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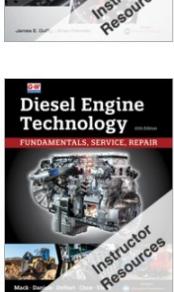
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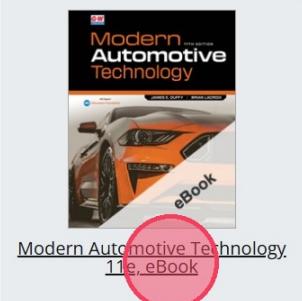
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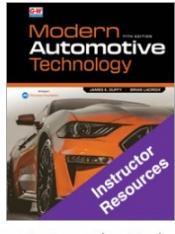
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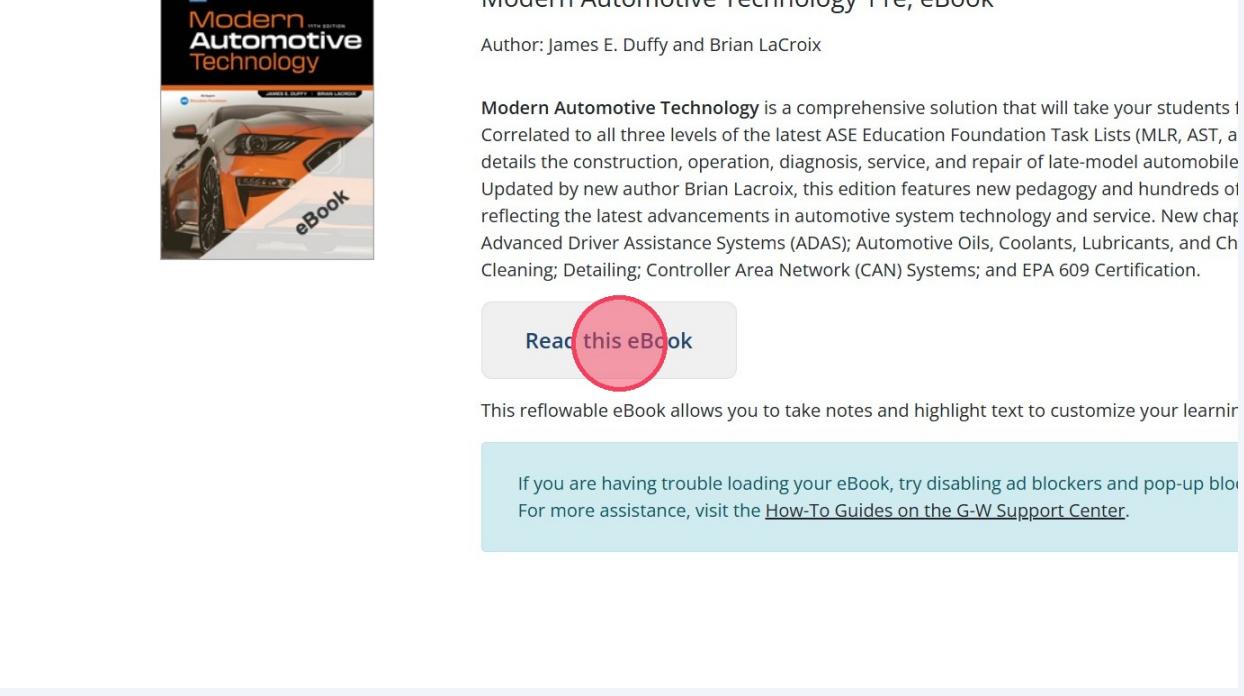


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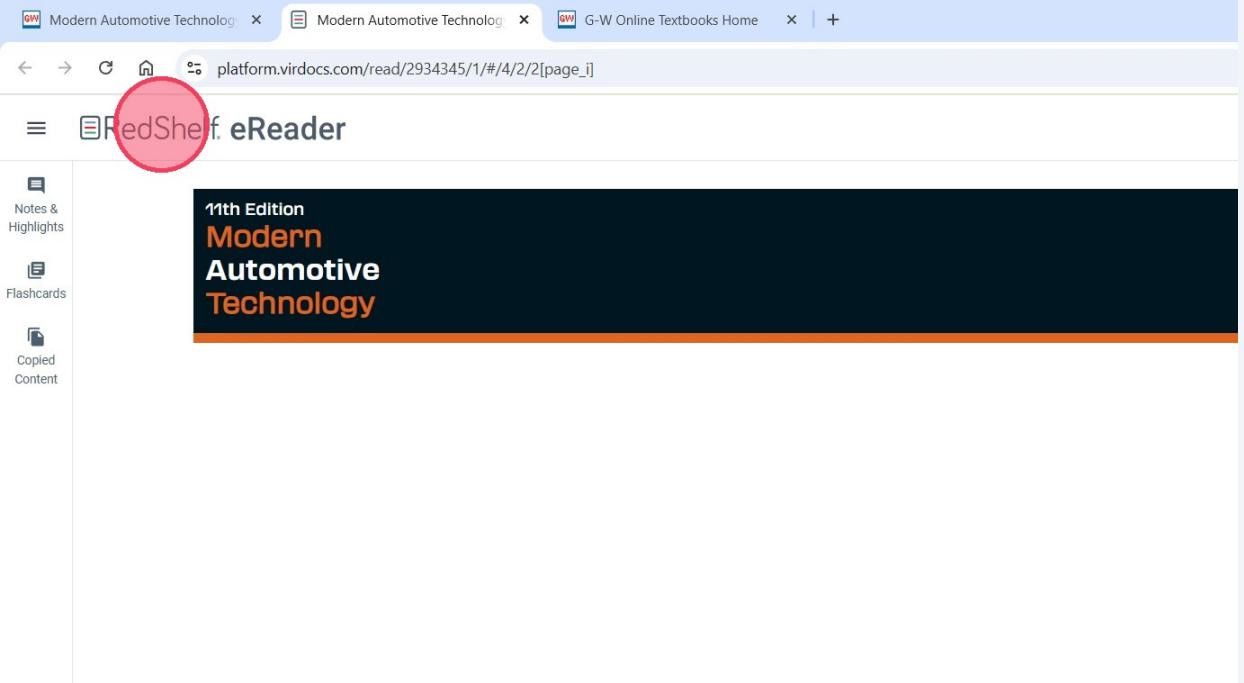
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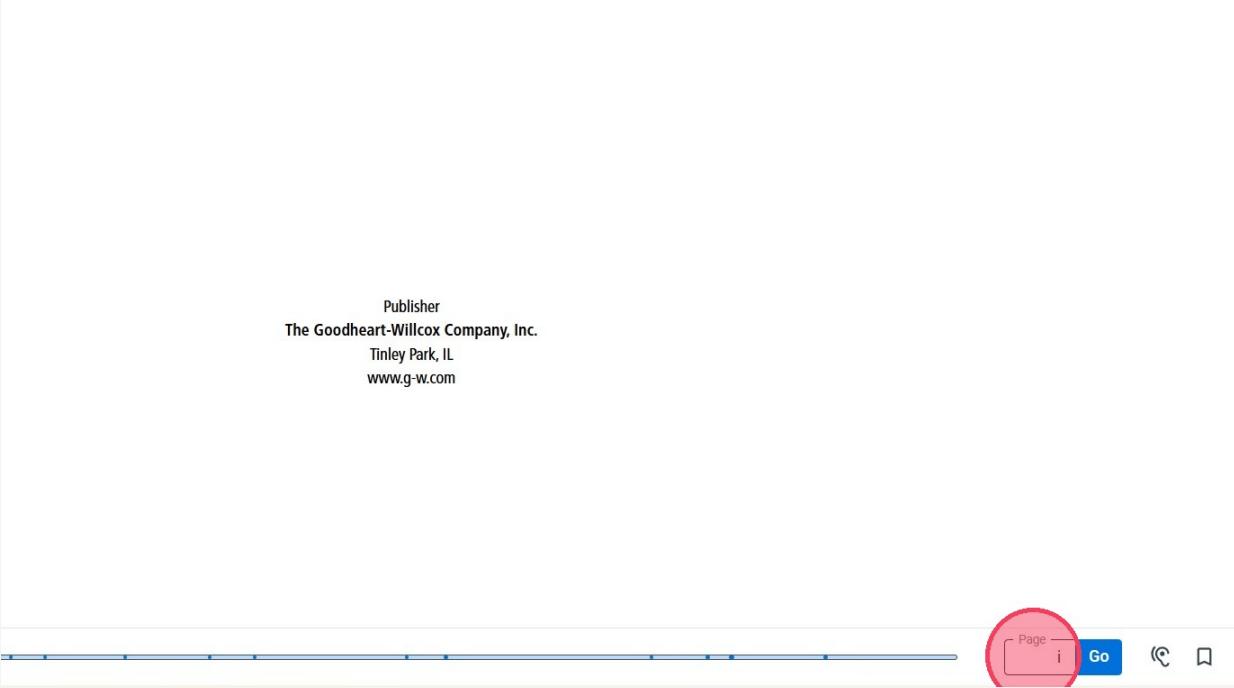
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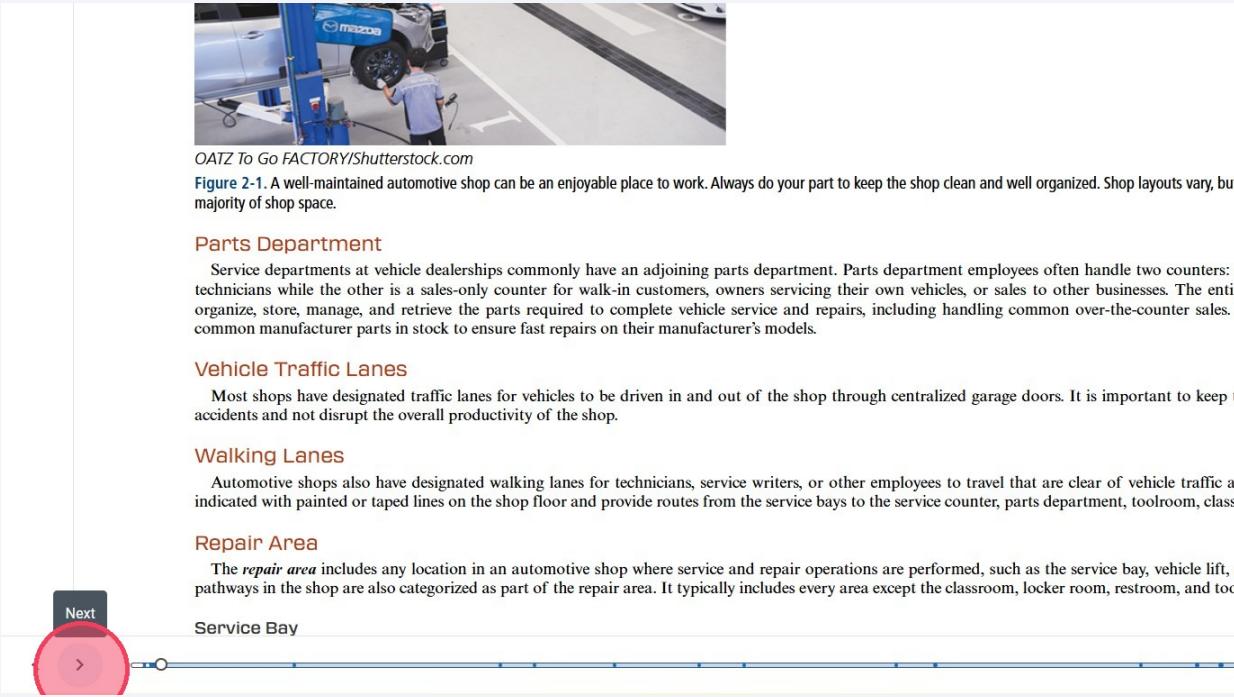
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Figure 2-1. A well-maintained automotive shop can be an enjoyable place to work. Always do your part to keep the shop clean and well organized. Shop layouts vary, but majority of shop space.

Parts Department

Service departments at vehicle dealerships commonly have an adjoining parts department. Parts department employees often handle two counters: one for technicians while the other is a sales-only counter for walk-in customers, owners servicing their own vehicles, or sales to other businesses. The entire department is responsible for organizing, storing, managing, and retrieving the parts required to complete vehicle service and repairs, including handling common over-the-counter sales. They also maintain a stock of common manufacturer parts in stock to ensure fast repairs on their manufacturer's models.

Vehicle Traffic Lanes

Most shops have designated traffic lanes for vehicles to be driven in and out of the shop through centralized garage doors. It is important to keep traffic lanes clear to prevent accidents and not disrupt the overall productivity of the shop.

Walking Lanes

Automotive shops also have designated walking lanes for technicians, service writers, or other employees to travel that are clear of vehicle traffic and indicated with painted or taped lines on the shop floor and provide routes from the service bays to the service counter, parts department, toolroom, classroom, and break room.

Repair Area

The **repair area** includes any location in an automotive shop where service and repair operations are performed, such as the service bay, vehicle lift, and pathways in the shop are also categorized as part of the repair area. It typically includes every area except the classroom, locker room, restroom, and too.

Next  Service Bay

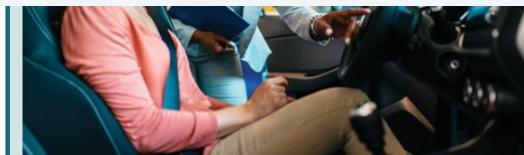
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CHAPTER 1 Review and Assessment

SUMMARY

- An automotive part, or component, can be removed from a vehicle but not disassembled. An automotive assembly is a set of fitted parts, which a technician can disassemble and reassemble during service, that is designed to complete a specific task on a vehicle. Automotive systems are groups of related components and assemblies that work together to perform a specific function. (1.1)
- A vehicle's paneled body structure provides safety to the occupant(s) and encloses the vehicle. A strong metal frame provides a mounting place for all vehicle's chassis and drive train components, as well as for the body structure. Unibody construction is the most common type of passenger vehicle construction. (1.2)
- General specifications for vehicles include fuel efficiency, curb weight, gross vehicle weight rating, weight distribution, wheelbase, track width, and vehicle length, width, and height. Vehicles are categorized as full-size, midsize, compact, and minicompact based on their size. Sedans, convertibles, hatchback wagons, pickup trucks, vans, sport utility vehicles, and crossover utility vehicles are some of the vehicle body types available. (1.2)
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- A vehicle's computer system uses electronic devices to monitor, control, and operate various automotive assemblies and systems. The three major components of vehicle computer systems are sensors, electronic control modules, and actuators. (1.4)
- Igniting the air-fuel mixture in a gasoline engine requires a correctly timed spark produced by components of the vehicle's ignition system. The starting system

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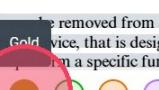


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Suspension, steering, and brake systems support and control vehicle handling, maneuvering, and deceleration. (1.7)

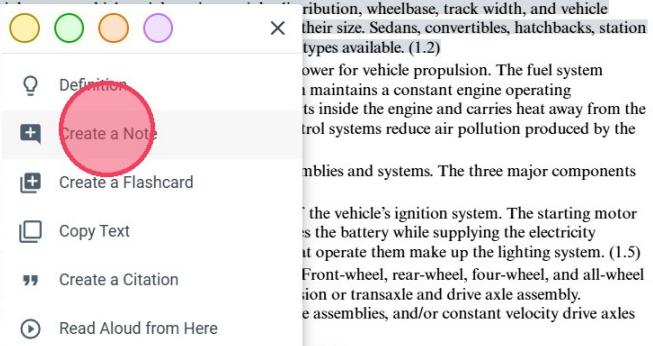
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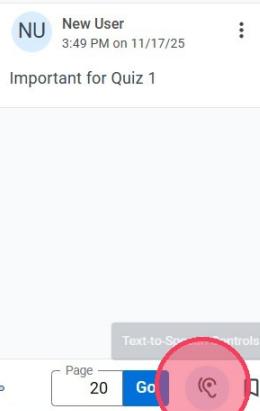
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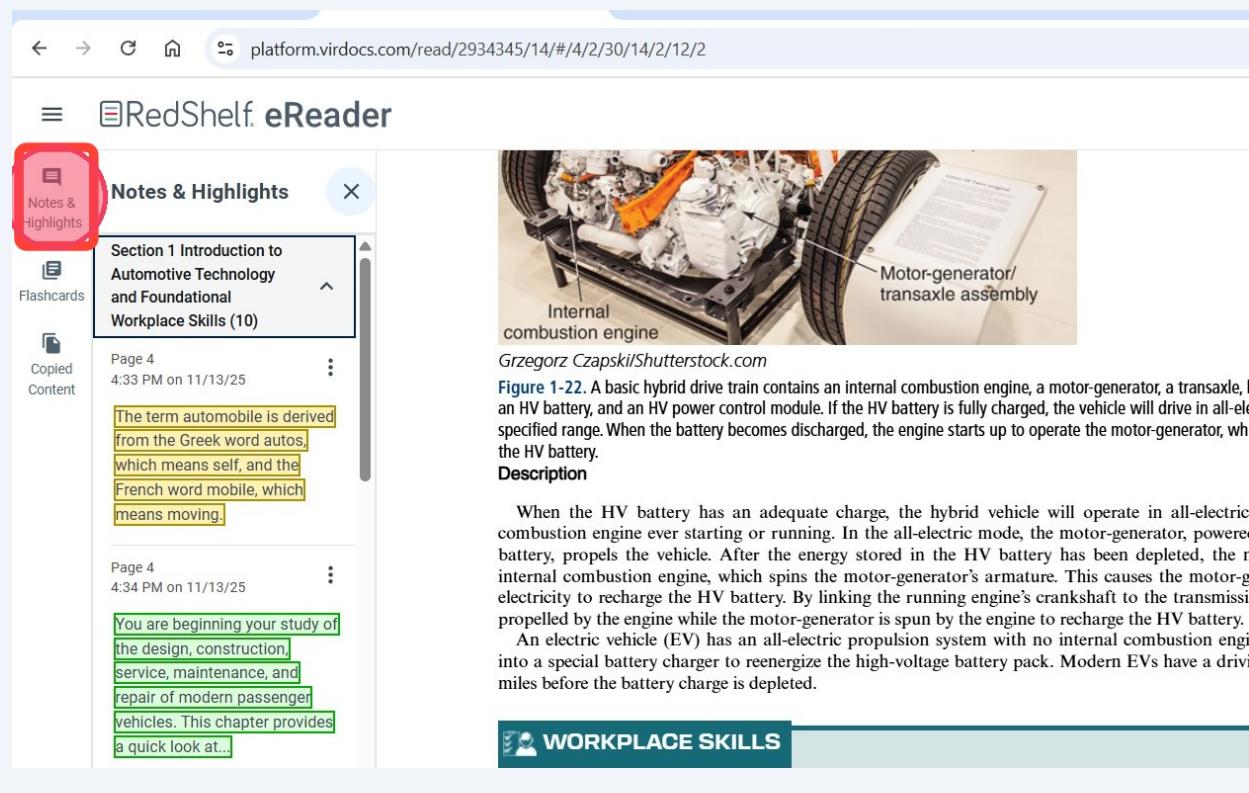
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Important for Quiz 1



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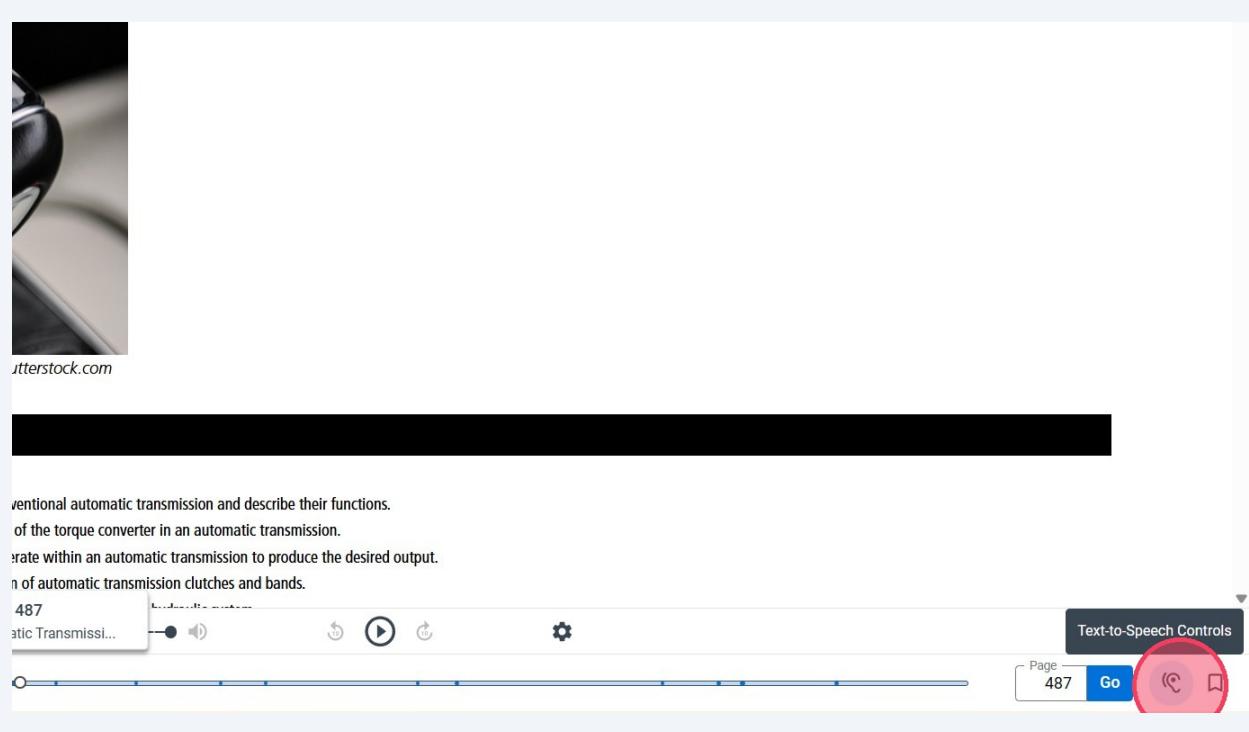
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The screenshot shows the RedShelf eReader interface. On the left, a sidebar is open with a red box highlighting the 'Notes & Highlights' icon. The sidebar lists 'Section 1 Introduction to Automotive Technology and Foundational Workplace Skills (10)' and two notes. The first note on page 4 highlights text about the etymology of 'automobile'. The second note on page 4 highlights text about the study of vehicle design and construction. The main content area shows a photograph of a hybrid vehicle's engine compartment with arrows pointing to the 'Internal combustion engine' and the 'Motor-generator/transaxle assembly'. Below the image is a caption and a detailed description of hybrid vehicle operation. A 'WORKPLACE SKILLS' section is visible at the bottom.

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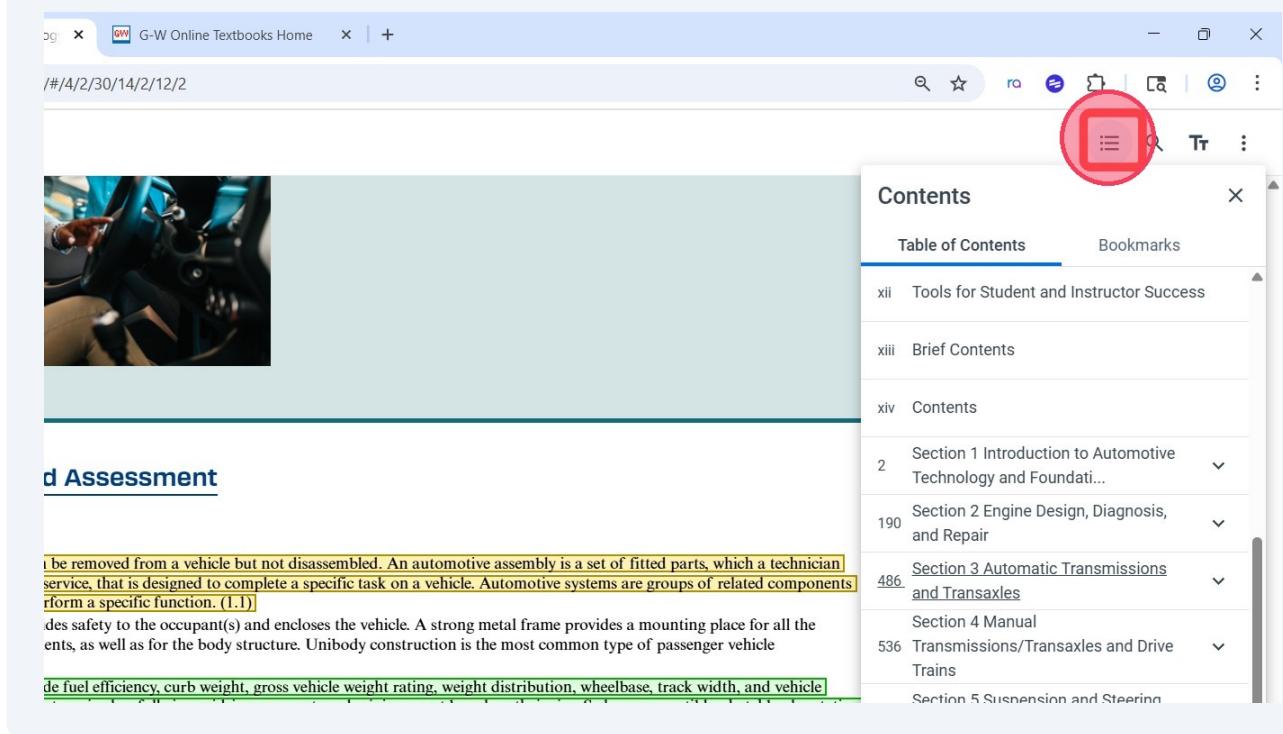
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Select the *bullet point* icon to view the **Table of Contents** and select a chapter or unit to link directly to that page in the book.

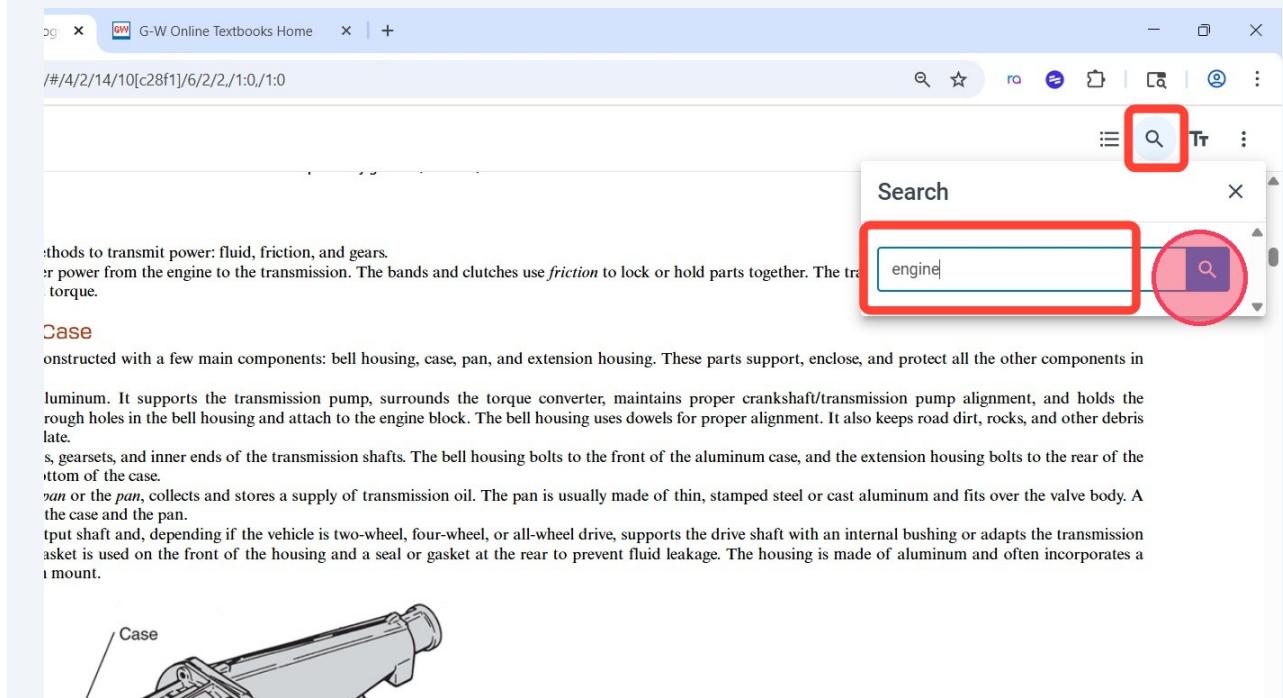


The screenshot shows a digital textbook interface. On the left, there is a large image of a car's interior. Below the image, the word 'Assessment' is underlined in blue. The right side of the screen features a 'Contents' panel with a red circle highlighting the 'Table of Contents' icon in the toolbar. The 'Table of Contents' tab is selected, showing a list of chapters and sections:

- xii Tools for Student and Instructor Success
- xiii Brief Contents
- xiv Contents
- 2 Section 1 Introduction to Automotive Technology and Foundati...
- 190 Section 2 Engine Design, Diagnosis, and Repair
- 486 Section 3 Automatic Transmissions and Transaxles
- 536 Section 4 Manual Transmissions/Transaxles and Drive Trains
- Section 5 Suspension and Steering

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Users may conduct a page or keyword search throughout the book. Select the **Search** icon, enter a keyword search and select *Go* or *Enter*.



The screenshot shows a digital textbook interface. On the left, there is a text block with the word 'Case' underlined in red. The right side of the screen features a 'Search' panel with a red circle highlighting the search icon in the toolbar. The search bar contains the word 'engine', and the search button is highlighted with a red circle.

Methods to transmit power: fluid, friction, and gears.
power from the engine to the transmission. The bands and clutches use *friction* to lock or hold parts together. The tra

Case
constructed with a few main components: bell housing, case, pan, and extension housing. These parts support, enclose, and protect all the other components in

luminum. It supports the transmission pump, surrounds the torque converter, maintains proper crankshaft/transmission pump alignment, and holds the rough holes in the bell housing and attach to the engine block. The bell housing uses dowels for proper alignment. It also keeps road dirt, rocks, and other debris late.

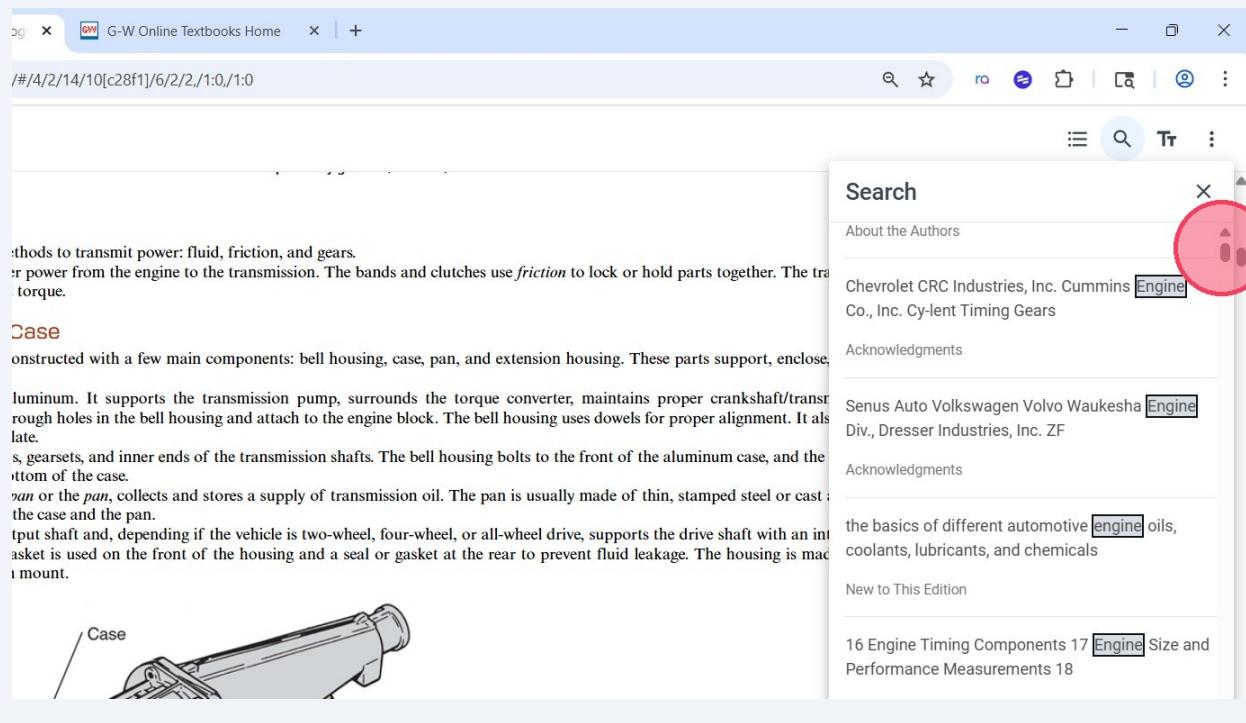
s, gearsets, and inner ends of the transmission shafts. The bell housing bolts to the front of the aluminum case, and the extension housing bolts to the rear of the bottom of the case.

pan or the *pan*, collects and stores a supply of transmission oil. The pan is usually made of thin, stamped steel or cast aluminum and fits over the valve body. A the case and the pan.

input shaft and, depending if the vehicle is two-wheel, four-wheel, or all-wheel drive, supports the drive shaft with an internal bushing or adapts the transmission asket is used on the front of the housing and a seal or gasket at the rear to prevent fluid leakage. The housing is made of aluminum and often incorporates a mount.

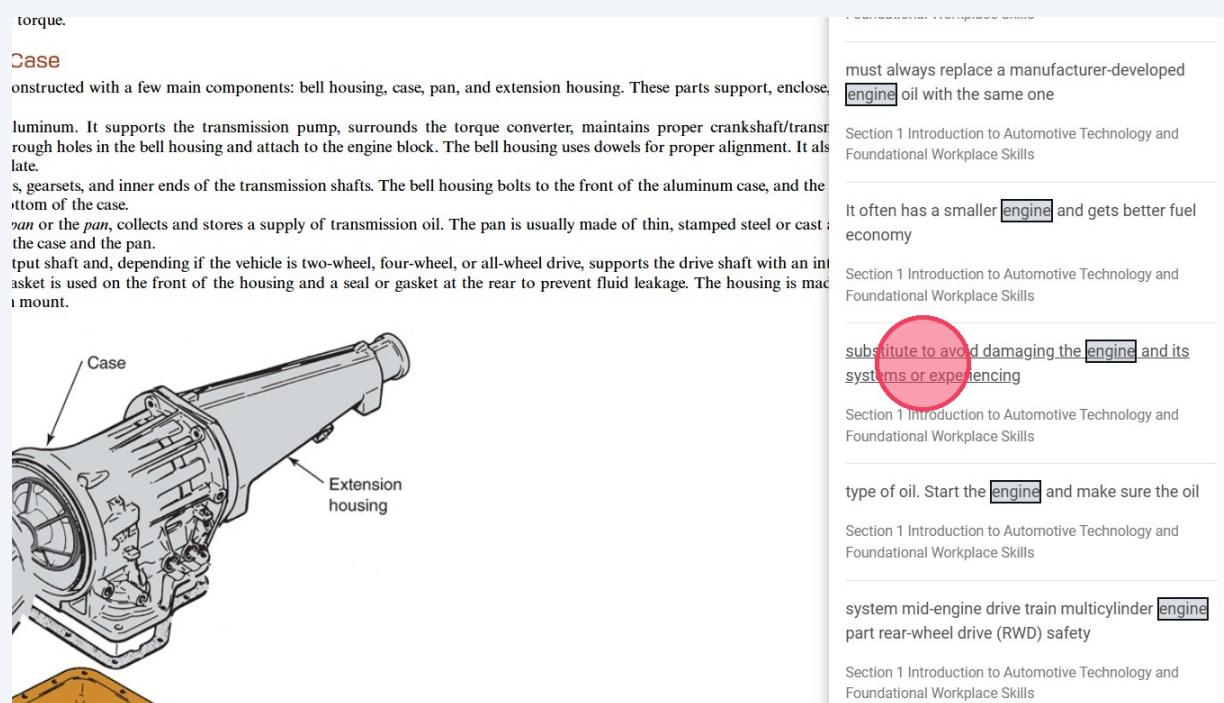


20 Scroll down to view the search results



The screenshot shows a web browser window with a search sidebar on the right. The sidebar has a 'Search' header and a list of results. The results include 'About the Authors', 'Chevrolet CRC Industries, Inc. Cummins Engine Co., Inc. Cy-lent Timing Gears', 'Acknowledgments', 'Sensus Auto Volkswagen Volvo Waukesha Engine Div., Dresser Industries, Inc. ZF', 'Acknowledgments', 'the basics of different automotive engine oils, coolants, lubricants, and chemicals', 'New to This Edition', and '16 Engine Timing Components 17 Engine Size and Performance Measurements 18'. A red circle highlights the 'Engine' link in the first result. The main content area shows a diagram of a transmission case with a label 'Case' pointing to it.

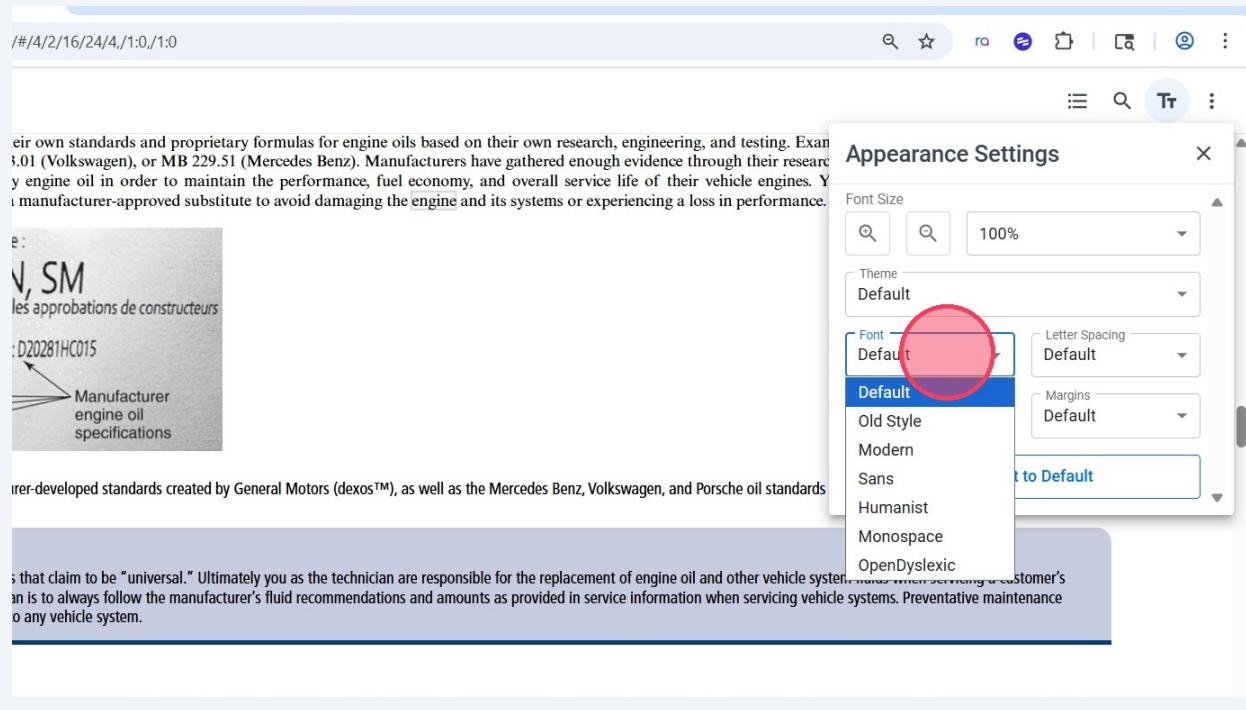
21 and select the section of text you wish to continue reading.



The screenshot shows a web browser window with a search sidebar on the right. The sidebar has a 'Search' header and a list of results. The results include 'must always replace a manufacturer-developed engine oil with the same one', 'Section 1 Introduction to Automotive Technology and Foundational Workplace Skills', 'It often has a smaller engine and gets better fuel economy', 'Section 1 Introduction to Automotive Technology and Foundational Workplace Skills', 'substitute to avoid damaging the engine and its systems or experiencing', 'Section 1 Introduction to Automotive Technology and Foundational Workplace Skills', 'type of oil. Start the engine and make sure the oil', 'Section 1 Introduction to Automotive Technology and Foundational Workplace Skills', 'system mid-engine drive train multicylinder engine part rear-wheel drive (RWD) safety', and 'Section 1 Introduction to Automotive Technology and Foundational Workplace Skills'. A red circle highlights the 'substitute to avoid damaging the engine and its systems or experiencing' link. The main content area shows a diagram of a transmission with labels 'Case' and 'Extension housing' pointing to their respective parts.

22

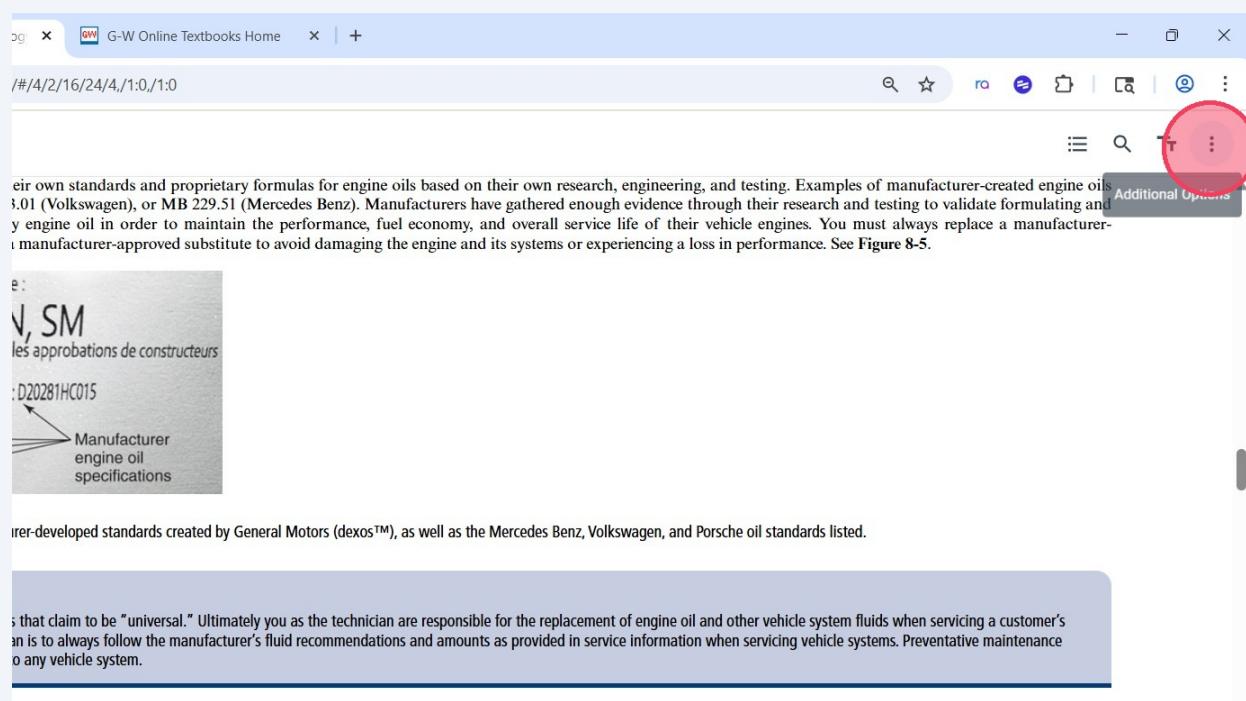
Select **Appearance and Settings** to edit features such as *Theme*, *Font*, *Zooming In* and *Out*, and more.



The screenshot shows a document page with a sidebar containing a 'Manufacturer engine oil specifications' section. A red circle highlights the 'Font' dropdown menu in the 'Appearance Settings' sidebar, which lists 'Default', 'Old Style', 'Modern', 'Sans', 'Humanist', 'Monospace', and 'OpenDyslexic'.

23

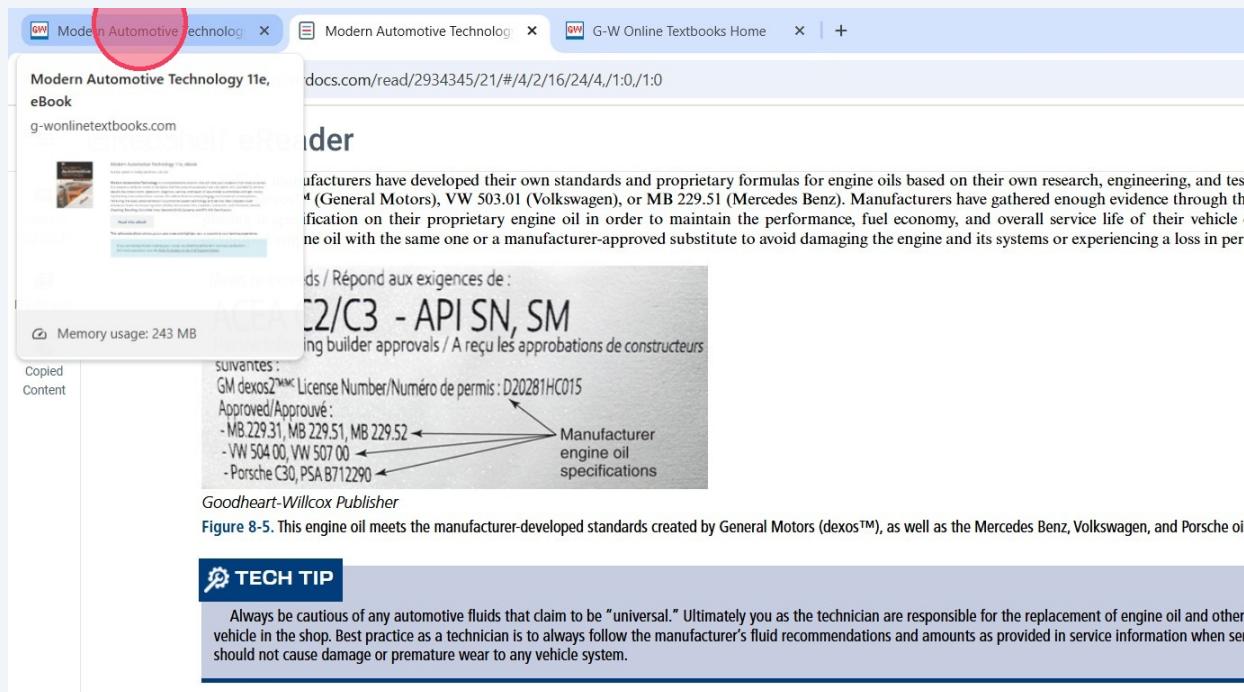
Select **Additional Options** to view even more features on the RedShelf eReader platform.



The screenshot shows a document page with a sidebar containing a 'Manufacturer engine oil specifications' section. A red circle highlights the 'Additional Options' button in the top right corner of the toolbar.

24

Once you are ready to go back to the *Online Instructor Resources*, select the previous tab.



docs.com/read/2934345/21/#/4/2/16/24/4/1:0/1:0

Manufacturers have developed their own standards and proprietary formulas for engine oils based on their own research, engineering, and testing. GM dexos2™ (General Motors), VW 503.01 (Volkswagen), or MB 229.51 (Mercedes Benz). Manufacturers have gathered enough evidence through testing and validation on their proprietary engine oil in order to maintain the performance, fuel economy, and overall service life of their vehicle. It is recommended to use the original manufacturer's oil with the same one or a manufacturer-approved substitute to avoid damaging the engine and its systems or experiencing a loss in performance.

ds / Répond aux exigences de :

C2/C3 - API SN, SM

ing builder approvals / A reçu les approbations de constructeurs

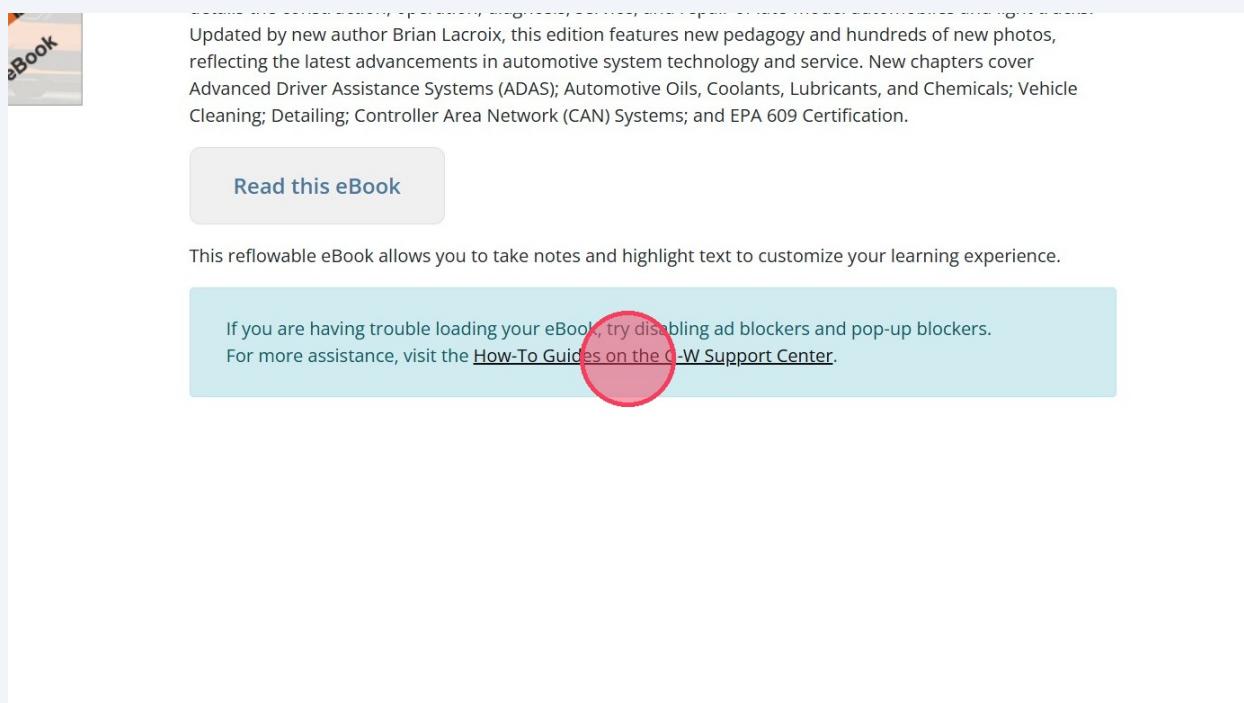
Goodheart-Willcox Publisher

TECH TIP

Always be cautious of any automotive fluids that claim to be "universal." Ultimately you as the technician are responsible for the replacement of engine oil and other fluids in the vehicle in the shop. Best practice as a technician is to always follow the manufacturer's fluid recommendations and amounts as provided in service information when servicing a vehicle. Using a universal fluid may not cause damage or premature wear to any vehicle system.

25

To learn more about the eBook features, select the link entitled "How-To Guides on the G-W Support Center."



Updated by new author Brian Lacroix, this edition features new pedagogy and hundreds of new photos, reflecting the latest advancements in automotive system technology and service. New chapters cover Advanced Driver Assistance Systems (ADAS); Automotive Oils, Coolants, Lubricants, and Chemicals; Vehicle Cleaning; Detailing; Controller Area Network (CAN) Systems; and EPA 609 Certification.

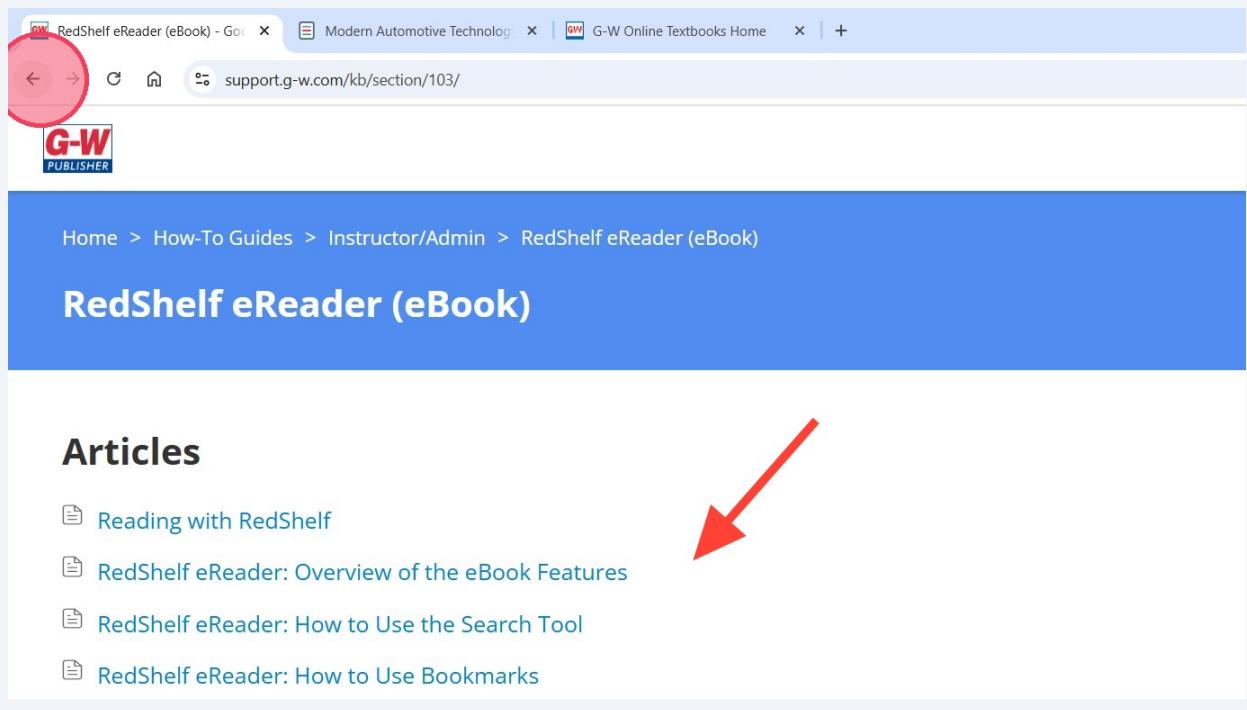
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26

Users may view a number of different Knowledge Base Articles on the G-W Support Center. Select the **Back Arrow** once you are ready to go back to the *Online Instructor Resources*.



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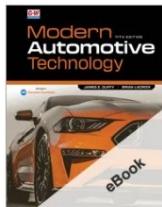
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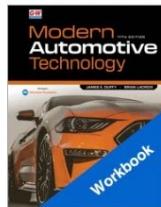
Modern Automotive Technology 11e, eBook



Modern Automotive Technology 11e, Online Textbook



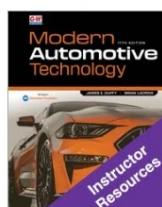
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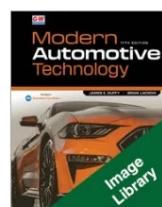
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