim.	A	S	S	--	--
Folding rear bench, full width. Extended Cab models only.	S	S	--	--	--
60/40 folding rear bench. WT and SL require Crew Cab models. SLE requires Extended or Crew Cab models. Not available on Sierra Hybrid.	S	S	S	S	S
SEAT TRIM Dark Titanium vinyl with Graphite-colored rubberized vinyl floor covering	S	--	--	--	--
Dark Titanium Cloth	A	S	--	--	--
Premium Cloth	--	--	S	--	--
Front leather-appointed seating, includes 8-way power driver seat adjuster. Not available on Regular Cab models.	--	--	A	S	--
Premium front leather-appointed seating, Nuance	--	--	--	--	S

INSTRUMENTATION AND CONTROLS – ALL MODELS

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
CRUISE CONTROL	S	S	S	S	S
INSTRUMENTATION Analog cluster with speedometer, fuel level, engine temperature and tachometer. On SLE, SLT and Denali models, includes voltmeter and oil pressure indicators.	S	S	S	S	S
Driver Information Center with odometer, trip odometer and message center. On SLE, SLT and Denali models, includes compass and outside temperature.	S	S	S	S	S
POWER-ADJUSTABLE PEDALS Requires Convenience Package	--	--	A	A	S
REAR-VISION CAMERA SYSTEM With inside rearview mirror display; if Touch-Screen Navigation is ordered, camera display is on NAV screen. Requires Convenience Package. On SLE models, also requires SLE Preferred Package.	--	--	A	A	S
STEERING WHEEL Tilt-Wheel adjustable steering column with brake/transmission shift interlock	S	S	S	S	S
Leather-wrapped (color-keyed on Denali). On WT and SL models, requires Bluetooth[1]	A	A	S	S	S
Steering-wheel-mounted audio controls. On WT and SL models, requires Bluetooth.[1] On SLE models, requires Preferred Package.	A	A	A	S	S
Heated, leather-wrapped and color-keyed	--	--	--	--	S
ULTRASONIC REAR PARKING ASSIST With audible warning. Requires Extended or Crew Cab models. Requires Convenience Package.	--	--	A	A	S

INTERIOR DETAILS – ALL MODELS

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
CARPETING Color-keyed with rubberized vinyl floor mats. Extended and Crew Cab models also include rear floor mats; WT models require Dark Titanium Cloth seat trim.	A	S	S	S	--
Color-keyed with removable carpeted floor mats for first and second rows	--	--	--	--	S
CLIMATE CONTROL Single-zone manual air conditioning	S	S	S	--	--
Dual-zone automatic air conditioning with individual settings for driver and right-front passenger; not available with Regular Cab models. Requires Preferred Package.	--	--	A	S	S
DEFOGGER Rear window. Not available with power-sliding rear window.	A	A	A	S	S
FLOOR COVERING Rubberized vinyl	S	A	A	--	--
REARVIEW MIRROR With manual day/night adjustment	S	S	S	--	--
Auto-dimming. Standard on SLE 3500HD models	--	--	A	S	S
SUNROOF Power with express-open. Includes Universal Home Remote. Extended and Crew Cab models only.	--	--	--	A	A
WINDOWS Power with driver express-down. SLT and Denali models include front passenger express-down.	--	S	S	S	S
Rear-access-door, power. Requires Extended Cab models.	--	--	S	S	--
Rear, power-sliding. Not available on Regular Cab models or with rear-window defogger.	--	--	A	A	A

[1]Go to gm.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [2]When properly equipped, includes weight of vehicle, passengers, cargo and equipment. [3]Always use safety belts and the correct restraint for your child's age and size. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with a passenger air bag. See the Owner's Manual and child safety seat instructions for more safety information.

PART 3

SPEC YOUR MODEL (CONTINUED)

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
OPTION PACKAGES – SIERRA 1500					
WORK TRUCK PREFERRED PACKAGE Includes power door locks, remote keyless entry, EZ-Lift locking tailgate and Solar-Ray deep-tinted glass. Requires Regular or Extended Cab models.	A	--	--	--	--
WORK TRUCK PLUS PACKAGE Includes 17" chrome-styled steel wheels, chrome surround grille and fog lamps. Requires 1500 Regular or Extended Cab models. On 2WD models, also includes front frame-mounted recovery hooks.	A	--	--	--	--
SLE CONVENIENCE PACKAGE Includes power-adjustable pedals, Universal Home Remote, remote vehicle starter system, Ultrasonic Rear Parking Assist and rear-window defogger. Requires Extended or Crew Cab models.	--	--	A	--	--
SLE PREFERRED PACKAGE (REGULAR CAB) Includes remote vehicle starter system, steering-wheel-mounted controls, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps, EZ-Lift locking tailgate and 17" polished aluminum wheels.	--	--	A	--	--
SLE PREFERRED PACKAGE (EXTENDED OR CREW CAB) Includes steering-wheel-mounted controls, dual-zone automatic air conditioning, 6-way power driver seat adjuster, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate.	--	--	A	--	--
ALL-TERRAIN PACKAGE Includes Z71 Off-Road Suspension Package, Heavy-Duty Trailering Package, inside rearview auto-dimming mirror, 18" x 8" chrome-clad aluminum wheels, P265/65R18 on-/off-road blackwall tires, outside heated power-adjustable power-folding body-colored mirrors, fog lamps, Rancho® brand shocks, body-colored side moldings with chrome accents, unique 4-bar horizontal grille insert with chrome surround, "All Terrain" badging on the front fenders, carpeted floor mats with embroidered "All Terrain" logo, unique sill plates, unique instrument cluster with Z71 logo and mechanical brushed aluminum accents for instrument panel, center console and switch trim plates. Requires Extended or Crew Cab models.	--	--	A	A	--
BODY-COLOR ALL-TERRAIN PACKAGE Includes All-Terrain Package content, plus body-color 4-bar horizontal grille and surround, body-color door handles, mirror caps, front and rear painted bumpers and 20" chrome-clad wheels (RSC).[1] Requires Extended or Crew Cab models.	--	--	A	A	--
CHROME ESSENTIALS PACKAGE Includes 6" chromed tubular oval assist steps, polished exhaust tip, chrome recovery hooks, chrome door handles and mirror caps and 18" chrome-clad aluminum wheels. Not available on Long Box Extended Cab models.	--	--	A	A	--
OPTION PACKAGES – SIERRA 2500HD/3500HD					
WORK TRUCK PREFERRED PACKAGE Includes Solar-Ray deep-tinted glass and fog lamps. On 2500HD models, includes 17" chrome-clad steel wheels.	A	--	--	--	--
SLE PREFERRED PACKAGE (REGULAR CAB) Includes remote vehicle starter system, steering-wheel-mounted controls, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate.	--	--	A	--	--
SLE PREFERRED PACKAGE (EXTENDED OR CREW CAB) Includes steering-wheel-mounted controls, dual-zone automatic air conditioning, 6-way power driver seat adjuster, Bluetooth[1] for your cell phone, CD/MP3 player, fog lamps and EZ-Lift locking tailgate.	--	--	A	--	--
SLE CONVENIENCE PACKAGE Includes power-adjustable pedals, Universal Home Remote, remote vehicle starter system, rear-window defogger and Ultrasonic Rear Parking Assist.	--	--	A	--	--
SLT CONVENIENCE PACKAGE Includes Universal Home Remote, power-adjustable pedals, EZ-Lift locking tailgate, Ultrasonic Rear Parking Assist and rear wheelhouse liner (dealer installed).	--	--	--	A	--

TRIM LEVELS	WT	SL	SLE	SLT	DENALI
ENTERTAINMENT/COMMUNICATION/NAVIGATION – ALL MODELS					
AM/FM STEREO With seek-and-scan and digital clock	S	--	--	--	--
With MP3-compatible CD player	A	S	S	--	--
With CD player and MP3 playback, USB port[2] and auxiliary input jack. On SLE models, requires SLE Preferred Package.	--	--	A	S	--
With MP3-compatible 6-disc CD player, USB port[2] and auxiliary input jack	--	--	--	A	S
With MP3-compatible CD/DVD player and USB port.[2] On SLT models, requires Crew Cab model and Rear-Seat Entertainment Package. On Denali models, requires Rear-Seat Entertainment Package.	--	--	--	A	A
TOUCH-SCREEN NAVIGATION[1] With CD or DVD player and MP3 playback, color touch-screen display, enhanced HDD-based navigation with voice recognition, memory available for music storage, USB port,[2] Radio Data System (RDS)[6] and pause/play radio. Touch-Screen Navigation with DVD player requires Rear-Seat Entertainment Package.	--	--	--	A	A
BOSE® AUDIO PREMIUM SPEAKER SYSTEM WITH SUBWOOFER On SLE models, requires front bucket seats and SLE Preferred Package or Power Tech Package on 1500 models.	--	--	A	S	S
Centerpoint® Surround Sound System	--	--	--	--	S
REAR-SEAT ENTERTAINMENT PACKAGE Rear-seat DVD player with LCD display and 2 sets of wireless headphones. Includes rear audio controls. Requires Crew Cab models. On SLT models, includes CD/DVD player. Upgradable to CD/DVD player with navigation. On Denali models, requires CD/DVD player or CD/DVD player and HDD-based navigation.	--	--	--	A	A
SiriusXM SATELLITE RADIO[6] Including 3 trial months of service	A	S	S	S	S
NAVTRAFFIC[1] Including 3 trial months of service. Included and only available with Touch-Screen Navigation.[1]	--	--	--	A	A
BLUETOOTH FOR PHONE[1] Personal cell-phone connectivity to vehicle audio system allowing hands-free calling	A	A	A	S	S
ONSTAR Directions & Connections Plan[7] 6-month subscription.	A	S	S	S	S
CONVENIENCE FEATURES – ALL MODELS					
POWER DOOR LOCKS With remote keyless entry (2 transmitters, panic button and content theft alarm). Remote keyless entry does not lock/unlock tailgate. Standard on Crew Cab models.	A	S	S	S	S
REMOTE START With remote keyless entry	--	--	A	S	S
UNIVERSAL HOME REMOTE	--	--	A	A	S
EXTERIOR STYLING AND FUNCTIONALITY – ALL MODELS					
BODYSIDE MOLDINGS Body-colored. Chrome insert on Denali models. Not available on Regular Cab DRW models.	--	S	S	S	S
BUMPERS Chrome. On Sierra 1500 WT models, includes black bumper top caps. On SL, SLE and SLT models, includes body-color bumper top caps.	S	S	S	S	--
Front, body-colored	--	--	--	--	S
Rear, chrome step-style with pad	S	S	S	S	--
Rear, body-colored step-style with pad	--	--	--	--	S
DOOR HANDLES Chrome	--	--	--	--	S
EZ-LIFT LOCKING TAILGATE	A	A	A	A	S
FRONT LICENSE PLATE BRACKET Included in all states that require a front license plate	A	A	A	A	A
GLASS Solar-Ray deep tinted	A	S	S	S	S
GRILLE SURROUND Black. 1500 WT models only.	S	--	--	--	--
Chrome grille surround with black horizontal bars. 2500HD and 3500HD WT models only.	S	--	--	--	--

A-Available S-Standard -- -Not Available
SRW-Single Rear Wheel DRW-Dual Rear Wheel

TRIM LEVELS	WT	SLE	SLE	SLT	DENALI
Chrome grille surround with chrome horizontal bars (on non-Denali HD models late availability). On WT models, requires Work Truck Plus Package. On Denali models, includes unique chrome upper and lower	A	S	S	S	S
LIGHTS Halogen front fog lamps. On WT and SLE models, requires Preferred Package.	A	–	A	S	S
Dual cargo area lamps	S	S	S	S	S
WIPERS Wet-arm front intermittent	S	S	S	S	S
RECOVERY HOOKS Front, frame-mounted; standard on 1500 4WD and Denali models. Standard on HD models. Requires All-Terrain Package on 2WD 1500 models.	S	S	S	S	S
Chrome (1500 models only). Requires Chrome Essentials Package.	–	–	A	A	–
TIRE CARRIER Outside spare, winch-type	S	S	S	S	S

OUTSIDE MIRRORS – ALL MODELS

Manual-folding, black (1500 and 2500HD models)	S	–	–	–	–
Heated power-adjustable, manual-folding, black (1500 and 2500HD models only)	A	S	S	–	–
Heated power-adjustable/power-folding. With integrated turn signal indicators and driver-side auto-dimming; body-color. Not available on 2500HD SLE models. On Light Duty SLE models, requires All-Terrain Package.	–	–	A	S	S
VERTICAL CAMPER Manual-folding with lower convex spotter glass. Standard on 3500HD models. Available on 1500 and 2500HD models.	A	–	–	–	–
Heated, power-adjustable with integrated turn signal indicators; manual-folding/extension; black (convex glass is not heated or power adjustable). SLE 1500 and 2500HD models require inside rearview auto-dimming mirror or inside rearview auto-dimming mirror with camera display. Standard on 3500HD SLE, SLT and Denali models. Not available on Denali 1500 models.	–	–	A	A	A

SAFETY – ALL MODELS

AIR BAGS[1] Frontal. On 1500 models, standard with Passenger Sensing System. On 2500HD and 3500HD models, standard with front driver and passenger single-stage air bag.	S	S	S	S	S
Head curtain, front and rear, side-impact					
1500 models	S	S	S	S	S
2500HD models	A	–	A	A	S
3500HD models (SRW only)	A	–	A	A	S
Seat-mounted, thorax and pelvic, side-impact for driver and outboard front-passenger					
1500 models	S	S	S	S	S
2500HD models	A	–	A	A	S
3500HD models (SRW only)	A	–	A	A	S
TIRE PRESSURE MONITORING SYSTEM (Does not monitor spare tire.) Standard on 3500HD models with GVWR[2] less than 10,000 lbs.	S	S	S	S	S
DAYTIME RUNNING LAMPS With automatic lamp control	S	S	S	S	S

SIERRA 1500 XFE FEATURES AND SPECIFICATIONS

Includes SLE standard content with the following changes/requirements:

ALUMINUM BLOCK	Vortec 5.3L V-8 VVT FlexFuel
AUTOMATIC TRANSMISSION	6-speed with heavy-duty cooling
REAR AXLE	3.08 ratio
ALUMINUM WHEELS	NBS 17"
LOW ROLLING RESISTANCE TIRES	
ALUMINUM LOWER CONTROL ARMS AND SPARE WHEEL	
TONNEAU COVER	Soft
EXTENDED AIR DAM AND OTHER AERO IMPROVEMENTS	
EATON HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL	
HEAVY-DUTY TRAILERING PACKAGE	

FUEL ECONOMY	
EPA-estimated mpg	15 city/20 hwy
Max. Trailering[3]	7000 lbs
Max. Payload[5]	1540 lbs
GVWR[2]	6700 lbs
GCWR[4]	13,000 lbs

MOST SLE CREW CAB OPTIONS ARE AVAILABLE ON THE SIERRA XFE EXCEPT FOR:
20" WHEELS
ALL-TERRAIN PACKAGE
MAX TRAILERING PACKAGE
ZT1 BFR-REAR SUSPENSION PACKAGE
POWER TECH EDITION

[1]Go to gmcvehicleinfo.com to find out which Bluetooth phones are compatible with the vehicle. [2]Use only GM-approved tire and wheel combinations. For approved tire and wheel combinations and other important information, go to gmcvehicleinfo.com or see your dealer for details. [3]Not compatible with all Devices. [4]Map coverage for Puerto Rico and the U.S. Virgin Islands available as expansion disc. Coverage not available for portions of Canada. [5]XM functions only when receiving broadcast XM information. [6]Requires a subscription, sold separately by SiriusXM after introductory trial period. SiriusXM service only available in 48 contiguous United States and the District of Columbia. For more information and to view Customer Agreement, visit siriusxm.com. [7]NavTraffic requires a monthly subscription after introductory trial service, sold separately by SiriusXM. NavTraffic only available in select markets. For more information, visit siriusxm.com/navtraffic. [8]Visit onstar.com for details and system limitations. [9]Always use safety belts and the proper restraint for your child's age and size. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with a passenger air bag. See the Owner's Manual and child safety seat instructions for more safety information. [10]When properly equipped; includes weight of vehicle, passengers, cargo and equipment. [11]Maximum trailer weight ratings are calculated assuming a base vehicle, (when for any options) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [12]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [13]When properly equipped, includes weight of the vehicle and trailer combination, including the weight of driver, passengers, fuel, optional equipment and cargo in the vehicle and trailer.

PART 3

SPEC YOUR MODEL (CONTINUED)

SIERRA HYBRID FEATURES AND SPECIFICATIONS/SIERRA 1500 SUSPENSIONS

TRIM LEVELS	SLE	SLT
SIERRA 1500 HYBRID MECHANICAL		
VORTEC 5.3L V-8 VVT HYBRID With Active Fuel Management, hybrid 2-mode Electronically Variable Transmission and 300-volt DC battery pack	S	S
AUXILIARY POWER MODULE To convert 300-volt battery power to 12-volt	S	S
HYBRID-SPECIFIC COOLING DESIGN Includes a separate powertrain electronics coolant circuit to keep the high-voltage hybrid content cool	S	S
COMBINATION TRANSMISSION COOLER Increases transmission cooling capacity	S	S
EATON HEAVY-DUTY AUTOMATIC LOCKING REAR DIFFERENTIAL	S	S
3.08 AXLE RATIO For optimum highway fuel economy	S	S
HEAVY-DUTY TRAILERING EQUIPMENT	S	S
4-WHEEL DISC BRAKES With 4-wheel Antilock Brake System (ABS) and StabiliTrak	S	S
REGENERATIVE BRAKING SYSTEM Uses hybrid motors in the transmission acting as generators to decelerate the vehicle, while capturing energy for the 300-volt battery pack	S	S
ELECTRIC POWER RACK-AND-PINION STEERING For improved fuel economy and on-center feel	S	S
EXTERIOR		
EZ-LIFT LOCKING TAILGATE	S	S
18" CHROME-CLAD ALUMINUM WHEELS	S	S
MIRRORS Outside heated power-adjustable, black, manual-folding	S	--
Outside heated power-adjustable, power-folding and driver-side auto-dimming, body-color with integrated turn-signal indicators	--	S
FOG LAMPS	--	S
REAR-WINDOW DEFOGGER	--	S
POWER SUNROOF	--	A
TONNEAU COVER 1-piece soft cover	S	--
3-PIECE BAGS COVER	--	S
ULTRASONIC REAR PARKING ASSIST	--	S
INTERIOR		
40/20/40 SPLIT-BENCH FRONT SEATS Premium Cloth with manual recline with outboard head restraints and center fold-down armrest with storage	S	--
LEATHER-APPOINTED FRONT BUCKET SEATS With driver and passenger 6-way power adjusters	--	S
FOLDING REAR BENCH 3-passenger, full width	S	S
AUTO-DIMMING INSIDE REARVIEW MIRROR	--	S
POWER-ADJUSTABLE PEDALS	--	S
UNIQUE HVAC SYSTEM Features a 300-volt electric air conditioning compressor and electric heater coolant pump. Compressor and pump use no belts, operate even when engine is in Autostop and operate as needed	S	S
SPECIALLY DESIGNED INSTRUMENTATION Features Autostop / Off indicators and economy gauge	S	S
DRIVER INFORMATION CENTER Includes messages for Hybrid System status	S	S
BOSE AUDIO AND REAR-SEAT AUDIO	--	S
TOUCH-SCREEN NAVIGATION[1] With unique hybrid power flow display	--	S
BATTERY BEAUTY COVER Provides a flat load floor and inhibits access to the battery	S	S
DUAL-ZONE AUTOMATIC AIR CONDITIONING	S	S
BLUETOOTH FOR PHONE[2]	S	S
REAR-VISION CAMERA SYSTEM	--	S

A-Available S-Standard -- Not Available
See dealer for availability, inclusions and exclusions

TRIM LEVELS	SLE	SLT
SAFETY		
AIR BAGS[3] Frontal, includes Passenger Sensing System	S	S
Head curtain, front and rear side-impact with rollover sensor	S	S
Seat-mounted, thorax and pelvic, side-impact for driver and outboard front-passenger	S	S
DAYTIME RUNNING LAMPS With automatic lamp control	S	S
TIRE PRESSURE MONITORING SYSTEM (Does not monitor spare tire)	S	S

ENGINE SPECIFICATIONS

VORTEC 5.3L V-8 VVT HYBRID	
HP @ RPM	338 @ 5200
LB-FT TORQUE @ RPM	297 @ 4200
ACTIVE FUEL MANAGEMENT	

TRAILER RATING[4]

2WD	6500 lbs
4WD	5900 lbs

MAX. PAYLOAD RATINGS[5]

2WD	1827 lbs
4WD	1608 lbs

FUEL ECONOMY

2WD (EPA-est. mpg)	20 city/26 hwy
4WD (EPA-est. mpg)	20 city/23 hwy

SIERRA 1500 SPECIFICATIONS

FRONT SUSPENSION[6] COIL-OVER-SHOCK

FRONT AXLE CAPACITY (Short / Standard / Long Box)	2WD	4WD (Denali: AWD)
Regular Cab (lbs)	--/3950/3950	--/3950/3950
Extended Cab (lbs)	--/3950/3950	--/3950/3950
Crew Cab (lbs)	3950/--/--	3950/--/--
Crew Cab Denali (lbs)	3950/--/--	3950/--/--
FRONT SPRING CAPACITY		
Regular Cab (lbs)	--/3950/3950	--/3950/3950
Extended Cab (lbs)	--/3950/3950	--/3950/3950
Crew Cab (lbs)	3950/--/--	3950/--/--
Crew Cab Denali (lbs)	3950/--/--	3950/--/--

REAR SUSPENSION[6] SEMI-ELLIPTICAL 2-STAGE MULTILEAF SPRINGS

REAR AXLE CAPACITY (Short / Standard / Long Box)	2WD	4WD (Denali: AWD)
Regular Cab (lbs)	--/3750/3750	--/3750/3950
Extended Cab (lbs)	--/3750/3950	--/3950/3950
Extended Cab with Max Trailering Package (lbs)	--/4000/--	--/4000/--
Crew Cab (lbs)	3950/--/--	4000/--/--
Crew Cab Denali (lbs)	4000/--/--	4000/--/--
REAR SPRING CAPACITY		
Regular Cab (lbs)	--/3750/3750	--/3750/4000
Extended Cab (lbs)	--/3750/3950	--/3950/3950
Crew Cab (lbs)	3950/--/--	3950/--/--
Crew Cab with Max Trailering Package (lbs)	4000/--/--	4000/--/--
Crew Cab Denali (lbs)	3950/--/--	3950/--/--

SIERRA 1500 SPECIFICATIONS/SIERRA HEAVY DUTY AXLE RATINGS

ENGINES

	VORTEC 4.3L V-6 (LU9)	VORTEC 4.8L V-8 VVT FlexFuel (L20)	VORTEC 5.3L V-8 VVT AFM/FlexFuel Iron Block (LM5)	VORTEC 5.3L V-8 VVT AFM/FlexFuel Alum Block (LC9)	VORTEC 6.2L V-8 VVT FlexFuel (L9H)
CAPACITY	4.3 liters (262 cu. in.)	4.8 liters (293 cu. in.)	5.3 liters (325 cu. in.)	5.3 liters (325 cu. in.)	6.2 liters (376 cu. in.)
SAE NET HORSEPOWER @ RPM	195@4600	302@5600	320@5200 hp@5600 RPM 315@5200 gasoline or gasoline/E85 mix	320@5200 hp@5600 RPM 315@5200 gasoline or gasoline/E85 mix	403@5700
SAE NET TORQUE @ RPM (LB-FT)	260@2800	305@4800	340@4400 lb-ft@RPM 335@4000 gasoline or gasoline/E85 mix	340@4400 lb-ft@RPM 335@4000 gasoline or gasoline/E85 mix	417@4000

ENGINE/MODEL AVAILABILITY

Regular Cab, Standard Box	S	A	A	--	--
Regular Cab Long Box	S	A	A	--	--
Extended Cab, Standard Box	S (2WD)	S (2WD)	A (2WD)	A (2WD)	--
Extended Cab Long Box	--	--	S	--	--
Crew Cab, Short Box	--	S	A (2WD)	A (4WD) / S on XFE	A
Crew Cab, Short Box (Denali)	--	--	--	--	S
FUEL ECONOMY (city/hwy mpg)					
2WD	16/20	14/19	15/21	15/21 (14/20 XFE)	13/18
4WD	14/18	13/16	15/21	15/21	12/18

TRANSMISSIONS: 1500: Electronic 4-speed automatic with overdrive and Tow/Haul mode is standard on 4.3L V-6 and 4.8L V-8. Electronically controlled 6-speed automatic heavy-duty with overdrive and Tow/Haul mode included and integrated on 5.3L V-8 and 6.2L V-8. Denali: Electronically controlled 6-speed automatic transmission with overdrive and Tow/Haul mode.

CARGO DIMENSIONS[2]	SHORT BOX	STANDARD BOX	LONG BOX
Cargo Volume	53.2 cu. ft.	68.7 cu. ft.	75.5 cu. ft.
Inside Width at Floor	62.4"	62.4"	62.4"
Box Length at Floor	66.3"	76.3"	97.8"

EXTERIOR DIMENSIONS	REGULAR CAB	EXTENDED CAB	CREW CAB
Height	70.8"-73.8"	73.6"-73.8"	73.7"-73.8"
Overall Length			
Short Box	--	--	230.2"
Standard Box	205.6"	209.2"	--
Long Box	224.8"	248.2"	--

WHEELBASE	REGULAR CAB	EXTENDED CAB	CREW CAB
Short Box	--	--	143.5"
Standard Box	119.0"	143.5"	--
Long Box	133.0"	157.5"	--

STANDARD TECHNICAL DATA	All models: Power 4-wheel anti-lock braking system		
Series/Drive Type	1500/2WD	1500/4WD	(DENALI) 2WD/4WD
BRAKES	Front disc/rear drum	Front disc/rear drum	4-wheel disc
STEERING	Power rack-and-pinion		
FUEL TANK CAPACITY (Approx gals. Short Standard/Long Box)	26.0/26.0/34.0	26.0/26.0/34.0	26.0
ALTERNATOR (amps)	145	145	145
GVWR[4] (Gross Vehicle Weight Rating)			
Regular Cab (lbs)	6400	6400-6800	--
Extended Cab (lbs)	6400-7000	7000-7800	--
Crew Cab (lbs)	6800-7100	7000-7300	6800-7000

MAXIMUM PAYLOAD[5]

HEAVIEST RATINGS. All models lbs in lbs

	2WD/4WD
Regular Cab Standard Box	1860/1714
Regular Cab Long Box	1894/1827
Extended Cab Standard Box	1608/1835
Extended Cab Long Box	1847/1810
Crew Cab 1500	1597/1800
Crew Cab 1500 XFE	1848/--
Crew Cab Denali	1599/1823
Hybrid	1827/1803

MAXIMUM CONVENTIONAL TRAILERING[6]

	2WD	4WD (Denali AWD)
Regular Cab Standard Box	9100 with 5.3L / 3.42 axle	8800 with 5.3L / 3.42 axle
Regular Cab Long Box	10,000 with 5.3L / 3.42 axle	9800 with 5.3L / 3.42 axle
Extended Cab Standard Box	10,700 with 5.3L / 3.73 axle	10,400 with 5.3L / 3.73 axle
Extended Cab Long Box	9500 with 5.3L / 3.42 axle	8800 with 5.3L / 3.42 axle
Crew Cab 1500	10,500 with 5.3L / 3.73 axle	10,400 with 5.3L / 3.73 axle
Crew Cab 1500 XFE	7000 with 5.3L / 3.08 axle	--
Crew Cab Denali	9600 with 5.3L / 3.42 axle	8400 with 5.3L / 3.42 axle
Hybrid	8100 with 5.3L / 3.08 axle	9300 with 5.3L / 3.08 axle

HEAVY-DUTY FRONT GROSS AXLE WEIGHT RATING (FGAWR) WITH SNOW PLOW PREP PACKAGE (4WD MODELS ONLY)

BODY	ENGINE RPO	ENGINE TYPE	2500HD	3500HD SRW	3500HD DRW
Regular Cab	L96 LM1	Gas Diesel	6200 6000	6600 6800	6800 6800
Extended Cab Standard Box	L96 LM1	Gas Diesel	6200 6000	-- --	-- --
Extended Cab Long Box	L96 LM1	Gas Diesel	6200 6000	6600 6800	6600 6800
Crew Cab Standard Box (includes Denali)	L96 LM1	Gas Diesel	6200 6000	6600 6800	-- --
Crew Cab Long Box (includes Denali)	L96 LM1	Gas Diesel	6200 6000	6600 6800	6600 6800

HEAVY-DUTY MAXIMUM PLOW WEIGHTS (4WD MODELS ONLY)

BODY	ENGINE RPO	ENGINE TYPE	2500HD	3500HD SRW	3500HD DRW
Regular Cab	L96 LM1	Gas Diesel	1100/925 1100/1000	1100/1000 1100/975	1100/1000 1100/975
Extended Cab Standard Box	L96 LM1	Gas Diesel	1100/975 1100/925	-- --	-- --
Extended Cab Long Box	L96 LM1	Gas Diesel	1100/1000 1100/975	1100/1000 1100/925	1100/950 1100/925
Crew Cab Standard Box (includes Denali)	L96 LM1	Gas Diesel	1100/950 1100/1000	1100/1000 1100/975	-- --
Crew Cab Long Box (includes Denali)	L96 LM1	Gas Diesel	1100/1000 1100/925	1100/1000 1100/975	1100/925 1100/1000

SRW=Single Rear Wheel DRW=Dual Rear Wheel
1100/xxx=1100 lbs maximum of permanently attached snow plow mounting hardware/xxx lbs maximum of removable snow plow blade and blade hardware. Maximum plow weights based on a vehicle with average manufacturer option content and 150 lbs each for driver and one additional front-seat occupant. Additional equipment and occupants will reduce maximum plow weight. Rear compensating weight may be required to maintain front axle weight below 55% of total vehicle weight when equipped with snow plow. Consult your snow plow mounting kit for specific compensating weight recommendation.

[1]Map coverage for Puerto Rico and the U.S. Virgin Islands available on separate disc. Coverage not available for portions of Canada. [2]Go to gm.com/bluetooth to find out which Bluetooth phones are compatible with the vehicle. [3]Always use safety belts and the correct restraint for your child's age and size. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with a passenger air bag. See the Owner's Manual and child safety seat instructions for more safety information. [4]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [5]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [6]Capabilities and weight ratings are dependent upon model, engine, transmission and GVWR combinations. See your GMC dealer for details. [7]Cargo and load capacity limited by weight and distribution. [8]When properly equipped, includes weight of vehicle, passengers, cargo and equipment.

PART 3

SPEC YOUR MODEL (CONTINUED)

SIERRA HEAVY DUTY SPECIFICATIONS

ENGINES

	VORTEC 6.0L V-8 VVT (L96)	DURAMAX DIESEL 6.6L V-8 TURBO (LML)
FUEL TYPE	Gasoline (Flex fuel)	Diesel (B20 biodiesel capable)
CAPACITY	6.0 liters (364 cu. in.)	6.6 liters (402 cu. in.)
SAE NET HORSEPOWER @ RPM	360 @ 5400 (<10,000 lb GVWR) 320 @ 4600 (>10,000 lb GVWR)[1]	397 @ 3000
SAE NET TORQUE @ RPM (LB-FT)	380 @ 4200	765 @ 1800
TRANSMISSIONS[1]	Electronically controlled 6-speed heavy-duty automatic transmission with overdrive, electronic engine grade braking and Tow/Haul mode	Electronically controlled Allison 1000 Series 6-speed automatic transmission with overdrive, electronic engine grade braking and Tow/Haul mode

STANDARD TECHNICAL DATA

	All models: Power 4-wheel anti-lock braking system	
Series / Drive Type	2WD	4WD
BRAKES	14" dia. 4-wheel disc	14" dia. 4-wheel disc
STEERING	Power recirculating ball	Power recirculating ball
FUEL TANK CAPACITY (approx gals. Standard / Long Box)	26.0	26.0
ALTERNATOR (amps)	105	105

MAXIMUM GVWR (GROSS VEHICLE WEIGHT RATING) VORTEC 6.0L V-8/DURAMAX DIESEL 6.6L V-8 TURBO

	REGULAR CAB	EXTENDED CAB	CREW CAB
2500HD			
Standard Box	--/--	9500 / 10,000	10,000 / 10,000
Long Box	10,000 / 10,000	10,000 / 10,000	10,000 / 10,000
3500HD			
SRW	10,700 / 11,400	11,000 / 11,600	11,000 / 11,600
DRW	13,400 / 13,000	13,000 / 13,000	13,000 / 13,000

CARGO DIMENSIONS[2]

	STANDARD BOX	LONG BOX
Cargo Volume	68.7 cu. ft.	76.6 cu. ft.
Inside Width at Floor	62.48"	62.48" - 63.70"
Box Length at Floor	78.8"	97.60"

EXTERIOR DIMENSIONS

	REGULAR CAB	EXTENDED CAB	CREW CAB
Height	77.60" - 77.60"	77.60" - 77.60"	78.10" - 78.30"
Overall Length			
Standard Box	--	230.60"	240.20"
Long Box	226.8"	243.60"	253.10"

WHEELBASE

	REGULAR CAB	EXTENDED CAB	CREW CAB
Standard Box	--	144.20"	153.70"
Long Box	133.7"	168.20"	167.70"

GROSS CAPACITY RATINGS All capacities in lbs

		MAXIMUM PAYLOAD[3]	MAXIMUM TRAILERING[6] BALL HITCH		MAXIMUM TRAILERING[6] FIFTH-WHEEL OR GOOSENECK	
			Vortec 6.0L V-8 / Duramax Diesel 6.6L V-8 Turbo		Vortec 6.0L V-8 / Duramax Diesel 6.6L V-8 Turbo	
2500HD		2WD / 4WD	2WD	4WD	2WD	4WD
Regular Cab Long Box		4011 / 3635	13,000 / 13,000	13,000 / 13,000	14,700 / 17,600	14,400 / 17,600
Extended Cab Standard Box		3475 / 3319	13,000 / 13,000	13,000 / 13,000	14,900 / 17,600	14,600 / 18,400
Extended Cab Long Box		3358 / 3275	13,000 / 13,000	13,000 / 13,000	14,200 / 17,400	13,800 / 18,700
Crew Cab Standard Box		3367 / 3068	13,000 / 13,000	13,000 / 13,000	14,300 / 17,400	13,800 / 18,800
Overall Crew Cab Standard Box		3169 / 2893	13,000 / 13,000	13,000 / 13,000	14,300 / 16,600	13,000 / 14,700
Crew Cab Long Box		3047 / 2885	13,000 / 13,000	13,000 / 13,000	14,100 / 16,700	13,000 / 13,700
3500HD						
Regular Cab	SRW	4826 / 4808	13,000 / --	13,000 / 13,000	14,800 / --	14,200 / 17,400
	DRW	7016 / 6893	14,000 / --	13,000 / 13,000	14,700 / --	13,000 / 19,000
Extended Cab	DRW	4456 / 4455	13,000 / 13,000	13,000 / 13,000	14,000 / 17,300	13,700 / 20,800
	DRW	6321 / 6033	13,000 / 13,000	13,400 / 13,000[4]	13,600 / 20,800	13,400 / 22,600
Crew Cab	SRW Standard Box	4187 / 4160	13,000 / 13,000	13,000 / 13,000	14,000 / 17,800	13,700 / 17,000
	SRW Long Box	4308 / 4288	13,000 / 13,000	13,000 / 13,000	13,900 / 17,300	13,600 / 18,100
	Overall SRW	4100 / 4078	13,000 / 13,000	13,000 / 13,000	13,800 / 17,100	13,600 / 18,800
	DRW	6188 / 5888	13,000 / 13,000	13,200 / 13,000[4]	13,600 / 22,000	13,000 / 22,400
	Overall DRW	6016 / 5708	13,400 / 13,000	13,000 / 13,000[4]	13,400 / 22,000	13,000 / 22,300

FRONT SUSPENSION[5] INDEPENDENT TORSION BAR - 2500HD/3500HD

STANDARD FRONT AXLE CAPACITY	2WD	4WD
Regular Cab (lbs)	4400 / 4400	4400 / 4400
Extended Cab (lbs)	4400 / 4400	4400 / 4400
Crew Cab (lbs)	4400 / 4400	4400 / 4400
STANDARD FRONT SPRING CAPACITY		
Regular Cab (lbs)	4400 / 4400	4400 / 4400
Extended Cab (lbs)	4400 / 4400	4400 / 4400
Crew Cab (lbs)	4400 / 4400	4400 / 4400

REAR SUSPENSION[5] SEMI-ELLIPTICAL MULTILEAF - 2500HD/3500HD-SRW/3500HD-DRW

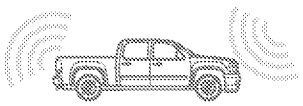
REAR AXLE CAPACITY	2WD	REAR AXLE CAPACITY	4WD
Regular Cab (lbs)	6200 / 7050 / 9375	Regular Cab (lbs)	6200 / 7050 / 9375
Extended Cab (lbs)	6200 / 7050 / 9375	Extended Cab (lbs)	6200 / 7050 / 9375
Crew Cab (lbs)	6200 / 7050 / 9375	Crew Cab (lbs)	6200 / 7050 / 9375
REAR SPRING CAPACITY		REAR SPRING CAPACITY	
Regular Cab (lbs)	6200 / 7050 / 9375	Regular Cab (lbs)	6200 / 7050 / 9375
Extended Cab (lbs)	6200 / 7050 / 9375	Extended Cab (lbs)	6200 / 7050 / 9375
Crew Cab (lbs)	6200 / 7050 / 9375	Crew Cab (lbs)	6200 / 7050 / 9375

SRW-Single Rear Wheel DRW-Dual Rear Wheel

GMC ACCESSORIES FOR YOUR SIERRA

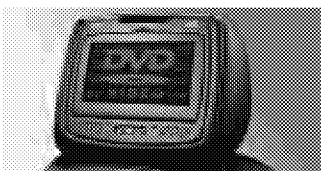
Engineered to the same standards as your Sierra, GMC Accessories help you to tailor your truck to your needs. From simple add-ons like floor mats and splash guards, to a brilliant array of chrome wheels and accents, you can make your Sierra ready for anything from a long day of work to a night on the town.

DEALER-INSTALLED AUTONET WIFI[1]



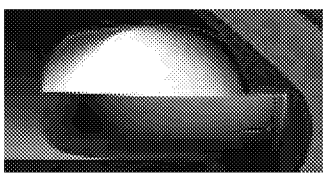
Turn your Sierra into a mobile hot spot with the first wireless router engineered specifically for automotive use. It can accommodate up to 16 wireless devices at one time, at a range of up to 150 feet, to help you stay connected, whether you're on the job or at your favorite hideaway.

INTEGRATED DVD



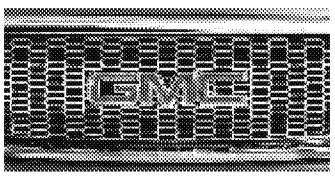
A Dual-Player DVD System mounted in back of each front head restraint with wireless headphones gives rear-seat passengers personal entertainment. Single remote control included.

CHROME MIRROR COVER



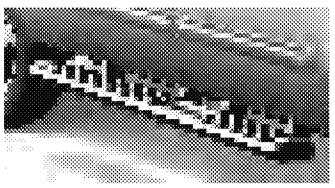
Help your Sierra make a fashion statement with these chrome outside rearview mirror covers.

OVAL-PATTERN CHROME GRILLE



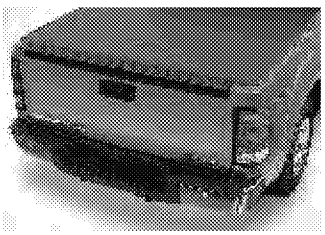
This sporty chrome grille features a chrome notch center and surround. It replaces the existing grille.

ASSIST STEPS



Make it easier to get in and out of your truck with these stylish assist steps. Crafted from rust-resistant stainless steel, they are available in either chrome or black powder coat and in 6-inch oval or 3-inch round styles.

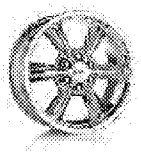
SOFT TONNEAU COVER



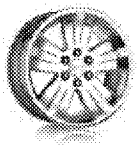
Roll-up design shields cargo, easily rolls up to allow full access to the bed and is constructed with integrated crossbows.

20" AND 22" CAST CHROME WHEELS[2]

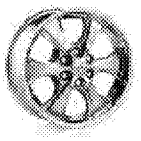
Fill up your wheel wells and stand out from the crowd with these factory-engineered and approved wheels from GMC Accessories. Each wheel features a brilliant durable chrome finish and is available with matching lugs and GMC logo center caps.



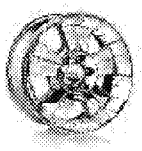
CK848 20" CHROME



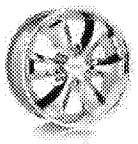
CK880 20" CHROME



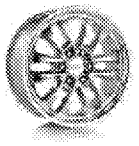
CK970 20" CHROME



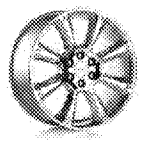
CK861 20" CHROME



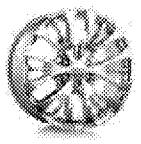
CK867 20" CHROME



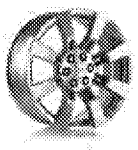
CK848 20" CHROME



CK918 22" CHROME

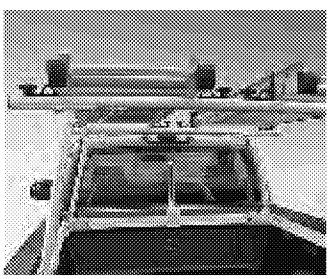


CK966 TRI-SPOKE 22" CHROME



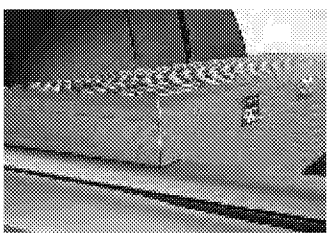
CK978 20" CHROME

OVERHEAD UTILITY RACK



The overhead utility rack mounts to the available Cargo Management System rails and supports up to 500 lbs.[1] The rear supports slide along the Cargo Management System rails to enhance functionality.

STATIONARY TOOLBOX



Diamond-patterned toolbox features dual gas shocks for smooth opening and closing and GMC logo.

[1]When properly equipped. Includes weight of vehicle, passengers, cargo and equipment. [2]Cargo and load capacity limited by weight and distribution. [3]Maximum payload capacity includes weight of driver, passengers, optional equipment and cargo. [4]Maximum trailer weight ratings are calculated assuming a base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers and cargo will reduce the maximum trailer weight your vehicle can tow. See your GMC dealer for additional details. [5]Available fourth quarter 2011. [6]Capacities and weight ratings are dependent on model, engine, transmission and GVWR combinations. See your GMC dealer for details. [7]Monthly rates apply. Visit autonetmobile.com for coverage maps and details. [8]Use only BIK approved tire and wheel combinations. Unapproved combinations may change the vehicle's performance characteristics. For approved tire and wheel combinations and other important information, go to gmcaccessories.com or see your dealer for details.

COMMITMENT PLUS

From the owner orientation – and full tank of gas – you receive when you take possession of your Sierra to the **24-Hour Roadside Assistance, Courtesy Transportation and Travel Benefits.** Commitment Plus is a portfolio of owner privileges that lasts throughout your warranty. For expert product information, Roadside Assistance or other services, call 1-800-GMC-8782.

TRAVEL BENEFITS AND ROADSIDE ASSISTANCE Available around the clock: trip routing service, a program for reimbursement for trip interruption due to necessary warranty repairs, towing, flat tire change, jump-starts and more for 5 years or 100,000 miles [whichever comes first].

COURTESY TRANSPORTATION Available at participating dealers, shuttle service, reimbursement of certain public transportation or fuel expenses for overnight warranty repairs, and courtesy rental for overnight work repairs. See your dealer for details.

GMC OWNER CENTER A complimentary, one-stop resource to enhance your GMC ownership experience. It's easy to sign up. Just go to gm.com/gmownercenter/gmc.

ONSTAR

OnStar is a core asset of your Sierra. Benefiting from more than a decade of innovative development, it is both a highly advanced technology – fully integrated within the vehicle – and a warm human service. Standard on all Sierra models are 6 months of the OnStar Directions & Connections Plan, including the convenience of available Hands-Free Calling. It also includes Automatic Crash Response, Stolen Vehicle Assistance, link to Emergency Services, Roadside Assistance, Remote Door Unlock, OnStar Vehicle Diagnostics, Crisis Assist and Remote Horn and Lights. OnStar services require vehicle electrical system [including battery], wireless service and GPS satellite signals to be available and operating for features to function properly. OnStar acts as a link to existing emergency service providers. Visit onstar.com for coverage maps, details and system limitations. Services vary with conditions.

HANDS-FREE CALLING

Available OnStar Hands-Free Calling capability is built into your Sierra. It's there when your cell phone is unavailable, its battery is low, you can't reach it easily or you left it at home or in the office. Your Hands-Free Calling system is the right choice whenever you need an easy way to make and receive calls – at the touch of the phone icon on the rearview mirror or the steering-wheel-mounted controls. Voice-activated dialing is convenient because you don't have to dial when you are at the wheel. And Hands-Free Calling is reliable because it's specially designed for better reception and fewer dropped calls in areas of limited cellular reception.

ONSTAR TURN-BY-TURN NAVIGATION

Standard on all Sierra models are 6 months of the OnStar Directions & Connections Plan that adds innovative, easy-to-use Turn-by-Turn Navigation plus Information and Convenience Services and Driving Directions. With Turn-by-Turn Navigation, you simply tell the OnStar Advisor your intended destination, and directions will automatically be sent to your Sierra. If you drive off course, the system can reroute you to your intended destination. An automated voice then guides you turn-by-turn until you arrive at your destination. Turn-by-Turn Navigation is further enhanced with eNAV, allowing you to send Google™ Maps and MapQuest™ directions directly to your vehicle. No need to print out directions; just call them up with simple voice commands.

SiriusXM SATELLITE RADIO

SiriusXM Satellite Radio[1] is standard on all Sierra models. It includes 3 trial months of service. SiriusXM Satellite Radio makes your drive come alive with commercial-free music channels from virtually every genre, artist-dedicated channels, live performances and more. Tune in to live play-by-play from the biggest sports, exclusive entertainment from top personalities, compelling talk, hilarious comedy, world-class news, local traffic and weather and family-friendly programming. Welcome to the world of satellite radio. Visit siriusxm.com for details.

GMC CERTIFIED SERVICE

To help your Sierra live up to its performance promise, GMC Certified Service – found exclusively at your GMC dealer – is there. With all the engineering excellence in Sierra, GM-trained technicians have the expertise to care for all of it.

A NOTE ON CHILD SAFETY Always use safety belts and the correct restraint for your child's age and size. Even in vehicles equipped with the Passenger Sensing System, children are safer when properly secured in a rear seat in the appropriate infant, child or booster seat. Never place a rear-facing infant restraint in the front seat of any vehicle equipped with a passenger air bag. See the Owner's Manual and child safety seat instructions for more safety information.

TRAILERING AND OFF-ROAD INFORMATION Please carefully review the Owner's Manual for important safety information about trailering or off-road driving in your vehicle.

IMPORTANT WORDS ABOUT THIS CATALOG We have tried to make this catalog comprehensive and factual. We reserve the right, however, to make changes at any time, without notice, in prices, colors, materials, equipment, specifications, models and availability. Specifications, dimensions, measurements, ratings and other numbers in this catalog and other printed materials provided at the dealership or affixed to vehicles are approximates based upon design and engineering drawings and prototypes and laboratory tests. Your vehicle may differ due to variations in manufacture and equipment. Since some information may have been updated since the time of printing, please check with your GMC dealer for complete details. GMC reserves the right to lengthen or shorten the model year for any product for any reason, or to start and end model years at different times.

FLEET ORDERS Some standard content may be deleted with fleet orders. See dealer for details.

ENGINES GMC products are equipped with engines produced by GM Powertrain or other suppliers to GM worldwide. The engines in GMC products may also be used in other GM makes and models.

GMC.COM See more of Sierra on our Web site: gmc.com/sierra. More photos and information; hot links to related subjects; convenient dealer locator; pricing guide, spec out your own vehicle. Or call 1-800-GMC-8782.

AN IMPORTANT NOTE ABOUT ALTERATIONS AND WARRANTIES Installations or alterations to the original equipment vehicle [or chassis] as distributed by General Motors are not covered by the General Motors New-Vehicle Limited Warranty. The special body company, assembler, equipment installer or upfitter is solely responsible for warranties on the body or equipment and any alterations [or any effect of the alterations] to any of the parts, components, systems or assemblies installed by GM. General Motors is not responsible for the safety or quality of design features, materials or workmanship of any alterations by such suppliers.

NEW-VEHICLE LIMITED WARRANTY All GMC light-duty vehicles come with a fully transferable, no-deductible 5-year/100,000-mile [whichever comes first] Powertrain Limited Warranty. GM vehicles registered in the U.S.A. are also covered for 3 years or 36,000 miles [whichever comes first]. Coverage includes tires and towing to your nearest GMC dealership. Repairs will be made to correct any vehicle defect and most warranty repairs will be made at no charge. In addition, rust-through corrosion will be covered for 6 years or 100,000 miles [whichever comes first]. See dealer for details.

ASSEMBLY GMC vehicles and their components are assembled or produced by different operating units of General Motors, its subsidiaries or suppliers to GM worldwide. We sometimes find it necessary to produce GMC vehicles with different or differently sourced components than originally scheduled. Since some options may be unavailable when your vehicle is assembled, we suggest that you verify that your vehicle includes the equipment you ordered or, if there are changes, that they are acceptable to you.

GMMOBILITY.COM [1-800-323-9935] GM Mobility offers financial assistance for eligible adaptive equipment to make automotive travel easier for persons with disabilities or special transportation needs. To learn more about special GM Mobility offers, visit gmmobility.com.

GMCARDMEMBERSERVICES.COM Did you know about the family of reward credit cards that can help you get a great deal on a new GM car, light-duty truck, SUV or crossover? With a GM reward card, you accrue earnings on every credit card purchase to use toward the purchase or lease of an eligible new GM vehicle. With three cards to choose from, you're sure to find one that suits you.

[1]Requires a subscription, sold separately by SiriusXM after the trial period. SiriusXM Radio service only available in the 48 contiguous United States and the District of Columbia. For more information and to view Customer Agreement, visit siriusxm.com.

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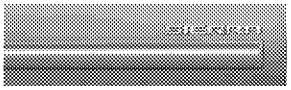
COLORS

ONYX BLACK[1]

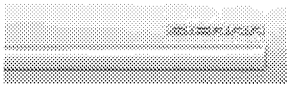
CARBON BLACK METALLIC[2]

SUMMIT WHITE[1]

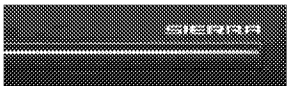
QUICKSILVER METALLIC



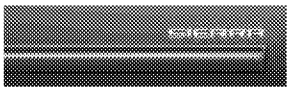
WHITE DIAMOND TRICOAT[1]



FIRE RED

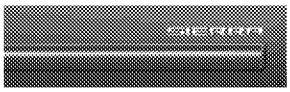


STEEL GRAY METALLIC

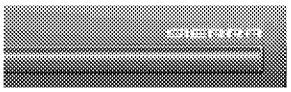


MIDNIGHT BLUE METALLIC[1]

STEALTH GRAY METALLIC[1]

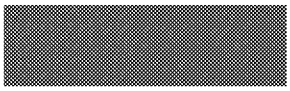


MOCHA STEEL METALLIC[2]



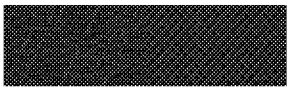
INTERIOR MATERIALS

VINYL
(Standard: WT trim)



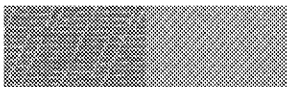
DARK TITANIUM

CLOTH
(Standard: SLE trim. Available: WT trim)

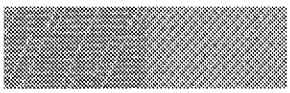


DARK TITANIUM

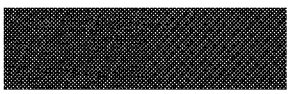
PREMIUM CLOTH
(Standard: SLE trim, Hybrid and XFE)



LIGHT TITANIUM

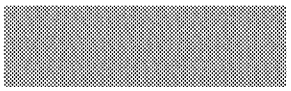


LIGHT CASHMERE



EBONY

LEATHER-APPOINTED
(Standard: SLT trim. Available: SLE trim, Hybrid and XFE)



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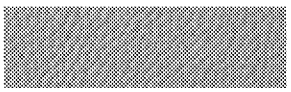
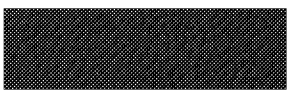
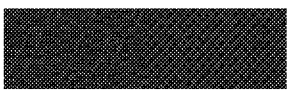


LIGHT CASHMERE



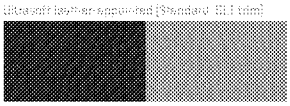
EBONY

SIERRA ALL-TERRAIN INTERIOR TRIM
Premium Cloth (Standard: SLE trim)



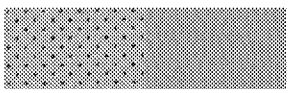
EBONY

Ultrasuede leather-appointed (Standard: SLT trim)

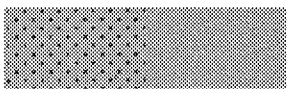


EBONY/LIGHT TITANIUM

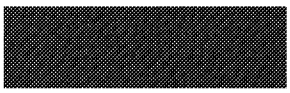
PERFORATED LEATHER-APPOINTED
(Standard: Sierra Denali. Available: Sierra SLT)



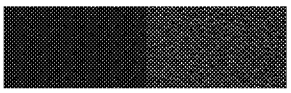
LIGHT TITANIUM[3]



OBSIDIAN/LIGHT CASHMERE



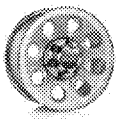
EBONY



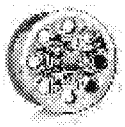
EBONY

WHEEL AVAILABILITY/SIERRA SELECT MODELS

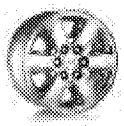
SIERRA/1500 WHEELS[4]



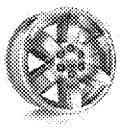
RX7
17" PAINTED STEEL
S: WT TRIM



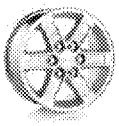
PY9
17" CHROME-STYLED STEEL
S: SLE TRIM AND SLT CREW CAB
A: WT REGULAR OR EXT CAB



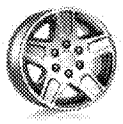
RQ6
18" CHROME-CLAD ALUMINUM
S: SLT AND HYBRID



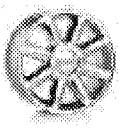
SB8
20" CHROME-CLAD ALUMINUM
A: SLE AND SLT



RB6
17" POLISHED ALUMINUM SPORT
S: XFE
A: SLE AND SLT W/MAX TRAILERING PACKAGE

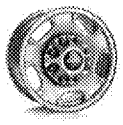


RZF
18" CHROME-CLAD ALUMINUM
S: ALL-TERRAIN PACKAGE

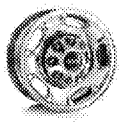


R41
20" CHROME ALUMINUM
S: SIERRA DENALI

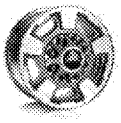
2500HD WHEELS[4]



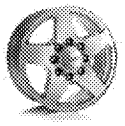
PYN
17" PAINTED STEEL
S: WT



PYP
17" CHROME-CLAD STEEL
A: WT

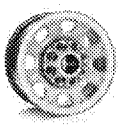


PYB
17" CAST-ALUMINUM BRIGHT MACHINED
S: SLE

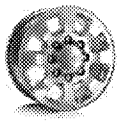


PYG
20" ALUMINUM
A: SLE, SLT

2500HD/3500HD SRW WHEELS[4]

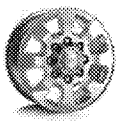


PYT
18" PAINTED STEEL
S: 2500HD WT
A: 3500HD WT

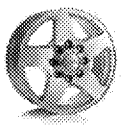


PYR
18" FORGED POLISHED ALUMINUM
S: 2500HD SLE
S: 3500HD SLE, SLT
A: 2500HD SLE

DENALI HD SRW WHEELS[4]

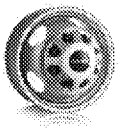


PYR
18" FORGED POLISHED ALUMINUM
S: 2500 & 3500 DENALI HD



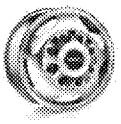
PYS
20" ALUMINUM
A: 2500 DENALI HD

3500HD DRW WHEELS[4]



PYW
17" PAINTED STEEL
S: WT

PQB
17" CHROME SKINS AND CENTER CAPS
S: SLE, SLT



RD7
17" FORGED POLISHED ALUMINUM
S: 3500 DENALI HD DRW
A: 3500HD SLE/SLT DRW

All colors are approximated/simulated for high gloss and durable finish. See your dealer for more details on color and trim options. [1]Available on Denali. [2]Available on Crew Cab and 1500 Denali. [3]Available fall 2017. [4]Use only GM-approved tire and wheel combinations. For approved tire and wheel combinations and other important information, go to gmcsierraforsale.com or ask your dealer for details. [5]Color not available on Denali.

You Tube

EXHIBIT 12

GMC
PRESSROOM

VEHICLE HIGHLIGHTS:

- First-time HD offering of Denali's unique combination of style, capability and premium features
- New Duramax 6.6L turbo diesel rated at 397 hp (296 kW) and 765 lb.-ft. of torque (1,037 Nm)
- Towing towing capability of 21,700 lbs. (9,843 kg) and payload capability of 6,635 lbs. (3,009 kg) supported by all-new frames and strong suspensions
- Segment-best conventional trailer tow rating of 17,000 lbs. (7711 kg)
- Fifth-wheel trailer rating of 21,700 lbs. (9,843 kg)
- All-new independent front suspension delivers 25-percent increased front axle rating and superior control under all conditions
- A wide array of control features – including new "smart" exhaust brake feature and hill start assist – provide confidence to manage the heaviest loads
- Best warranty coverage in America

PRODUCT INFORMATION

SIERRA DENALI HD LEADS NEW 2011 SIERRA HEAVY-DUTY LINEUP

GMC Sierra Denali 2500HD and 3500HD – the first offerings of the exclusive Denali line on a heavy-duty GMC pickup – lead a new Sierra heavy-duty truck lineup for 2011.. The comprehensively redesigned roster of 2011 Sierra 2500HD and 3500HD trucks includes a new, more powerful 6.6L Duramax turbo diesel that delivers 397 horsepower (296 kW) at 3,000 rpm and 765 lb.-ft. of torque (1,037 Nm) at 1,600 rpm.

"The new Sierra Denali HD is the latest expression of GMC's Denali philosophy of blending capability with premium features and styling," said Lisa Hutchinson, GMC product marketing director. "It is a premium tool that offers many comfort and infotainment features, along with a maximum towing capacity of 21,700 pounds with the more powerful Duramax diesel."

The new Denali HDs are crew cabs available only in the 2500 series (3/4-ton), 2WD and 4WD configurations, as well as the 3500 Series (1-ton) 2WD and 4WD in both single-rear-wheel and dually versions. The 3500 series is also available in standard (6-foot 6-inches) and dually long box (8-foot) versions. A Vortec 6.0L gas V-8/six-speed automatic powertrain is standard and the new Duramax 6.6L turbo diesel/Allison 1000 six-speed transmission powertrain is available on all Denali HDs.

The iconic Denali four-bar, chrome grille with round air inlets distinguishes the Sierra Denali HDs on the outside, along with body-color bumpers, chrome door handles, chrome accents and 17- (Dually), 18- and 20-inch polished forged aluminum wheels. On the inside they include Denali-specific brushed aluminum trim, power-adjustable pedals, a Bose premium surround audio system and 12-way power seats. Along with an optional heated steering wheel, heated and cooled leather-appointed seating is available. The exterior is offered in three colors: Black, Stealth Gray and White.

The balance of the new 2011 Sierra HD lineup is identified on the outside by new, three-bar grilles and powertrain-badged louvered hoods, along with a revised, full-width chrome steel front bumper and a new family of 17-, 18- and 20-inch wheels. It's beneath the skin, however, where they are truly separated from their predecessors – and the competition. Highlights include:

- Greater towing capability (21,700 lbs./9,843 kg) and payload (6,635 lbs./3,009 kg) supported by all-new fully-boxed, high-strength-steel frames and strong suspensions for maximum capability and exceptional ride characteristics
- New 6.6L Duramax diesel delivering more power, up to 11-percent greater highway fuel economy, up to 63-percent lower emissions, B20 biodiesel capability and quicker acceleration
- Larger gas tank and fuel economy improvements for up to 680 miles (1,090 km) between fill-ups with the 6.6L Duramax turbo diesel
- All-new "smart" exhaust brake feature for greater control on grades and reduced brake pad wear
- An array of control features, including trailer sway control, integrated trailer brake control, hill start assist, automatic grade braking, intelligent brake assist and larger brakes
- Consumer-focused technology, including available mobile WiFi, USB connectivity, Bluetooth connectivity, XM Satellite Radio, OnStar 9.0 and navigation.

"GMC has been one of the industry's strongest truck brands for more than 100 years, and we back the 2011 Sierra HDs with a comprehensive five-year/100,000-mile powertrain warranty that provides the best coverage in America," said Hutchinson.

"From greater diesel power to the segment-best warranty, these trucks deliver strength and peace of mind on all fronts."

The following pages provide details of the new and redesigned product features of the Sierra Denali HD and the other Sierra 2500HD and 3500HD models.

Greater capability

Depending on the model, Sierra HD models offer:

- Segment-leading fifth-wheel towing capacity of 21,700 pounds (9,843 kg)
- Conventional towing capacity increases to a segment-best 17,000 pounds (7,711 kg)
- Improved payload capability of 6,635 pounds (3,009 kg) on a complete vehicle
- Segment-leading Gross Combined Weight Rating increases to 29,200 pounds (13,244 kg)
- Gross Vehicle Weight Ratings increases up to 17 percent to 13,000 pounds (5,909 kg)
- Front Axle Weight Rating increases by up to 25 percent to 6,000 pounds (2,721 kg)
- Snow plow capability for all 4WD cab configurations.

"You can see by the ratings numbers that the Sierra HD lineup is more capable, but the trucks are also better performers in the intangible qualities that bond owners with their trucks," said Rick Spina, vehicle line executive. "They accelerate quicker – especially when fully loaded – stop more confidently and deliver a smooth, quiet driving experience that you have to experience to fully appreciate."

Eleven all-new, fully boxed frame assemblies improve durability and ride characteristics; and support increased capabilities.

The frames have increased cross sections and use more high-strength steel for greater durability, higher towing capacity and improved ride and handling; the front sections are hydroformed. The bending and beaming stiffness of the frames is increased 92 percent and 20 percent, respectively, with the fully boxed sections enhancing torsional stiffness by a factor of five. Also, larger engine and transmission mounts, coupled with a 125-percent-stiffer front frame structure, provide greater vibration control, while hydraulic body mounts are incorporated under the cab section on extended and crew cab models for a more isolated feel inside.

Engineers addressed common customer and aftermarket uses when designing the new frames, including adding access holes to the rear frame section to enable easier installation of fifth-wheel/gooseneck-style hitches. Also, the frame-mounted hitch for conventional trailering is stronger, with a box-tube design. It supports up to 17,000 pounds (7,711 kg).

New, stronger front suspension enables snow plow installation on all 4WD models.

A completely redesigned independent front suspension system offers up to a 25-percent greater front axle weight rating – up to 6,000 pounds (2,721 kg) front gross axle weight rating (FGAWR) – so a snow plow can be used on all 4WD cab configurations with the available snow plow prep package. Sierra's signature short-long arm/torsion bar front suspension design is retained, but now features new, forged steel upper control arms that are stronger and lighter than their predecessors.

The new lower control arms are made of precision-machined cast iron to handle the greater loads. Five different torsion bar rates support five different front gross axle weight ratings (a single torsion bar was previously used for all models). This helps stabilize the range of trim heights of various models under load, while enhancing appearance, handling, durability, tire wear and alignment. The trim height is adjusted on each bar via a single bolt, easily allowing the height to be changed to account for the weight of a snow plow or other accessories.

The Sierra HD front suspension now uses a pair of urethane jounce bumpers on each side, instead of one, for improved load management; and there's a new upper shock mount attachment design that's positively connected to the frame with two fasteners. This design eliminates squeaks and clunks, while supporting higher load capability and increased durability.

Compared to competitors' beam-axle front suspensions, the Sierra's independent front suspension provides a better ride, more accurate trim height control (with fewer parts) and greater flexibility to adjust the alignment for weight and tire sensitivity.

New, asymmetrical leaf-spring rear suspension supports greater loads.

Matching the Sierra HD's greater strength and capability is a rear suspension designed to support greater loads. It features a new, larger asymmetrical leaf-spring design that also contributes to improved ride and handling characteristics. The asymmetrical design is derived from unequal front and rear spring half lengths, which minimize axle hop and enhance traction control efficiency.

The 2500HD models feature a two-stage leaf-spring design, while 3500HD models have a three-stage design. All models feature 3-inch-wide (76 mm) leaf springs that are 20-percent wider than previous models. The larger leaf-spring design

supports increased rear gross axle weight ratings across the board. On the 2500HD models, the rating is 6,200 pounds (2,818 kg) – up from 6,084 (2,765). On 3500HD models, the rating increases to 7,050 pounds (3,204 kg) on single-rear-wheel models and 9,375 pounds (4,261 kg) on dual-rear-wheel models – the latter representing a nearly 14-percent increase over the previous 8,200-pound (3,727 kg) rating.

Sierra HDs deliver a more refined driving experience.

Longer wheelbases – ranging from 133.6 inches (3,395 mm) to 167.7 inches (4,259 mm) – and wider front/rear tracks enhance the ride and handling characteristics of the Sierra 2500HD and 3500HD, giving them a greater feeling of smoothness and control. The longer wheelbases and wider tracks are complemented by the new, stiffer frames, new jounce bumpers, shock mounts and hydraulic body mounts to provide a solid, smooth and isolated driving experience. New shocks were specially valved to support the new trucks' weight ratings, while balancing excellent ride characteristics.

A revised steering system designed to support the trucks' greater front gross axle weight rating also enhances the driving experience. It includes a new, larger steering gear, power steering pumps and linkages. The pumps (different parts for gas and diesel models) deliver greater pressure for reduced steering effort in low-speed and parking maneuvers; they are also quieter. On some models, the new linkages feature a compliant joint added at the pitman attachment to enhance handling.

New 6.6L Duramax turbo diesel

The workhorse Duramax 6.6L turbo diesel V-8 is more powerful and durable for 2011, delivering 397 horsepower (296 kW) at 3,000 rpm and 765 lb.-ft. of torque (1,037 Nm) at 1,600 rpm. It also produces lower emissions and offers B20 biodiesel capability that promotes a domestically produced renewable fuel. The new Duramax 6.6L features:

- NOx emissions reduced at least 63 percent over 2010 models
- Quieter operation
- High-pressure (30,000 psi/2,000 bar) Piezo-actuated fuel system for greater fuel efficiency, improved performance and reduced emissions
- "Smart" exhaust brake feature that enables controlled vehicle slowdown on downhill grades without actuating the brakes
- Selective catalytic reduction after-treatment system using diesel exhaust fluid (DEF) injection to provide the best overall diesel characteristics and performance – with a range of about 5,000 miles (8,000 km) between DEF refills
- Combustion and after-treatment that have been optimized to provide about 700 miles (1,125 km) between diesel particulate filter regenerations – a 75-percent improvement over the previous system and a significant contributor to improved fuel efficiency, as the regeneration process requires additional fuel
- B20 biodiesel capability for an alternative fueling option
- Internal revisions that improve durability.

The nearly 1.3 million Duramax 6.6L engines produced since 2000 have proven exceptionally durable and dependable. The internal elements that helped build its reputation are enhanced for 2011, including:

- Main bearings' profiles changed to enhance oil film thickness
- Oil pump flow increased for increased pressure at low speeds
- Modified turbocharger oil circuit for increased pressure at the turbo and faster oil delivery
- Modified connecting rods' pin ends to provide increased piston support
- New, higher-strength piston design that eliminates bushings to provide lower reciprocating weight
- An EGR cooler bypass that reduces high-mileage soot deposits in the cooler and EGR circuit.

Sierra HD's selective catalytic reduction after-treatment system delivers better overall diesel performance, with a range of about 5,000 miles (8,000 km) between DEF refills. Its optimized combustion and after-treatment process provides about 700 miles (1,125 km) between diesel particulate filter regenerations.

New Allison 1000 six-speed automatic transmission

The enhanced Allison 1000 is strengthened to handle the higher torque capability of the new 6.6L Duramax engine, while also helping to improve fuel economy and provide seamless assistance with a new exhaust brake system. Greater efficiency is delivered through reduced "spin loss" – meaning, the transmission channels more of the engine's power to the axles, allowing it to do more with less fuel.

The Allison 1000 also features driver shift control with tap up/tap down shifting and a patented elevated idle mode cab warm-up feature. Also, the tow/haul mode reduces shift cycling for better control and improved cooling when towing or hauling heavy loads. The six-speed configuration retains its two overdrive gears for optimal efficiency.

Performance with the Duramax/Allison combination is also improved over previous models, with preliminary testing showing 0-60 mph times of less than 9 seconds and quarter-mile times of less than 16 seconds in 2500HD models. That's about 0.3-second and 0.5-second quicker, respectively, than previous models.

Vortec 6.0L/Hydra-Matic 6L90 six-speed powertrain is standard on all models.

The Vortec 6.0L gas V-8 with variable valve timing returns to the new Sierra HDs, along with a strengthened version of the Hydra-Matic 6L90 six-speed automatic transmission. This combination delivers excellent performance and efficiency, with a greater emphasis on low-rpm power. It is enhanced for 2011 with greater idle refinement.

The engine is rated at 360 horsepower (268 kW) at 5,400 rpm and 380 lb.-ft. (515 Nm) at 4,200 rpm in trucks with GVWRs up to 10,000 pounds. It is rated at an estimated 322 horsepower (240 kW) at 4,400 rpm and 380 lb.-ft. of torque (515 Nm) at 4,200 rpm in trucks with GVWRs greater than 10,000 pounds.

The 6L90 is enhanced for greater strength, smoothness and quietness via:

- Adding four attachment bosses to the transfer case adapter (4WD models) for increased strength and smoother, quieter performance
- Increasing the cross section size of the transfer case adapter for greater strength
- Adding a new, stronger output shaft
- Adding a new heat shield and vent hose.

Brake feel and performance is greatly improved.

The standard four-wheel disc system is completely revamped to deliver smoother, more immediate and confident-feeling performance. Four-wheel, four-channel ABS is standard on all single-rear-wheel models and a three-channel system is standard on dual-rear-wheel models. The front and rear rotors are larger in diameter – 14 inches (355 mm) – and width on all models to support their increased capacity, weight ratings and trailering ratings, while the calipers are stiffer and stronger. The revised hydroboost brake booster calibration reduces pedal effort, and the revised travel of the pedal provides a more comfortable, confident feel. Larger wheel hub and bearing assemblies complement the new brake system, and the rear rotors attach to the wheel hubs for easier servicing.

'Smart' exhaust brake provides greater control and reduces brake pad wear.

A new standard feature on Duramax-equipped models is the "smart" exhaust brake. This driver-selectable feature uses the turbine control of the variable geometry turbocharger and the compression of the engine to generate backpressure, slowing the vehicle without applying the brakes. It is integrated with the cruise control feature, and varies the braking to account for the grade and vehicle load. The exhaust brake allows for virtually effortless driving and towing, with seamless and quiet operation. It also helps prolong brake life and prevents overheating the brakes on long, downhill grades.

Safety features include trailer sway control system and hill start assist.

The 2011 Sierra 2500HD and 3500HD models have a comprehensive roster of safety features and functional technologies that include:

- StabiliTrak electronic stability control system on all single-rear-wheel models
- Larger, four-wheel disc brakes with standard four-wheel ABS
- A new high-strength steel tubular frame cross member that enhances safety and improves crashworthiness
- Seat pelvic/thorax and head curtain side air bags available on 2500HD
- Available rear backup camera
- Segment-exclusive OnStar 9.0
- Trailer sway control system on all single-rear-wheel models
- Hill start assist (standard on single-rear-wheel models).

The trailer sway control system provides an added measure of confidence when towing a trailer. The system senses conditions of trailer sway and intervenes with braking and/or reduced engine power to bring the trailer under control and keep it on its intended path. The system uses electric trailer brakes when a trailer is plugged into the standard wiring harness of the truck, and its performance requires no input from the driver.

The hill start assist system is automatically engaged when sensors detect the vehicle is on a grade of about 5 percent or greater. It holds the brakes for about 1.5 seconds or until the gas pedal is pressed, preventing rollback. It is particularly effective when towing, giving the driver time to switch from the brake pedal to the gas pedal without rolling.

Broad lineup – inside and out.

For 2011, the Sierra heavy-duty lineup expands to include 12 2500HD models and nine single- and dual-rear-wheel 3500HD models – including a new 3500HD Crew Cab with a 6.5-foot cargo box. Other models are offered in WT, SLE and SLT trim levels, while popular features such as the EZ Lift tailgate and rearview camera system are retained.

The interiors have excellent attention to detail and are quieter – thanks to the range of the truck's enhancements. The stronger chassis, quieter Duramax engine and even details like a quieter power steering pump contribute to the Sierra HD delivering exceptional quietness.

Along with quietness, Sierra HD models are designed for work. The interiors feature numerous storage compartments, providing covered access for everything from work gloves to laptops. For those who use their truck as a mobile office, Sierra HDs deliver with available mobile WiFi, USB connectivity, Bluetooth connectivity, XM Satellite Radio and a navigation system. Multiple charge points enable multiple electronic devices to operate simultaneously; and when equipped with the available navigation system, XM NavTraffic offers real-time updates of traffic conditions (in selected areas) that can help plan the most effective route to the job site.

Ready for the long haul – and the cold.

The 2011 Sierra HDs drive farther without stopping to refuel. A new, 36-gallon (136 L) fuel tank is standard on all models and, with the improved fuel efficiency of the powertrains, enables a cruising range of about 680 miles (1,090 km) with the Duramax 6.6L. Cold-weather customers will appreciate the Duramax 6.6L's quick, reliable start-up, with a starting time on par with gas engines. Its glow plug cycle time is the segment's best in all temperatures, taking no more than 3 seconds in temperatures as low as -20 F (-29 C). There's also a cab heat-up feature that allows the engine to idle faster in low temperatures to warm the interior more quickly.

The best warranty coverage in America.

All 2011 Sierra 2500HD and 3500HD trucks work under the best warranty coverage in America: a five-year/100,000-mile limited powertrain warranty, plus roadside assistance, courtesy transportation and other features that provide assurance that GMC backs its trucks for everything the road offers.

RELATED NEWS

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Vortec 6.0L V-8 And 6L90 Six-Speed Combination Delivers Efficient, Integrated Performance In 2011 GMC Sierra Heavy-Duty Trucks
New 2011 GMC Sierra Heavy-Duty Trucks Deliver Best-in-Class Diesel Torque And Horsepower

TRANSLATIONS

SPANISH

SIERRA HD DENALI LIDERA LA NUEVA LÍNEA DE VEHÍCULOS SIERRA PARA TRABAJO PESADO 2011

SIMPLIFIED CHINESE

SIERRA HD DENALI HD 引领 2011 年的 SIERRA 系列产品系列

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EXHIBIT 13

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Bosch Media Service

BOSCH Invented for life

Mobility Solutions

The brain of diesel injection

New Bosch EDC17 engine management system

- Effective control of combustion
- Concept tailored for all vehicle classes and markets
- Ready for standardization with Autosar

February 28, 2006
Mobility Solutions
Press releases

press release

In 2006 Bosch will introduce a new generation of diesel engine control units with the EDC17. The Electronic Diesel Control (EDC) controls every parameter that is important for effective, low-emission combustion.

EDC17: Ready for future demands
Because the computing power and functional scope of the new EDC17 can be adapted to match particular requirements, it can be used very flexibly in any vehicle segment on all the world's markets. In addition to controlling the precise timing and quantity of injection, exhaust gas recirculation, and manifold pressure regulation, it also offers a large number of options such as the control of particulate filters or systems for reducing nitrogen oxides. The Bosch EDC17 determines the injection parameters for each cylinder, making specific adaptations if necessary. This improves the precision of injection throughout the vehicle's entire service life. The system therefore makes an important contribution to observing future exhaust gas emission limits. The improved control functions also open up potential for employing new combustion processes, with even cleaner emissions, such as the process known as "partially homogeneous combustion."

Specialists from both the Diesel Systems and Gasoline Systems Divisions at Bosch have worked together closely to develop the new generation of electronic control units. This involved the development of a new and improved system architecture, prepared for future standards such as Autosar (Automotive Open System Architecture). The proven plug and housing design of the EDC16 has been retained. The EDC17 therefore satisfies both the present and the future requirements of an engine management system.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 375,000 associates worldwide (as of December 31, 2015). According to preliminary figures, the company generated sales of more than 70 billion euros in 2015. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiaries and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing and sales network covers some 150 countries. The basis for the company's future growth is its innovative strength. Bosch employs 55,800 associates in research and development at roughly 115 locations across the globe. The Bosch Group's strategic objective is to deliver innovations for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is ï¿½Invented for life.ï¿½

The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as ï¿½Workshop for Precision Mechanics and Electrical Engineering.ï¿½ The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

*Additional information is available online at **www.bosch.com** and **www.bosch-press.com**, **http://twitter.com/BoschPresse**.*

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EXHIBIT 14

Bosch Auto Parts

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Bosch eXchange
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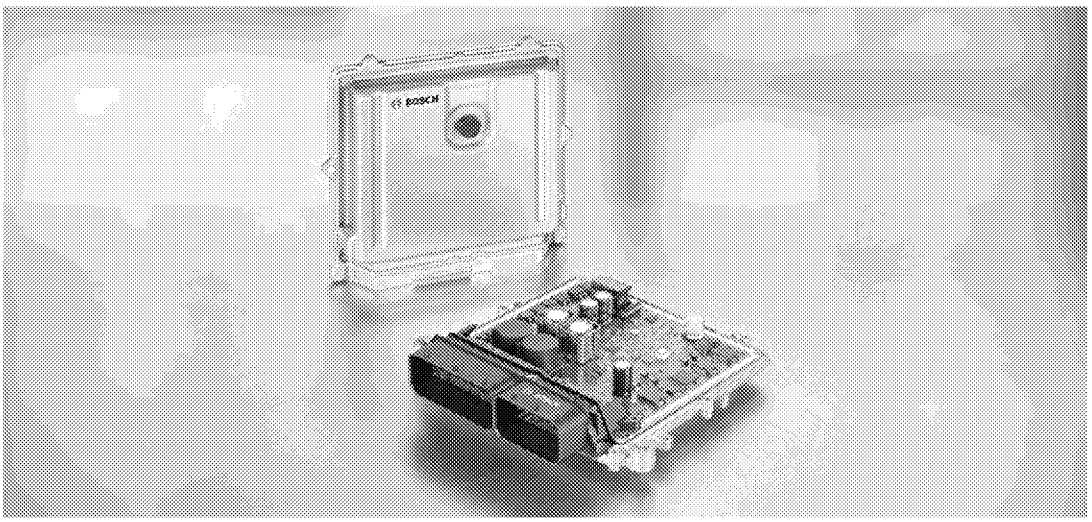
Engine management



Product information

Engine management: perfectly regulated engine functions

The EDC (Electronic Diesel Control) is the engine management system for diesel vehicles. It regulates the functions of the injection system and ensures that the engine provides the requested engine torque. The injection is constantly adjusted to both the engine and the driving situation. Diesel engines with a Bosch engine management system impress with their dynamic performance, low fuel consumption and optimized engine performance.

Benefits

- Efficient operation due to quick adaption of all injection parameters

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EXHIBIT 15

Volkswagen: The scandal explained

By Russell Hotten
Business reporter, BBC News

10 December 2015 | Business

GETTY IMAGES

What is Volkswagen accused of?

It's been dubbed the "diesel dupe". In September, **the Environmental Protection Agency (EPA) found** that many VW cars being sold in America had a "defeat device" - or software - in diesel engines that could detect when they were being tested, changing the performance accordingly to improve results. The German car giant has since admitted cheating emissions tests in the US.

VW has had a major push to sell diesel cars in the US, backed by a huge marketing campaign trumpeting its cars' low emissions. The EPA's findings cover 482,000 cars in the US only, including the VW-manufactured Audi A3, and the VW models Jetta, Beetle, Golf and Passat. But VW has admitted that about 11 million cars worldwide, including eight million in Europe, are fitted with the so-called "defeat device".

The company has also been accused by the EPA of modifying software on the 3 litre diesel engines fitted to some Porsche and Audi as well as VW models. VW has denied the claims,

which affect at least 10,000 vehicles.

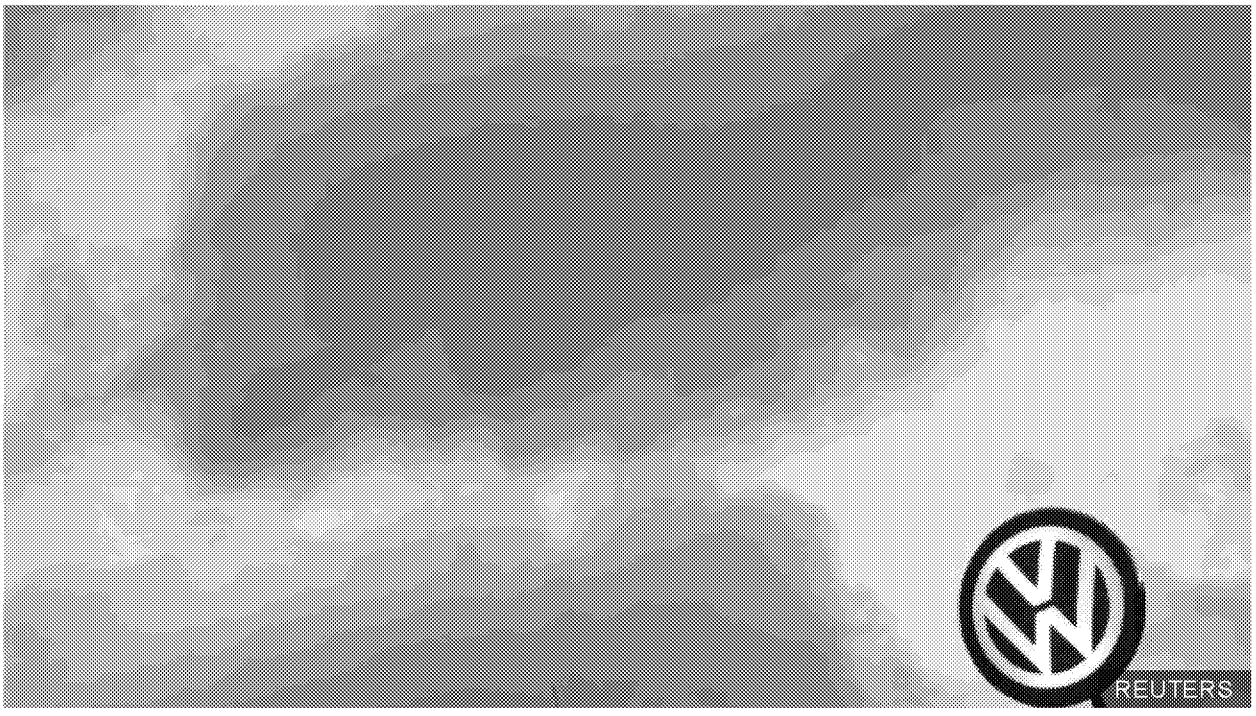
In November, VW said it had found "irregularities" in tests to measure **carbon dioxide emissions levels** that could affect about 800,000 cars in Europe - including petrol vehicles. However, in December it said that following investigations, it had established that this only affected about 36,000 of the cars it produces each year.

This 'defeat device' sounds like a sophisticated piece of kit.

Full details of how it worked are sketchy, although the EPA has said that the engines had computer software that could sense test scenarios by monitoring speed, engine operation, air pressure and even the position of the steering wheel.

When the cars were operating under controlled laboratory conditions - which typically involve putting them on a stationary test rig - the device appears to have put the vehicle into a sort of safety mode in which the engine ran below normal power and performance. Once on the road, the engines switched out of this test mode.

The result? The engines emitted nitrogen oxide pollutants up to 40 times above what is allowed in the US.



What has been VW's response?

"We've totally screwed up," said VW America boss Michael Horn, while the group's chief executive at the time, Martin Winterkorn, said his company had "broken the trust of our customers and the public". Mr Winterkorn resigned as a direct result of the scandal and was replaced by Matthias Mueller, the former boss of Porsche.

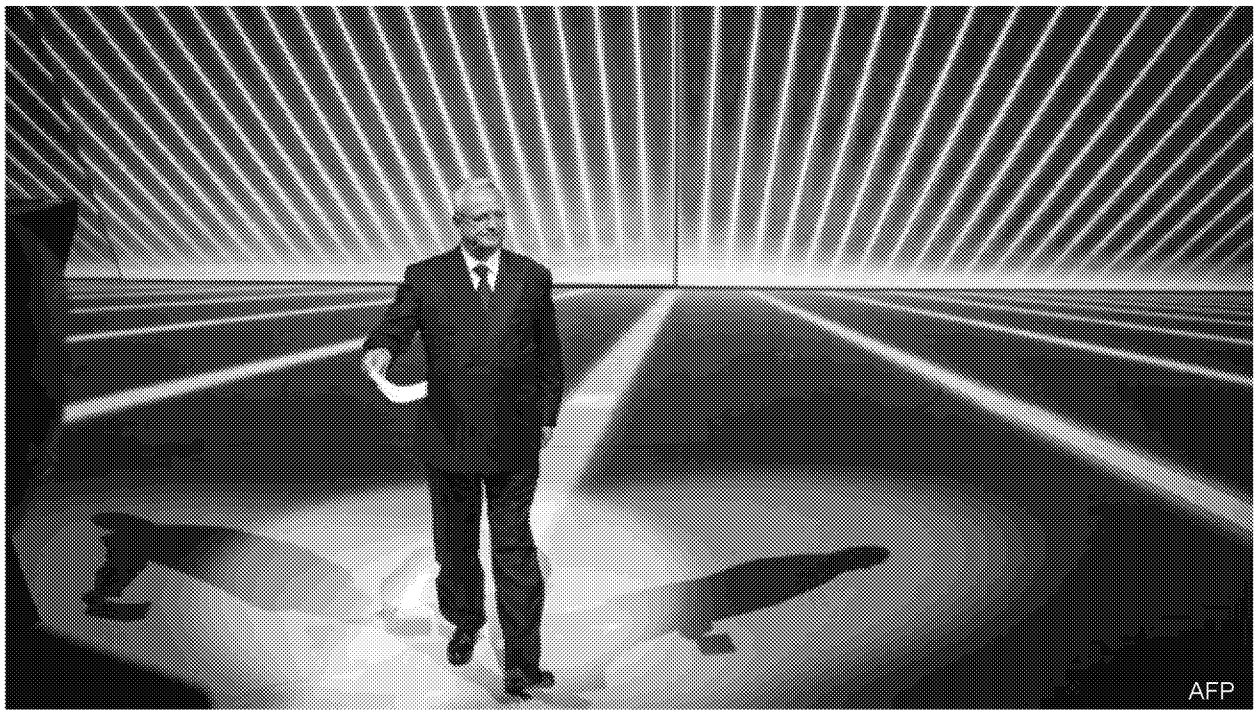
"My most urgent task is to win back trust for the Volkswagen Group - by leaving no stone unturned," Mr Mueller said on taking up his new post.

VW has also launched an internal inquiry.

With VW recalling millions of cars worldwide from early next year, it has set aside €6.7bn (£4.8bn) to cover costs. That resulted in the company posting its **first quarterly loss** for 15 years of €2.5bn in late October.

But that's unlikely to be the end of the financial impact. The EPA has the power to fine a company up to $37,500 for each vehicle that breaches standards - a maximum fine of about $18bn.

The costs of possible legal action by car owners and shareholders "cannot be estimated at the current time", VW added.


AFP

How widespread are VW's problems?

What started in the US has spread to a growing number of countries. The UK, Italy, France, South Korea, Canada and, of course, Germany, have opened investigations. Throughout the world, politicians, regulators and environmental groups are questioning the legitimacy of VW's emissions testing.

VW will recall 8.5 million cars in Europe, including 2.4 million in Germany and 1.2 million in the UK, and 500,000 in the US as a result of the emissions scandal.

No wonder the carmaker's shares have fallen by about a third since the scandal broke.

Will more heads roll?

It's still unclear who knew what and when, although VW must have had a chain of management command that approved fitting cheating devices to its engines, so further departures are likely.

Christian Klingler, a management board member and head of sales and marketing is leaving the company, although VW said this was part of long-term planned structural changes and was not related to recent events.

In 2014, in the US, regulators raised concerns about VW emissions levels, but these were dismissed by the company as "technical issues" and "unexpected" real-world conditions. If executives and managers wilfully misled officials (or their own VW superiors) it's difficult to see them surviving.

Are other carmakers implicated?

That's for the various regulatory and government inquiries to determine. California's Air Resources Board is now looking into other manufacturers' testing results. Ford, BMW and Renault-Nissan have said they did not use "defeat devices", while other firms have either not commented or simply stated that they comply with the law.

The UK trade body for the car industry, the SMMT, said: "The EU operates a fundamentally different system to the US - with all European tests performed in strict conditions as required by EU law and witnessed by a government-appointed independent approval agency."

But it added: "The industry acknowledges that the current test method is outdated and is seeking agreement from the European Commission for a new emissions test that embraces new testing technologies and is more representative of on-road conditions."

That sounds like EU testing rules need tightening, too.

Environmental campaigners have long argued that emissions rules are being flouted. "Diesel cars in Europe operate with worse technology on average than the US," said Jos Dings, from the pressure group Transport & Environment. "Our latest report demonstrated that almost 90%

of diesel vehicles didn't meet emission limits when they drive on the road. We are talking millions of vehicles."

Car analysts at the financial research firm Bernstein agree that European standards are not as strict as those in the US. However, the analysts said in a report that there was, therefore, "less need to cheat". So, if other European carmakers' results are suspect, Bernstein says the "consequences are likely to be a change in the test cycle rather than legal action and fines".

It's all another blow for the diesel market.

Certainly is. Over the past decade and more, carmakers have poured a fortune into the production of diesel vehicles - with the support of many governments - believing that they are better for the environment. Latest scientific evidence suggests that's not the case, and there are even moves to limit diesel cars in some cities.

Diesel sales were already slowing, so the VW scandal came at a bad time. "The revelations are likely to lead to a sharp fall in demand for diesel engine cars," said Richard Gane, automotive expert at consultants Vendigital.

"In the US, the diesel car market currently represents around 1% of all new car sales and this is unlikely to increase in the short to medium term.

"However, in Europe the impact could be much more significant, leading to a large tranche of the market switching to petrol engine cars virtually overnight."

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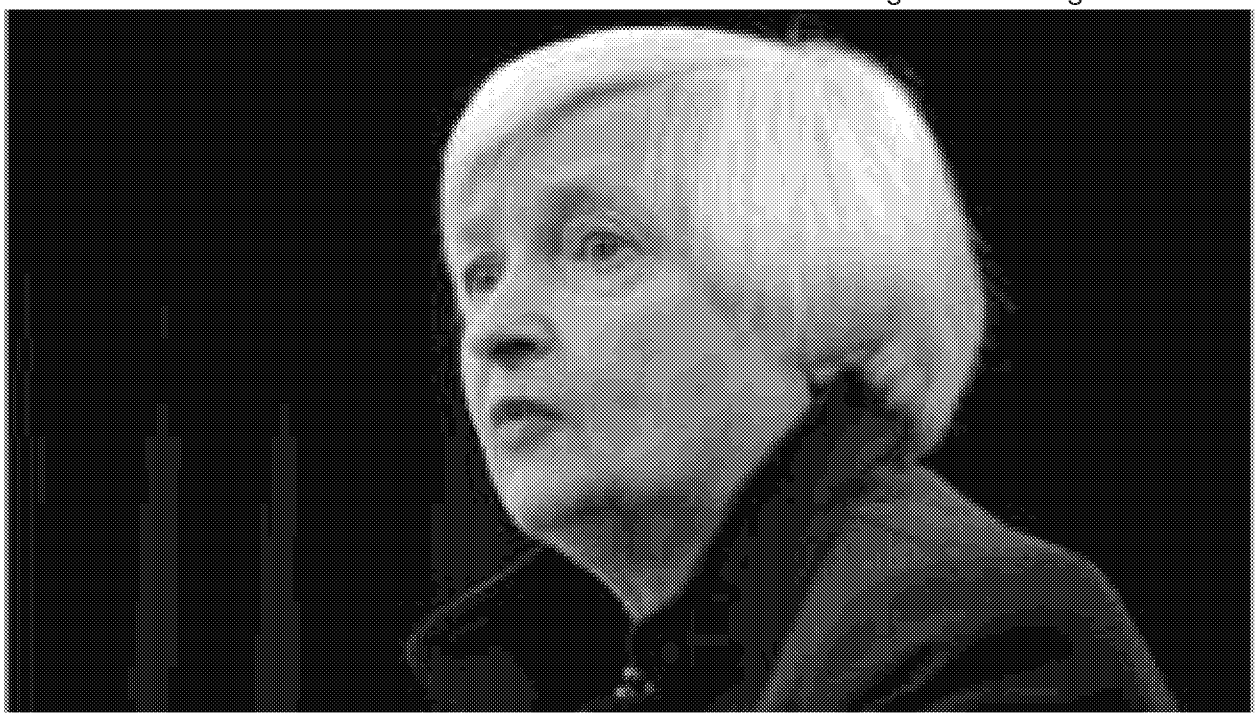

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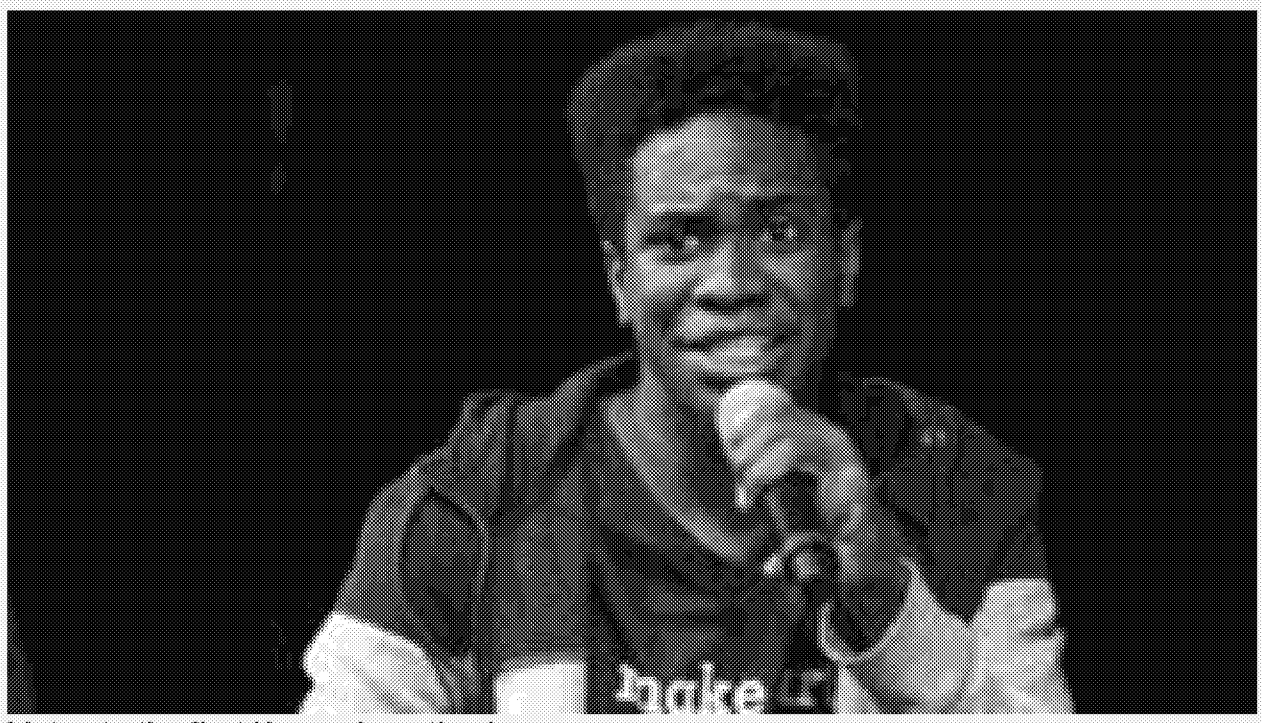

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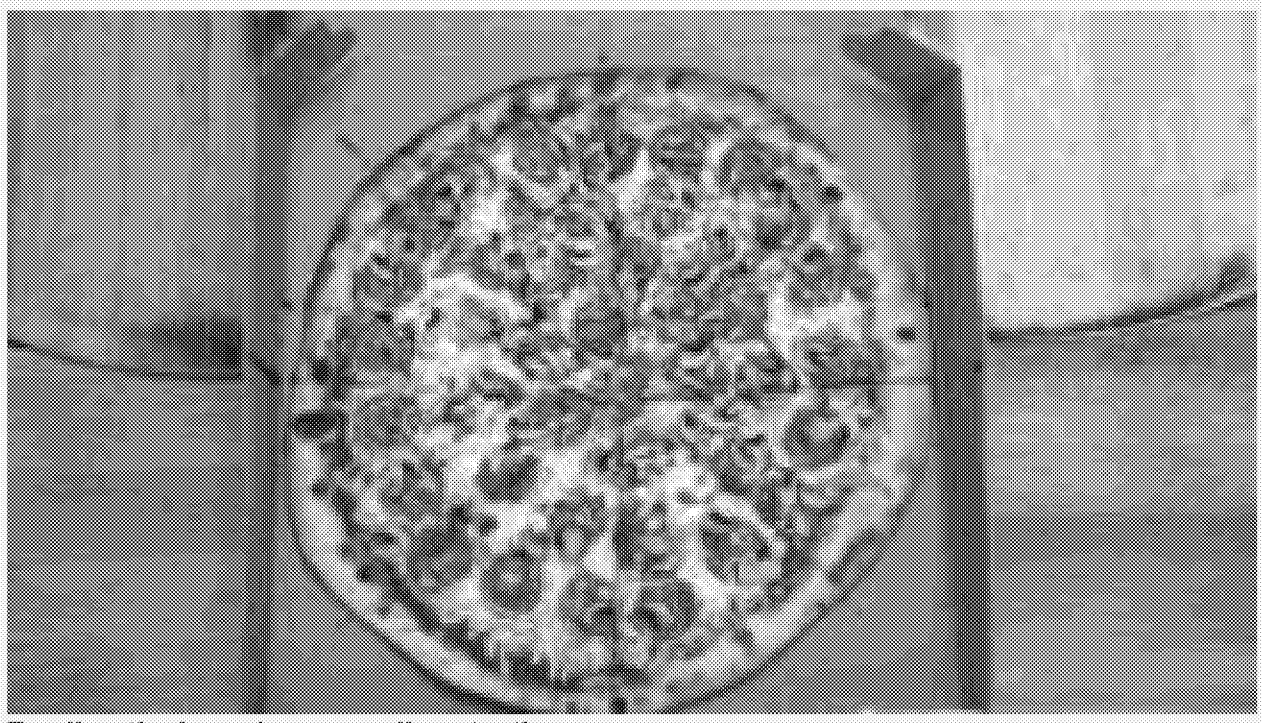

Feeding the homeless one slice at a time

EXHIBIT 16

Automotive News

Bosch probes whether its staff helped VW's emissions rigging

Automotive News | January 27, 2016 - 4:03 am EST

-- UPDATED: 1/27/16 8:25 am ET - adds details

STUTTGART -- Robert Bosch is carrying out an internal probe to investigate whether any of its staff were involved in Volkswagen's rigging of emissions tests, the supplier's CEO, Volkmar Denner, said.

However, VW bears the responsibility for its emissions-cheating scandal and not suppliers or diesel technology, Denner said at a press briefing here at the supplier's headquarters on Tuesday.

Bosch said in September that it supplied control components for VW engines implicated in emissions rigging. Prosecutors in the U.S. and Germany are looking into whether the partsmaker helped VW to cheat on emissions tests.

Denner said Bosch started an internal investigation into its role a day after the scandal broke.

Each automaker is responsible for a vehicle's emissions, not suppliers who contribute particular parts or component sets to the engine or gearbox, he said.

Highly complex

The company was cooperating with authorities, Denner said. Bosch has submitted additional material to authorities beyond what was requested to support technical understanding of the matter. Engine-control software is a highly complex field and the documentation can comprise thousands of pages, he said.

Bosch is reluctant to disclose its engine management software codes to authorities since they contain years of proprietary know-how. "Why should we disclose this," Denner said. "What do authorities want with this? It's so complex that it is not feasible."

Denner said only automakers could provide real insight into potential engine management violations since they were the ones who had a complete overview of engine and exhaust systems and since they submitted cars to the authorities for certification.

Asked whether Bosch played a role in calibrating Volkswagen's engine software, Denner said: "Powertrain is complex, many suppliers are involved."

Bosch hasn't noted a drop in demand for diesel cars, but long-term prospects are uncertain if authorities intensify scrutiny that eventually taints the technology's reputation, Denner said.

Bosch's diesel-technology operations employ about 50,000 people.

To revive public trust in emissions data, Denner said he supports independent organizations conducting checks to narrow the gap between laboratory test results and real-world driving.

Diesels 'air cleaning machines'

Denner said diesel technology should continue to be pushed, since combined with modern filter systems, diesel engines can help cut pollution in large cities by reducing particulate matter.

"The diesel is an air cleaning machine," he said.

Dismissing diesel technology out of hand may dent consumer confidence in cars and further weigh on demand in a year when Bosch forecasts that global automobile production will grow by 1 percent rather than the 3 percent growth seen in previous years.

"2016 will not be an easy year," Denner said.

Separately, Bosch today released **preliminary full-year earnings** for 2015. The industrial group, which makes household goods, engine components and sensor technologies, said its revenue rose 10 percent to 70.6 billion euros ($76.7 billion) in 2015 thanks to a 12 percent jump in sales from its mobility solutions division to 41.7 billion euros.

The supplier said it continued to expect a rise in operating profit in 2016 on rising demand for driver assistance and infotainment systems. Driver assistance systems, including ultrasound, radar and video sensors are used in crash-avoidance technology and will become important components for automakers to launch self-driving cars.

The shift towards more fuel-efficient and safer cars has helped unlisted Bosch boost sales of gasoline and diesel injection systems and to sell more high-margin products. Revenue from the sale of automotive radar and assistance systems doubled, Bosch said.

Overall, the group's operating margin widened to 6.5 percent in 2015 from 5.8 percent in the year-earlier period.

Preliminary results for the first time included proceeds from two joint-venture companies, Bosch Siemens Haushaltsgeraete and ZF Lenksysteme, which Bosch acquired in 2014, boosting revenues by 16 billion euros.

Bloomberg and Reuters contributed to this report

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EXHIBIT 17

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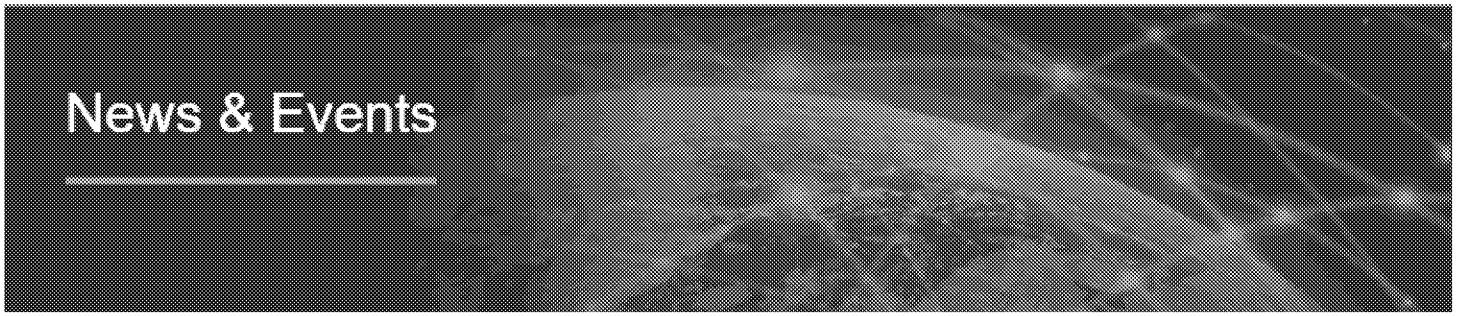

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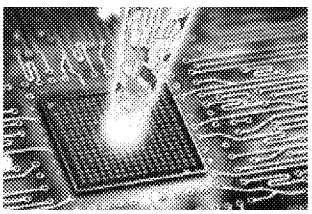
Reliable Protection for ECUs



12.05.2016

When attackers gain unauthorized access to increasingly connected vehicle electrical systems, the situation can turn extremely dangerous for occupants. Holistic strategies are required to reliably protect vehicular systems across their entire service life against hackers, viruses, and unauthorized software uploads while maintaining the functional safety of the vehicle in a worst-case scenario. Hardware security modules (HSMs) are an integral component of such holistic

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automotive HSM and shared them with semiconductor manufacturers. Since that time, various manufacturers derivatives of the Bosch HSM have surged onto the market. ESCRYPT's CycurHSM firmware enables using the full functionality of an HSM. It protects vehicle systems against unauthorized access in every operating phase – which means during booting, regular operation, and installation of software updates or upgrades. To achieve this, the hardware and software work hand in hand. Among other features, HSMs are equipped with a true random number generator (TRNG), in addition to accelerator hardware that enables lightning-fast calculation of AES-standard cryptographic message authentication codes (MACs) on the modules. This hardware provides the basis for the three central functions of CycurHSM:

- Secure boot
- Secure flashing
- Runtime manipulation detection

"CycurHSM is a standardized software stack for the Bosch HSM as well as all key derivatives on the market," says Dr. Frederic Stumpf, product manager in charge at ESCRYPT. It supports HSMs from Infineon, Renesas, Freescale, and STMicroelectronics platforms. The software relies on the established ETAS RTA-OS real-time operating system for easy integration. And thanks to an additional interface, an AUTOSAR environment is not an absolute requirement for using CycurHSM. Because of this flexibility, as well as its high degree of functionality, this firmware will promote the rapid take-up of HSM technology in the marketplace.

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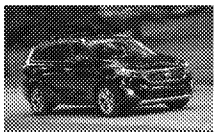
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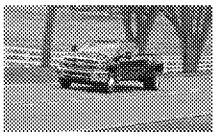
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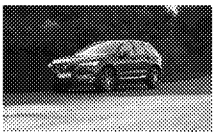
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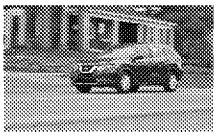
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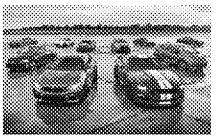
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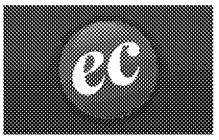
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EPA Investigating Bosch over VW Diesel Cheater Software

NOVEMBER 23, 2015 AT 10:02 AM BY MICHAEL TAYLOR

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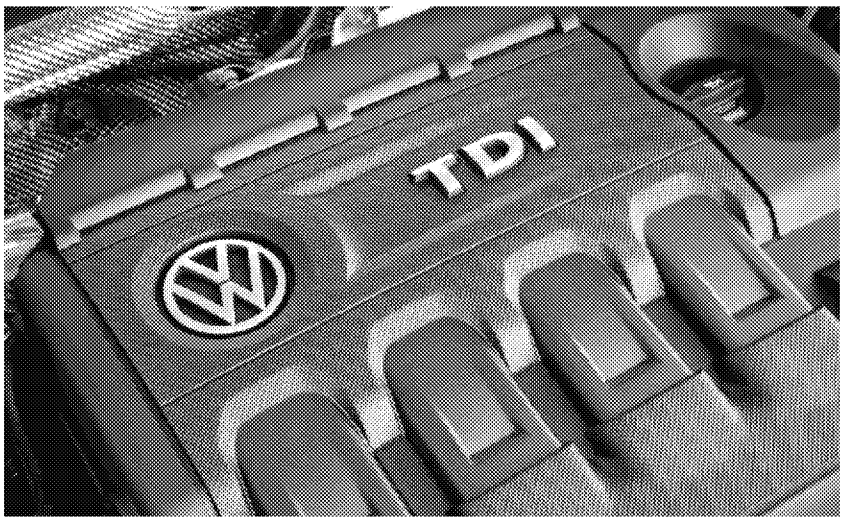

The world's biggest automotive supplier is being investigated by the U.S. Department of Justice over its role in the Volkswagen diesel-emissions cheating scandal. Prosecutors have launched the investigation to find out whether Robert Bosch GmbH knew about or participated in the software-controlled cheat, which turned off emissions controls in real-world driving conditions.

A Department of Justice spokesman said they had so far found no evidence of Bosch breaking the law, but admitted the investigation was at an early stage. To bring charges against Bosch, he said, investigators would have to prove it knew Volkswagen was using its technology to cheat the U.S. (and EU) emissions tests.

While Bosch declined to comment on the investigation, it released a statement in the early stages of the scandal, insisting it only made components to the specifications delivered by automakers. "How these components are calibrated and integrated into complete vehicle systems is the responsibility of each automaker," Bosch said at the time.

Bosch's defense might be made more difficult by an admission to German Sunday newspaper, *Bild am Sonntag*, that it warned Volkswagen eight years ago that the cheat was illegal.

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The paper said its sources had uncovered an internal communication between Bosch and Volkswagen, with Bosch insisting that the "defeat" code emissions test-cheating software was for test purposes and that to use it on production road cars would be against the law. Bosch nonetheless supplied Volkswagen with more than 11 million control modules fitted with the software code.

Another German Sunday newspaper, the *Frankfurter Allgemeine Zeitung*, said one of Volkswagen's own engineers also blew the whistle on the cheat code in a 2011 internal communication, but was ignored.

Bosch, the world's biggest automotive supplier, refused to comment, insisting only that its communications with Volkswagen were confidential, as they were with any other car company. Bosch has insisted throughout that it was not to blame, even though it supplied the complete fuel-delivery and metering systems for treating the exhaust gases for the 2.0-liter TDI, plus its common-rail fuel-injection systems. In a statement, Bosch insisted the responsibility for configuring the system "lies with Volkswagen."

At the heart of all the affected cars is Bosch's EDC 16 and EDC 17 engine-control module, which also regulates the emissions clean-up on turbo-diesel engines from Fiat, Mercedes-Benz, and BMW. Each car company has its own specification and software to manage the engine's operation, with the control module providing the base.

One car-company engineer, who spoke on the condition of anonymity, insisted Bosch had to know the code was active in production models.

"I've had many arguments with Bosch, and they certainly own the dataset software and let their customers tune the curves. Before each dataset is released it goes back to Bosch for its own validation.

"Bosch is involved in all the development we ever do. They insist on being present at all our physical tests and they log all their own data, so someone somewhere at Bosch will have known what was going on.

"All software routines have to go through the software verification of Bosch, and they have hundreds of milestones of verification, that's the structure," he said.

"The car company is *never* entitled by Bosch to do something on their own."

- **Bosch Warned VW about Diesel Emissions Cheating in 2007**
- **Everything You Need to Know about the VW Diesel Emissions Scandal**
- **VW Diesel Emissions Scandal: Ongoing Coverage from *Car and Driver***

Bosch has been at the heart of the auto industry for more than 100 years, being the first company to adopt the magneto to cars to spark the air-fuel mixture and the first to deliver a commercially practical spark plug in 1902. It also sold the world's first diesel fuel-injection system in 1927.

It employs more than 110,000 people in Germany with more than $1 billion in annual sales and has an unusual corporate structure. It is privately held and donates its profits to charity. The Robert Bosch Foundation charity owns 92 percent of the shares in the company but has no voting rights. The Bosch family owns seven percent of the shares and has eight percent of the voting rights, while other leading industrialists own just 0.01 percent of the company and have 93 percent of the votes.

Its unusual structure sees about 95 percent of its profits plowed back into research and development, while about four percent is disbursed in charitable payments with the rest going to the Bosch family.

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SchmidtG

+1

The USG should be careful that it doesn't give the impression of using this case for protectionist purposes...

5:01 PM on 11/24/2015 **5 Replies** Reply

OnkelUdo

+1

What does United States Gypsum have to do with this. Was drywall involved and I missed it?

7:45 PM on 11/24/2015

SchmidtG

+1

Yes, they claimed that Bosch supplied gypsum-making technology that

exuded more fumes than was allowed by the EPA. The management was so distraught, they got plastered.

11:17 PM on 11/24/2015

SchmidtG

+0

I am thus called out, Sir. I must warn you, I was a member of the Teutonia Student Duelling Society. En Garde!

11:18 PM on 11/24/2015

Load More Replies (2 of 2)

simul8guy

+1

Hmmmm.... I guess the author doesn't know the difference between the EPA (as mentioned in the title of the story) and the US Justice Dept. The EPA is never mentioned in the body of the article...

9:41 AM on 11/24/2015 Reply

gregg_vw

+0

As well they should.

12:10 AM on 11/24/2015 Reply

Tri D.

+5

Let's just put it this way. Bosch did everything it could to stay legal while still wanting the sales that they knew were probably for illegal purposes.

VW: Hey Bosch, I need 11 million of those modules so I can pass emissions
Bosch: VW, these are for testing purposes ONLY! but I'll sell you 11M modules. Just promise me it's only for testing purposes.

Sounds like ebay autoparts sellers. It's ONLY FOR OFF ROAD PURPOSES!!!

Yes because we take our Civics, Camaro, etc.. off road all the time. We'll spend a few hours before and after the track uninstalling/reinstalling the parts.

In criminal court, this case would have no grounds to accuse Bosch of anyting. But this is not criminal court so they may be able to get Bosch for somet

... read more

10:18 PM on 11/23/2015 **7 Replies** Reply

Rishi T.

+0

I'm sure somewhere, someone's teenager has already done that; taken a Civic off-roading. ☺.Our neighbour's kid took his parents' 1yr old Civic off-roading on the boulevards when he was a teen. Now he's a firefighter.

Back to the VW thing, this will definitely stick for a bit, now that the V6 models of their TDI, i.e. 3.0L version is also afflicted by the similar cheat software. For those that think why do we need environmental protection, etc, then how is it that we have can have awesome beasts like the Dodge Hellcats and AMGs/M cars and have more power than 1960's/pre-1978 cars that didn't have catalytic converters and clean burning engines, think about it ;-). If Chrysler/Dodge can deliver compliant cars for emissions and extre

... read more

4:23 AM on 11/24/2015

simul8guy

+2

Diesel engine emissions are very different from gasoline engine emissions so comparing Hellcats and TDIs is ridiculous and your Civic comment makes no sense at all....

9:50 AM on 11/24/2015

Tri D.

+2

1. By off road, you mean the grass or even gravel in the back then yes. Else, that civic won't make it very far and probably get stuck in a small mud puddle before anything.

2. Diesel and gasoline are very different. Gasoline is a REFINED fuel.

3. I guarantee you that a 18L R18 Civic cannot get 26mpg if driven like a race car. More like 18mpg hopefully. Even a Prius will only get 17mpg. I have no idea what you're talking about. I grew up with Hondas, Mitsubishi, etc... I would believe it had you said a CRX.

10:06 AM on 11/24/2015

Load More Replies (3 of 4)

Vincent Wolf

-2

VW should be banned from exporting cars to America for a period of not less than 10 years.

9:55 PM on 11/23/2015 **6 Replies** Reply

Jon368

+1

why?

then GM, Ford, Toyota, and anything with a defective Takata airbag should as well.

10:45 PM on 11/23/2015

Chet Manley

+1

What about what GM did? They essentially murdered people when they covered up the ignition switch problem

covered up the ignition switch problem.

What would you do to GM?

4:10 AM on 11/24/2015

Rishi T.

+1

Someone overseas is probably saying the same thing about GM, stringent fines are better and are more of deterrent than just banning/embargoing a brand. Also, criminal charges where possible, if knowingly negligent.

5:08 AM on 11/24/2015

Load More Replies (3 of 3)

Alexander Dewitt

+0

If Bosch ends up eating a huge fine would that impact supply to other manufacturers around the world?

9:50 PM on 11/23/2015 Reply

Jon368

+1

and the plot thickens...

9:50 PM on 11/23/2015 Reply

Bait83

+3

I have a feeling whatever comes out of this will blow back on VW more than it will Bosch.

Bosch already admitted to knowing about the software and issued a written warning to VW saying the defeat software was for testing only and not to be used in customer cars.

All they're are going to find is that VW ordered the ECU modules this way and then used the defeat software even after they were warned not to.

9:38 PM on 11/23/2015 9 Replies Reply

wjtinfwb

+2

Agree! The US general public knows Bosch as a high-end Dishwasher, if they know the brand at all. In fact, I'm a 55 year old car and motorcycle guy, very familiar with Bosch but never knew of their ownership or financial structure. VW on the other hand, is one of the premier brands in the world. With the German engineering emphasis on control and precision, it will be very difficult for VW to pin responsibility on any external parties. The EPA however, may choose to go after both parties to send a clear message to suppliers as well as defer some blame and fines from VW and it's significant US presence and investment, which affects states, dealers and US investors.

10:05 PM on 11/23/2015

Bait83

+1

Ya, well you know how lawyers and gov't regulators work; if they smell blood they'll go in for the kill.

1:29 AM on 11/24/2015

The W.

+0

Pretty sure that's how Corporations work too. So why should the lawyers and gov't regulators that enforce our laws be any different.

VW saw a loop hole in testing that they could exploit with an illegal cheat device. And they went in for the kill.

1:49 AM on 11/24/2015

Load More Replies (3 of 6)

V4isnice

+3

Even when (which is the most plausible scenario imho) it was kind of obvious to Bosch what Volkswagen was intending to do, they are not responsible for the cars that VW sells. The only one they could be liable to would be VW if they actually delivered faulty modules, which seems very unlikely.
All they could ever be punished for is not telling, and I've not yet heard about such a paragraph for economic matters ...

9:16 PM on 11/23/2015 **7 Replies** Reply

Chet Manley

+0

And that gets complicated. Most of Bosch's potential liability will be under German and EU laws. And I have no idea how that applies to a situation like this. Its generally harder to sue in most countries compared to the US.

So I guess we have to wait and see.

4:19 AM on 11/24/2015

michael p.

+2

It's the ambulance chaser's dream. Joint and several liability, etc. Let's sue the gun maker for the criminal's behavior, and so on. I'm waiting for the ad agencies to file suit. Or maybe they will be sued. Or maybe Bosch can sue VW. Are the tire makers innocent in all this? Can VW sue Bosch? If they can, they will. Before this is over, there's going to be a lot of lawyers with enough money to afford nice new high line Audis and Porsches. Hell, the way this is going, after their take they might be even able to afford a Lambo, or even a used Veyron. What will VW owners get? A "fixed" car returning less mpg and HP, plus a prepaid Visa card good at the VW accessory store.

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4:06 PM on 11/24/2015

simul8guy

+1

Something tells me there will be some detailed news with respect to the emissions scandal breaking after the 1st of the year. Until then everything is just speculation.

6:10 PM on 11/24/2015

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EXHIBIT 19

AUTOS | Sat Jan 23, 2016 | 6:29am EST

Volkswagen probe finds manipulation was open secret in department: newspaper

Volkswagen cars are lined up for sale at a car shop in Bad Honnef near Bonn, Germany, November 4, 2015. REUTERS/Wolfgang Rattay

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Volkswagen's (VOWG_p.DE) development of software to cheat diesel-emissions tests was an open secret in its engine development department, Germany's Sueddeutsche Zeitung newspaper said on Friday, citing results from VW's internal investigation.

Many managers and staff dealing with emissions problems in the department knew of or were involved in developing the "defeat devices", said the newspaper, which researched the matter with regional broadcasters NDR and WDR.

A culture of collective secrecy prevailed within the department, where the installation of the defeat software that would cause the carmaker's biggest ever corporate crisis was openly discussed as long ago as 2006, Sueddeutsche said.

But it said there were exceptions: a whistleblower, who was himself involved in the deception and has been giving evidence to investigators hired by Volkswagen, alerted a senior manager outside the department in 2011.

This manager, however, did not react, the newspaper said.

Staff members in engine development felt pressure from the management board to find a cost effective solution to develop clean diesel engines for the U.S. market.

Rather than telling Volkswagen's management board the rules could not be adhered to, staff members in engine development decided to push ahead with manipulation, Sueddeutsche reported.

"Within the company there was a culture of 'we can do everything', so to say something cannot be done, was not acceptable," Sueddeutsche Zeitung said, quoting the VW internal report which included testimony from a staff member who took part in the fraud.

PICTURES

"Instead of coming clean to the management board that it cannot be done, it was decided to commit fraud," Sueddeutsche reported in its Saturday edition.

Staff in engine development took comfort from the fact that regulators would not be able to detect the fraud using conventional examination techniques, the paper further said.

Engine management software delivered by Bosch was then manipulated in Wolfsburg, where Volkswagen has its headquarters, Sueddeutsche Zeitung said.

Manipulation started in November 2006, Sueddeutsche Zeitung said.

Volkswagen has said that to the best of its knowledge only a small circle of people knew about the manipulation, which Europe's biggest carmaker admitted to U.S. environmental authorities in September last year.

It has said it is not aware of any involvement by top management or supervisory board members in the affair, which toppled its chief executive last year and is likely to cost billions of dollars for recalls, technical fixes and lawsuits.

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A Volkswagen spokesman declined to comment on Friday on what he called "speculation", saying the investigation - for which Volkswagen has hired U.S. law firm Jones Day - was continuing.

Contacted by Reuters late on Friday, Jones Day in Munich said its spokespeople had left for the day.

The Sueddeutsche Zeitung said the whistleblower was being investigated by prosecutors in Braunschweig.

Braunschweig prosecutors did not immediately return calls from Reuters late on Friday.

Volkswagen initiated an amnesty program last year for witnesses who could shed light on the scandal, promising not to fire employees who came forward with information by Nov. 30.

The carmaker plans to give the first public results of its investigation at the annual shareholders' meeting in April.

(Reporting by Georgina Prodhan, Edward Taylor and Jan Schwartz; Editing by Greg Mahlich and Raissa Kasolowsky)

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