Vehicle Identification

Vehicle Specification Decal

The vehicle specification decal lists the vehicle model, identification number, and major component models. It also recaps the major assemblies and installations shown on the chassis specification sheet. The specification decal is inside the rear cover of the *Owner's Warranty Information for North America* booklet. An illustration of the decal is shown in **Fig. 1.1**.

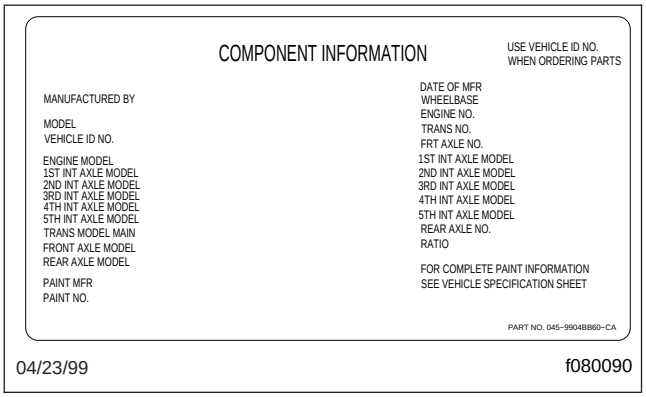


Fig. 1.1, Vehicle Specification Decal, Canadian-Built Vehicle Shown

NOTE: Labels shown in this chapter are examples only. Actual specifications may vary from vehicle to vehicle.

Federal Motor Vehicle Safety Standard (FMVSS) Labels

NOTE: Due to the variety of FMVSS certification requirements, not all of the labels shown will apply to your vehicle.

Tractors with or without fifth wheels purchased in the U.S. are certified by means of a certification label (**Fig. 1.2**) and the tire and rim labels (**Fig. 1.3**). These labels are attached to the left side rear door jamb, as shown in **Fig. 1.4**.

If purchased for service in the U.S., trucks built without a cargo body have a certification label (**Fig. 1.5**) attached to the left side rear door jamb. See **Fig. 1.4**. In addition, after completion of the vehicle, a certification label similar to that shown in **Fig. 1.2** must be attached by the final-stage manufacturer. This label will be located on the left side rear door jamb and certifies that the vehicle conforms to all applicable

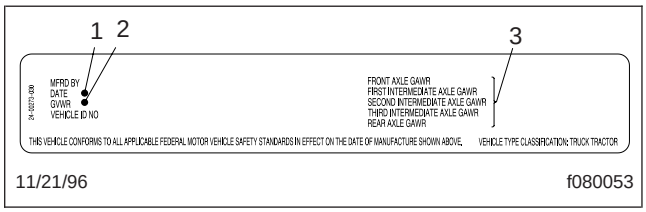
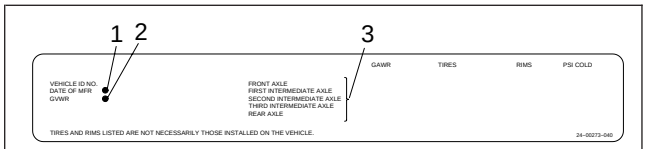
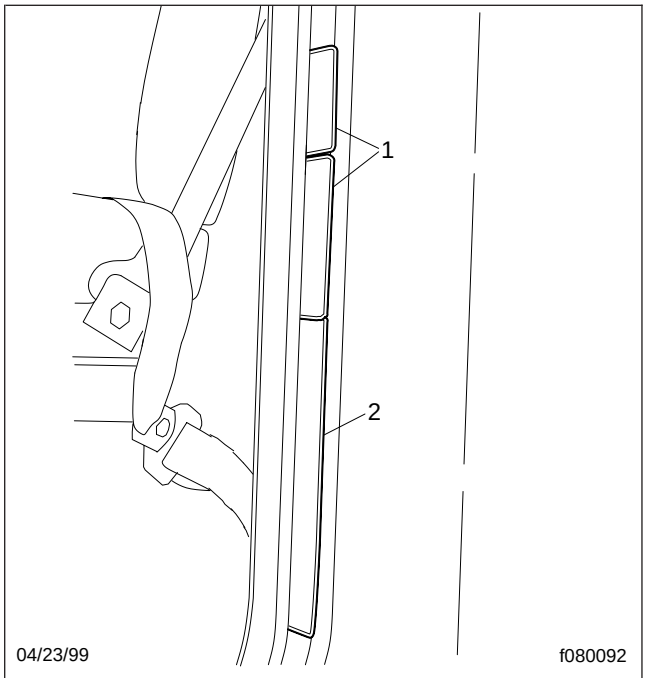


Fig. 1.2, Certification Label, U.S.



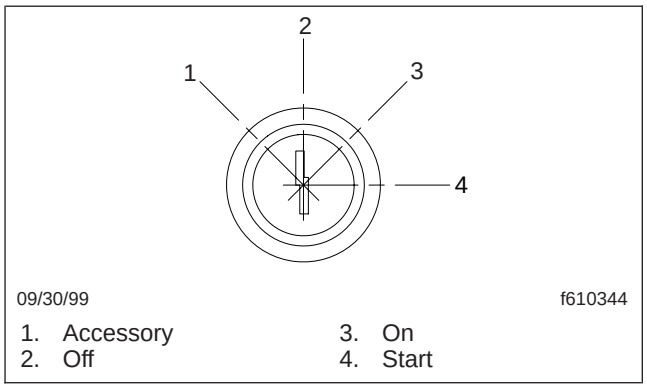
1. Date of manufacture by month and year.
2. Gross vehicle weight rating; developed by taking the sum of all the vehicle's gross axle ratings.
3. Gross axle weight ratings; developed by considering each component in an axle system, including suspension, axle, wheels, and tires. The lowest component capacity is the value for the system.

Fig. 1.3, Tire and Rim Label



1. Tire and Rim Labels
2. Certification Label

Fig. 1.4, Labels Location

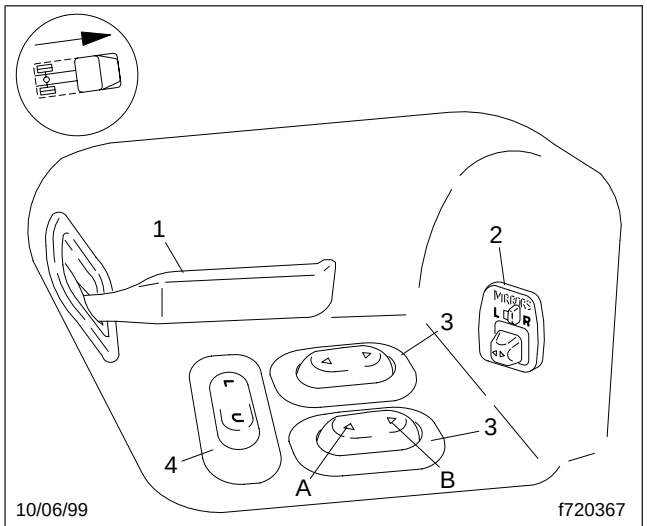


1. Accessory
2. Off
3. On
4. Start

Fig. 2.2, Ignition Switch Positions

window switch if both doors are controlled electrically.

Push the dimpled end of the power window switch to lower the window; push the raised end of the switch to raise the window.



A. Push here to lower window.
B. Push here to raise window.
1. Door Handle
2. Power Mirror Switch
3. Power Window Switch
4. Power Lock Switch

Fig. 2.3, Power Lock, Window, and Mirror Switches

Power Lock Switch, Optional

The power lock switch (**Fig. 2.3**) is located below the door handle on the driver's side and the passenger's side of the cab. Press the **L** to lock the doors. Press the **U** to unlock the doors.

Mirror Controls

Power Mirror Switch, Optional

The position of the door-mounted mirrors is controlled by the power mirror switch (**Fig. 2.4**) located near the door handle on the driver's side of the cab. Move the lever toward the **L** to control the left mirror, and toward the **R** to control the right mirror. Move the button to the left or right to control the position of the mirror.

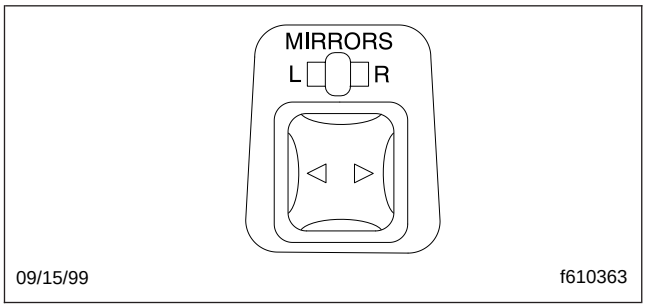


Fig. 2.4, Power Mirror Switch

Heated Mirror Switch, Optional

One or both door-mounted mirrors can be heated to keep them defrosted. Press the upper end of the heated mirror switch (**Fig. 2.5**) to heat the mirrors. When the heated mirror switch is pressed, the MIR HEAT indicator on the dash message center comes on.

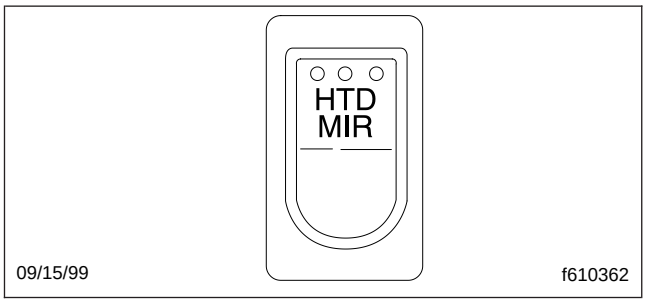


Fig. 2.5, Heated Mirror Switch

Lighted Mirrors, Optional

The lights on the door-mounted mirrors act as marker lights. Push the paddle on the marker blink (MARK BLNK) switch (**Fig. 2.7**) down to turn on the mirror lights.

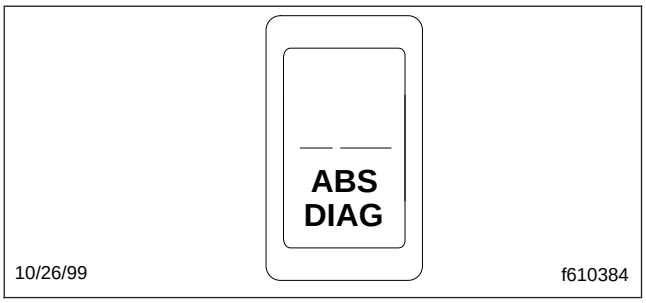


Fig. 2.23, ABS Diagnostic Switch

Cruise Control

To turn on the cruise control, press the ON switch located on the steering wheel. See **Fig. 2.24**.

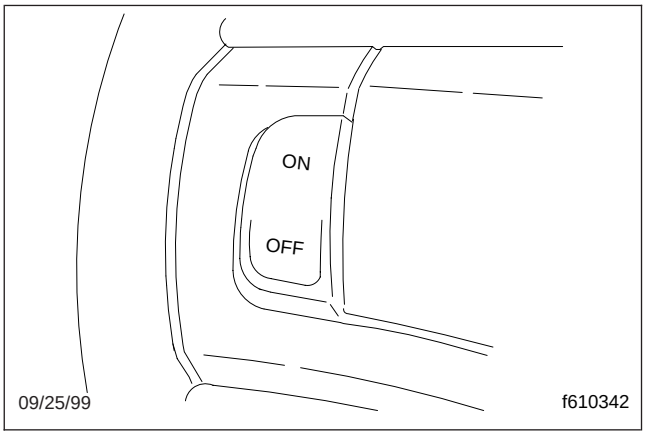


Fig. 2.24, Cruise Control On/Off Switch

To Set a Speed—press the set/coast (SET/CST) switch located on the steering wheel, after you have reached the desired speed. See **Fig. 2.25**. The vehicle will travel at the set speed until the brake pedal or clutch pedal is depressed, or until the cruise control OFF switch is pressed.

The speed control may not operate until a minimum vehicle speed is reached. For more information, refer to your diesel engine operation and maintenance manual.

When driving up a steep hill, the speed control may not be able to maintain the preset speed in the transmission gear position selected. To maintain a preset speed in this situation, downshift the transmission to a lower gear.

To Set a Higher Set Speed—choose one of three ways to set a higher set speed.

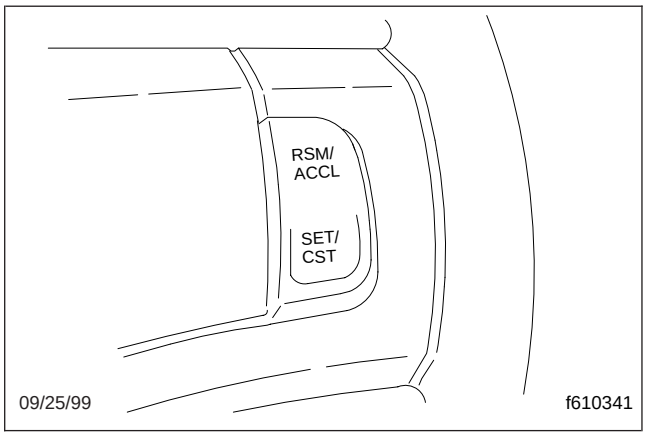


Fig. 2.25, Speed Control Switch

- Press and hold the resume/accelerate (RSM/ACCL) switch (**Fig. 2.25**) located on the steering wheel until the higher set speed is reached. Then release the switch.
- Press and release the resume/accelerate switch. Each press of the switch will increase the set speed by 1 mph (1.6 km/h).
- Press and release the resume/accelerate switch and depress the accelerator pedal until the desired speed is reached. Then press the set/coast (SET/CST) switch.

You can accelerate with the throttle pedal at any time during cruise control usage. Releasing the throttle pedal will return the vehicle to the previously programmed set speed.

To Set a Lower Set Speed—choose one of three ways to set a lower set speed.

- Press and hold the set/coast (SET/CST) switch located on the steering wheel until the lower set speed is reached. Then release the switch.
- Press and release the set/coast switch. Each press of the switch will decrease the set speed by 1 mph (1.6 km/h).
- Press and release the set/coast switch and depress the brake pedal until the desired speed is reached. Then press the set/coast switch.

To Disengage the Speed Control—depress the brake pedal or the clutch pedal. Disengaging the

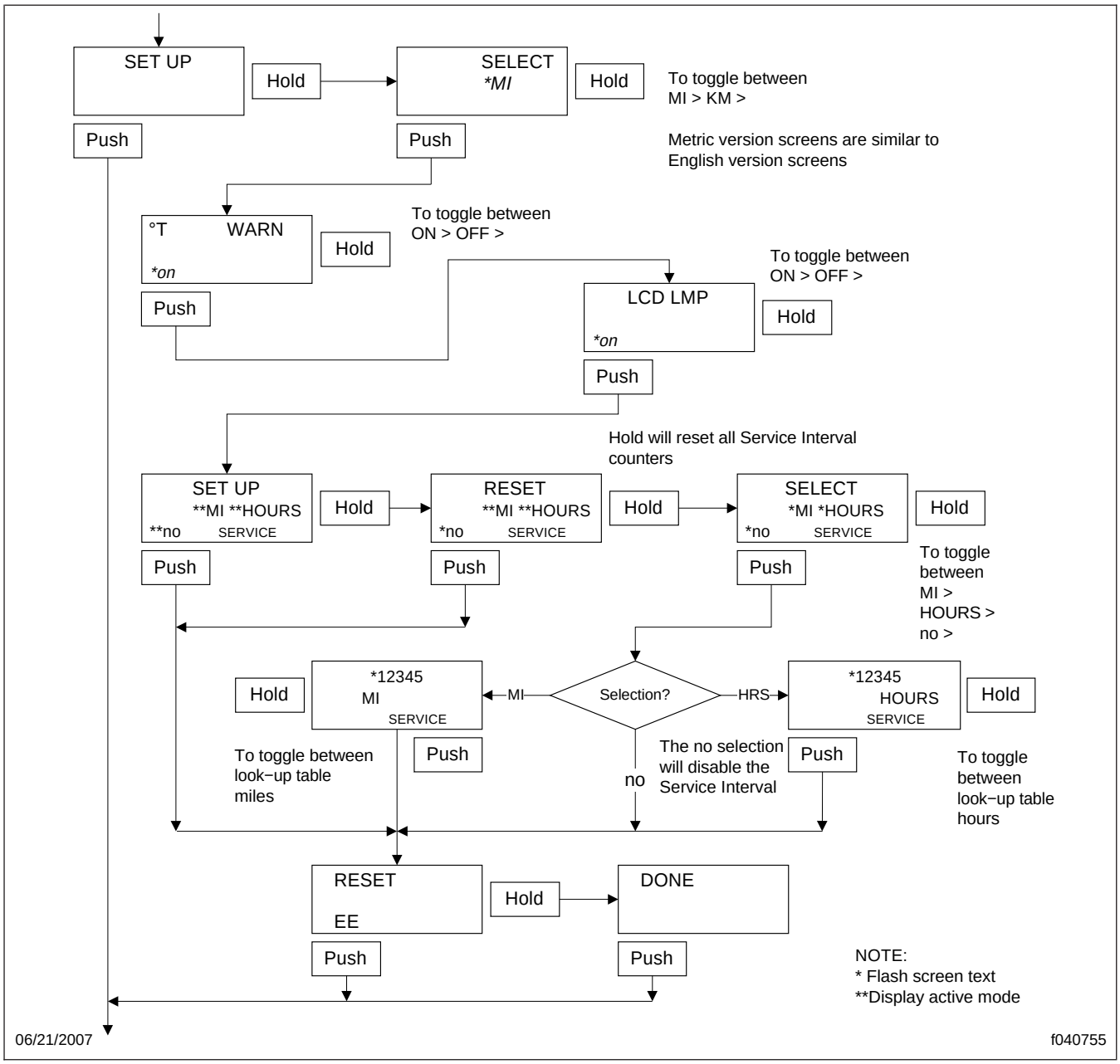


Fig. 2.43, ICU4 Setup Screens

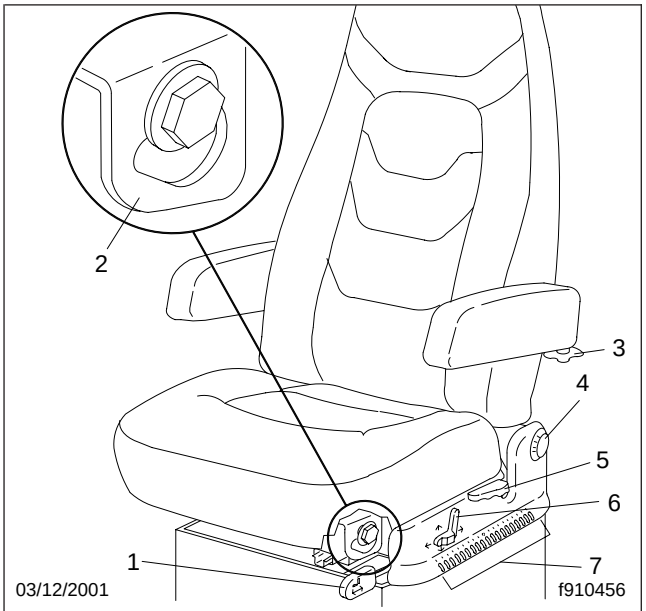
through the tables. Release the mode switch when the desired interval flashes, then push the mode/reset switch to select it. When completed, the display will sequence to the odometer display.

When HOURS is selected, push the mode switch to sequence to the service hours time select screen. Holding the mode switch for approximately 1-1/2 seconds will display table values. Holding the mode/reset switch for 3 seconds will speed up scrolling through the tables. Release the mode switch when the desired interval flashes, then push the mode/reset switch to select it. When completed, the display will sequence to the odometer display.

6. Fore and Aft Seat or Seat Track Adjustment: The entire seat moves forward or backward when this adjustment is made.
7. Head Rest Adjustment: When this adjustment is made, the angle of the head rest changes to provide support to the head.
8. Weight Adjustment: On seats with weight adjustment, the feature is fully automatic. When you sit on the seat, a leveling valve places you in the center of the ride zone. Additional adjustments are possible by using the height adjustment feature.

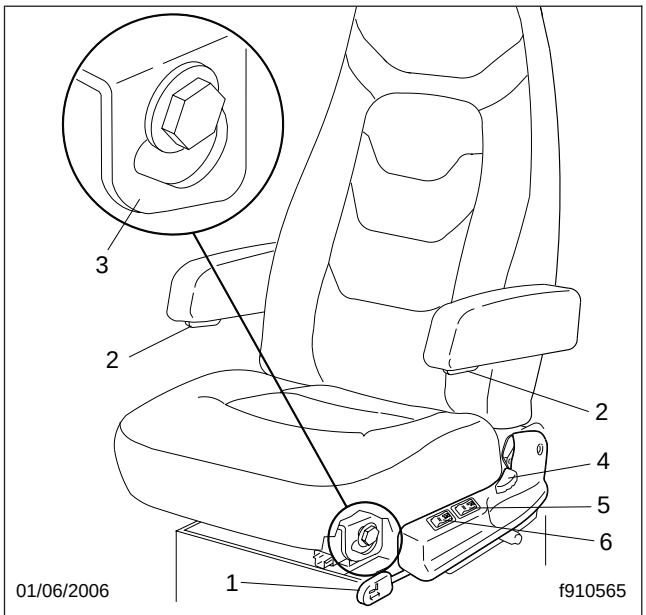
EzyRider® Seat

For seat adjustment controls on vehicles built before November 28, 2005, see **Fig. 5.2**. For seat adjustment controls on vehicles built on or after November 28, 2005, see **Fig. 5.3**.



1. Isolator and Fore/Aft Seat Adjustment Lever
2. Bottom Cushion Angle Guide
3. Armrest Adjustment Knob
4. Back Cushion Tilt Position Indicator
5. Back Cushion Tilt Lever
6. Height Adjustment and Lumbar Support Lever
7. Fore/Aft Seat Position Indicator

Fig. 5.2, EzyRider Seat Adjustment Controls (Vehicles Built Before November 28, 2005)



1. Isolator and Fore/Aft Seat Adjustment Lever
2. Armrest Adjustment Knob
3. Bottom Cushion Angle Guide
4. Back Cushion Tilt Lever
5. Lumbar Support Switch
6. Height Adjustment Switch

Fig. 5.3, EzyRider Seat Adjustment Controls (Vehicles Built on or After November 28, 2005)

Back Cushion Tilt

To tilt the back cushion, raise the back cushion tilt lever and lean forward or backward. Release the lever to lock the cushion in place.

Lumbar Support

To adjust the amount of support for your lower back, use the lumbar support switch or lever on the side of the seat.

Isolator

To engage the isolator, push in on the isolator lever. To lock out the isolator, pull the isolator lever out to the first stop.

Fore and Aft Seat Adjustment

Pull the fore and aft seat adjustment lever out to the second stop and slide the seat forward or backward to the desired position.

(the four-sensor system), or two rear axles (the six-sensor system) to form one control circuit. For example, the sensor and solenoid control valve at the left-front axle form a control circuit with the sensor(s) and solenoid valve(s) on the right rear axle(s). During vehicle operation, if the safety circuit senses a failure in any part of the ABS system (a sensor, solenoid control valve, wiring connection, short circuit, etc.), the TRACTOR ABS warning light comes on and the control circuit where the failure occurred is switched to normal braking action. ABS will continue to work on the remaining control circuit. Even if the ABS system is not working to some degree, normal braking ability is maintained. A possible exception would be if a solenoid control valve or combination solenoid control valve is damaged or not working. Since these valves are an integral part of the air brake system, normal braking may be reduced or may not work at all and if they are malfunctioning the vehicle must be parked as quickly and safely as possible.

IMPORTANT: If any of the ABS warning lights do not work as described above or come on while driving, repair the ABS system immediately to ensure full antilock braking capability.

During emergency or reduced-traction stops, push the brake pedal steadily until the vehicle comes to a safe stop. Do *not* pump the brake pedal. If the driver pushes the brake pedal hard enough to lock the wheels, the ABS system will control braking to provide steering control and the shortest possible stopping distance.

Although the ABS system improves vehicle control during emergency braking situations, the driver still has the responsibility to drive appropriately for the existing traffic and road conditions. For example, the ABS system cannot prevent an accident if the driver is speeding or following too closely, or going too fast in slippery road surfaces.

Automatic Slack Adjusters

Automatic slack adjusters are required on all vehicles equipped with air brakes manufactured after October 20, 1994. Automatic slack adjusters should never be manually adjusted except during routine maintenance of the foundation brakes (e.g., replacing shoes), during slack adjuster installation or in an emergency situation.

When the brake pushrod stroke exceeds the legal brake adjustment limit on a vehicle, there is likely a mechanical problem with the foundation brake components or the adjuster is improperly installed.

Visit a repair facility as soon as possible when brakes equipped with automatic slack adjusters are determined to be out of adjustment.

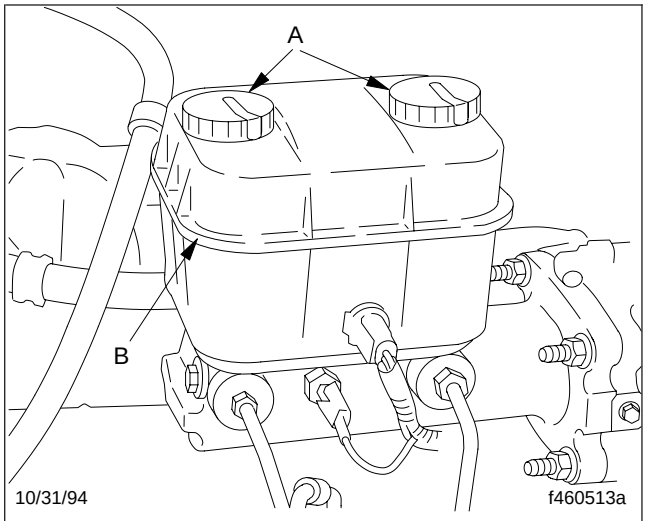
⚠ WARNING

Manually adjusting an automatic slack adjuster to bring the pushrod stroke within legal limits is likely masking a mechanical problem. Adjustment is not repairing. In fact, continual adjustment of automatic slack adjusters may result in premature wear of the adjuster itself. Further, the improper adjustment of some automatic slack adjusters may cause internal damage to the adjuster, thereby preventing it from properly functioning.

Hydraulic Brake System

General Information

The hydraulic brake system includes a Hydro-Max® power booster, master cylinder, hydraulic brake reservoir (**Fig. 6.3**), hydraulic lines, a brake rotor on each wheel hub, and a brake caliper and pad assembly at each rotor.



A. Open caps and check fluid level.
B. Fill to this level.

Fig. 6.3, Hydraulic Brake Reservoir

is selected when the vehicle is moving faster, an audible warning will sound and continue sounding at three-second intervals until the control lever is returned to the D position. When the vehicle is moving at the proper speed, reverse can be engaged.

Neutral

IMPORTANT: Always start the engine with the transmission in neutral, the parking brake set, and the service brakes applied.

Neutral (N) is directly below R on the four-position selector switch located at the end of the SmartShift control lever. To select N, move the selector switch to the position below R. When neutral is selected, the letter "N" displays on the current gear indicator. See **Fig. 8.11**.

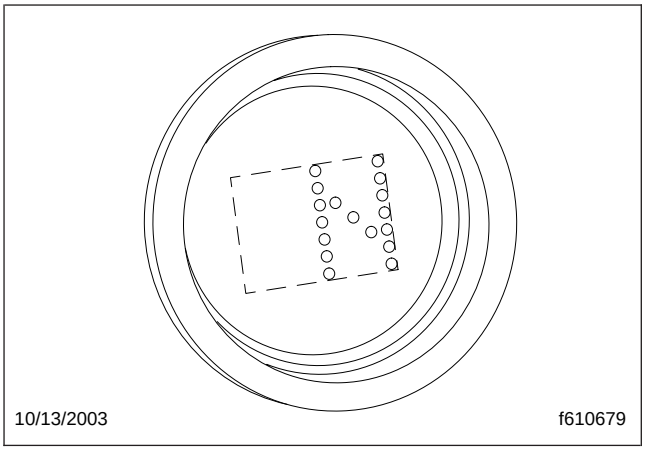


Fig. 8.11, Neutral Display

⚠ WARNING

Do not coast in neutral. Coasting in neutral can cause an accident, possibly resulting in severe personal injury or death.

Neutral is always available during operation, whatever the vehicle speed. When in neutral, requests to upshift or downshift are ignored. If the selector switch is moved from neutral to drive while the vehicle is moving, the transmission will shift into a gear within the engine's operating torque range.

Before shutting down the engine, return the selector switch to N. When the ignition is turned off, the transmission will reset to neutral in a few minutes regardless of the position of the shift lever.

Drive

Drive (D) is directly below N on the four-position selector switch located at the end of the SmartShift control lever. To select D, press in the neutral lock button and move the selector switch to the position below N. When drive is selected, the number of the currently selected forward gear (1, 2, 3, 4, 5, or 6) displays on the gear indicator. See **Fig. 8.9**.

When in drive, requests to upshift or downshift are enabled. Either manual or automatic mode can be selected on the slide switch.

The vehicle starts up in either first or second gear, depending on load and grade.

The ASW UltraShift controller adapts to the working conditions of each vehicle and its driver. After power up or a load change, it needs to learn the new conditions. While learning, it may hold a gear too long before upshifting. Start the upshift manually. It may take three or four shifts before ASW succeeds in learning the new load-based shift points, but after that it will handle the shifting automatically.

Low

Low (L) is located at the lower end of the four-position selector switch located at the end of the SmartShift control lever. To select L, press in the neutral lock button and move the selector switch to the position below D.

When in low, the current gear is maintained. Requests to upshift are not enabled.

IMPORTANT: If the engine is approaching overspeed, the ASW TCU will override the current gear setting and upshift to prevent engine damage.

To enhance engine braking, downshifts are performed at higher rpm than normal.

If L is selected from neutral while stopped, the vehicle starts up in first gear and stays there until the engine approaches overspeed.

Upshifting

To request an upshift with the transmission in drive, pull the control lever up (towards you). If the gear is available, the transmission upshifts and the new gear displays on the gear indicator. No skip shifts are available while upshifting.

Oil Level Sensor

Allison MD Series transmissions have an electronic oil level sensor to read fluid level information. The fluid level diagnostic will display whether the oil level is OK, too low, or too high. It will also display a default code and indicate if the preconditions (of receiving the fluid level information) are not met.

IMPORTANT: Maintain the the proper fluid level at all times. If the fluid level is too low, the converter and clutch do not receive an adequate supply of fluid. If the level is too high, the transmission may shift erratically or overheat.

To access the oil level display mode, park the vehicle on a level surface, shift to N (Neutral), apply the parking brake, and idle the engine. Then simultaneously press both the up and down arrows once. The oil level will display at the end of a two-minute countdown.

Diagnostic Codes

Diagnostic codes are numerical indications relating to a malfunction in transmission operation. These codes are logged in the TCM/ECU memory. The most severe or most recent code is listed first. A maximum of five codes (numbered d1-d5) may be listed in memory at one time. If the mode indicator LED is illuminated, the displayed code is active. If it is not illuminated, the displayed code is not active.

NOTE: During normal operation, an illuminated mode indicator LED signifies the specialized mode operation is in use.

To enter diagnostics mode, first park the vehicle and apply the parking brake. Then simultaneously press both the up and down arrows twice.

Allison AT/MT Series Transmissions

Refer to the Allison website for additional information, www.allisontransmission.com.

Allison AT 500 Series

The Allison AT 500 Series transmissions provide four forward ranges and one reverse range. A lever shift selector (**Fig. 8.20**) is used by the driver to select the ranges.

⚠ WARNING

Do not leave the vehicle unattended with the engine running. If you leave the vehicle and the engine is running, the vehicle can move suddenly, which could result in personal injury or property damage.

If you must leave the engine running, do not leave the vehicle until you do the following.

- Put the transmission in neutral.
- Apply the parking brake and emergency brakes and make sure they are properly engaged.
- Chock the rear tires and take any other steps necessary to keep the vehicle from moving.

PB (Auto-Apply Parking Brake, optional)

When the shift selector does not have an auto-apply parking brake, always put the shift selector in neutral and apply the parking brake to hold the vehicle when it is unattended and before turning off the engine.

R (Reverse)

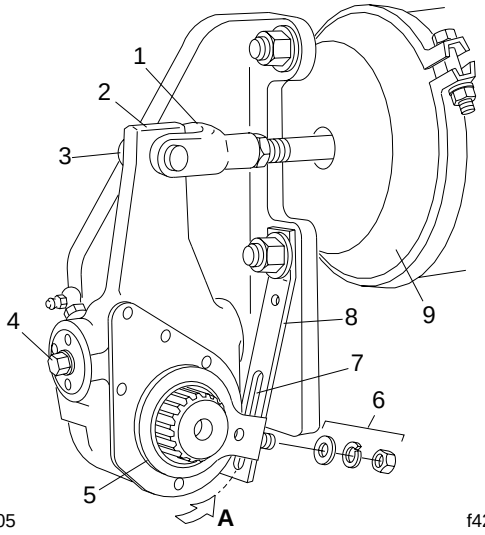
Reverse is used to back the vehicle. Completely stop the vehicle before shifting from a forward range to reverse, or from reverse to a forward range. The reverse warning signal will sound when the selector is in reverse.

N (Neutral)

Place the shift selector in neutral before starting the engine. When the shift selector has no park provision, always put the shift selector in neutral and apply the parking brake to hold the vehicle when it is unattended and before turning off the engine. The neutral position is also used during stationary operation of the power takeoff if your vehicle is equipped with a PTO.

⚠ WARNING

Do not let the vehicle coast in neutral. If the vehicle is allowed to coast in neutral, the engine brake will not work and you could lose control of the vehicle. This can cause an accident possibly resulting in personal injury or property damage. Coasting in neutral can also cause severe transmission damage.



A. Rotate the control arm toward the brake chamber until you can feel it contacting the internal stop.

1. Clevis
2. Slack Adjuster
3. Clevis Pin
4. Manual Adjusting Nut
5. Control Arm
6. Control-Arm Washers and Nut
7. Anchor Strap Slot
8. Anchor Strap
9. Brake Chamber

Fig. 11.10, Haldex Automatic Slack Adjuster

cut in and out as described above, it must be adjusted to these specifications. If the air governor cannot be adjusted or repaired, replace it before operating the vehicle.

25.2 Check the air pressure buildup time as follows.

With the air system fully charged to 120 psi (827 kPa), make one full brake application and note the air pressure reading on the gauge. Continue to reduce the air pressure by moderate brake applications to a maximum of 90 psi (620 kPa), then run the engine at governed rpm. If the time required to raise the air pressure to 120 psi (827 kPa) (from the pressure noted after one brake application) is more than 30 seconds, eliminate any leaks or replace the air compressor before operating the vehicle.

25.3 Check the air pressure reserve as follows.

With the air system fully charged to 120 psi (827 kPa), stop the engine and note the air pressure. Then make one full brake application and observe the pressure drop. If it drops more than 25 psi (172 kPa), all areas of leakage must be eliminated before operating the vehicle.

25.4 Check the air leakage in the system as follows.

With the parking brake (spring brake) applied, the transmission out of gear, and the tires chocked, charge the air system until cut-out pressure of 120 psi (827 kPa) is reached.

With the service brakes released, shut down the engine, wait 1 minute and note the air pressure gauge reading. Observe the air pressure drop in psi (kPa) per minute.

Charge the air system until cut-out pressure of 120 psi (827 kPa) is reached. With the parking brakes released and the service brake applied, shut down the engine, wait 1 minute and note the air pressure gauge reading. Observe the air pressure drop in psi (kPa) per minute.

If leakage exceeds the limits shown in **Table 11.4**, repair all areas of leakage before driving the vehicle.

Maximum Allowable Service Brake Air Leakage		
Description	**Air Leakage in psi (kPa) Per Minute**	
	Released	**Applied**
Truck or Tractor Only	2 (14)	3 (21)
Truck or Tractor w/Single Trailer	3 (21)	4 (28)
Truck or Tractor w/Two Trailers	5 (35)	6 (42)

Table 11.4, Maximum Allowable Service Brake Air Leakage

26. *Test the service brakes.*

When starting to move the vehicle and before picking up speed, test the brakes with the foot pedal and parking brake control valve (yellow knob) to be sure they will bring the vehicle to a safe stop.

Verification of Inspections Log: 00–02

Verification of Inspections Log

Verification of Inspections Log — Group 20

Verification of Inspections Log — Group 20 — Engine Cooling/Radiator				
Date	**Mileage**	**Repair Description**	**Cost**	**Repair Facility**

Verification of Inspections Log — Group 49

Verification of Inspections Log — Group 49 — Exhaust				
Date	**Mileage**	**Repair Description**	**Cost**	**Repair Facility**

Lubrication and Fluid Level Check (M1): 00–15

Maintenance Operation 00–15 (see **Table 10**), summarizes all Lubrication and Fluid Level Check operations that must be performed at the **M1** Maintenance Interval for Schedules I, II, and III

Maintenance operation numbers given in the table are reference numbers used to help you find detailed instructions in the manual on the lubrication or fluid check.

Maintenance Operation 00–15 M1 Lubrication and Fluid Level Check	
Maint. Oper. No.	**Operation Description**
25–01	Clutch Release Bearing and Release Cross-Shaft Lubricating
25–03	Hydraulic Fluid Level Checking
26–01	Manual Transmission Fluid Level Checking
31–03	Fifth Wheel Lubricating
31–04	Trailer Electrical Connector Lubricating
32–02	Suspension Lubricating
33–01	Knuckle Pin Lubricating
33–03	Tie-Rod End Lubricating
33–05	All-Wheel-Drive Front Axle Oil Level Checking
35–01	Axle Lubricant Level Checking
41–02	Driveline Lubricating
42–03	Foot Brake Valve Actuator Lubricating, Bendix E–8P
42–10	Automatic Slack Adjuster Lubricating, Meritor
42–20	Automatic Slack Adjuster Lubricating, Gunite
42–22	Automatic Slack Adjuster Lubricating, Haldex
46–02	Drag Link Lubricating
46–03	Power Steering Reservoir Fluid Level Checking
46–05	Power Steering Gear Lubricating
72–01	Weatherstrip, Door Latch, and Door Hinge Lubricating

Table 10, Maintenance Operation 00-15, M1 Lubrication and Fluid Level Check

20–01 Radiator Cap Checking

⚠ WARNING

Do not remove or loosen the radiator cap until the engine and cooling system have completely cooled. Use extreme care when removing the cap. A sudden release of pressure from removing the cap prior to the system cooling can result in a surge of scalding coolant that could cause serious personal injury.

⚠ CAUTION

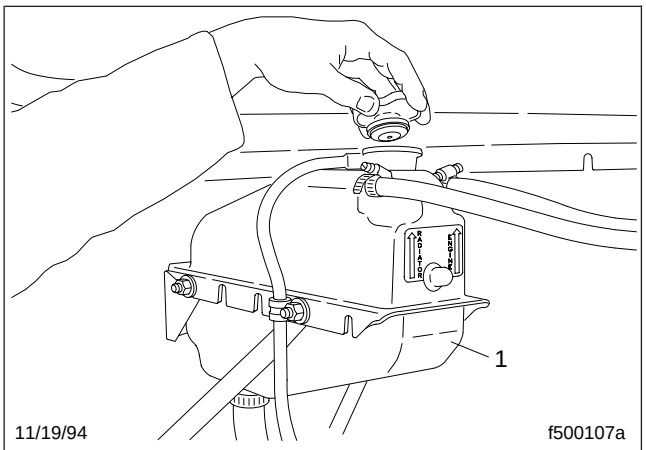
The radiator cap currently installed may not be the same one installed when the vehicle was built. If the radiator cap must be replaced, make sure that it is the correct cap for the cooling system of the vehicle. Because the radiator cap pressure rating affects the operating temperature of the engine, installing an improperly rated radiator cap may have adverse effects on the cooling system, and engine operating temperatures. This could cause premature engine wear or damage.

1. Using a radiator-cap tester, check the pressure cap to see if it maintains pressure to within 10% of the pressure rating marked on the cap. If it doesn't, replace the cap. Make sure that the replacement radiator cap is correctly rated for the cooling system of the vehicle.
2. There is a second valve in the radiator cap that opens under vacuum. This prevents the collapse of hoses and other parts that are not internally supported when the system cools. Inspect the vacuum-relief valve to be sure it is not stuck.
3. Make sure that the cap seals properly on the coolant filler neck seat, and that the radiator cap gasket is not damaged. On vehicles with screw on caps with O-rings, make sure that the O-ring is not cracked or deteriorated. Replace the cap if the gasket shows deterioration or damage.

20–02 Radiator Pressure Flushing and Coolant Changing

NOTE: For additional instructions on cleaning and flushing the cooling system, see the engine manufacturer's maintenance and operation manual.

1. Drain the radiator.
   - 1.1 Remove the surge tank cap. See **Fig. 1**.



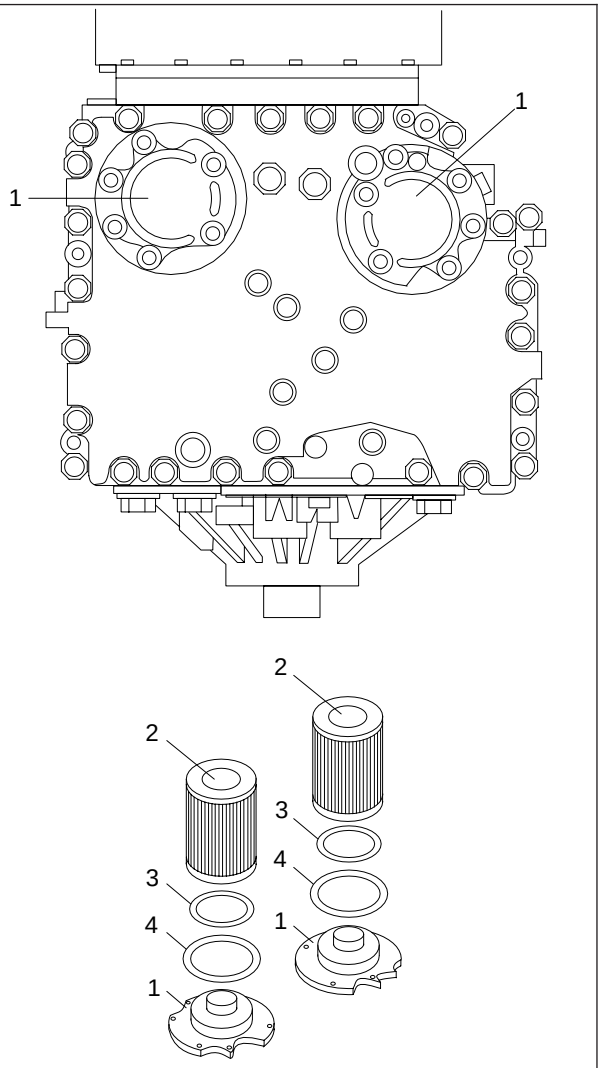
1. Surge Tank

Fig. 1, Surge Tank and Cap

   - 1.2 Open the petcock at the bottom of the radiator to drain the engine coolant. See **Fig. 2**.
2. Disconnect the radiator inlet and outlet hose connections.
3. Flush the radiator.
   - 3.1 Attach a flushing gun nozzle to the radiator outlet.
   - 3.2 Run water in until the radiator is full.
   - 3.3 Apply no more than 20 psi (138 kPa) air pressure intermittently to help dislodge sediment buildup in the core.

⚠ CAUTION

When flushing the radiator, do not apply more than 20 psi (138 kPa) air pressure. Excessive pressure can damage the radiator or heater core.



1. Filter Cover
2. Filter Element
3. Filter Element O-Ring
4. Square-Cut Seal

Fig. 5, Allison MD Series Transmission Filter Locations and Components

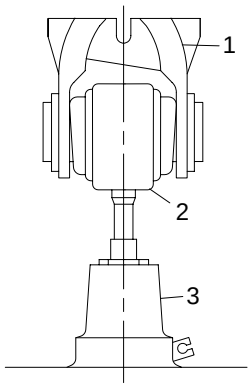
CAUTION

Do not use the bolts to draw the filter covers to the sump. This can damage the covers, seals, or sump.

11. Install six bolts in each cover, and torque the bolts 38 to 44 lbf·ft (51 to 61 N·m).
12. Replace the drain plug O-ring, and install the drain plug. Tighten the drain plug 18 to 24 lbf·ft (25 to 32 N·m).
13. Refill the transmission with fresh transmission fluid (see **Table 3**) and check the fluid level. See **Table 4** for lubricant capacities.
14. Check and adjust the fluid level using the procedures under "Checking the Fluid Level."

MT Series

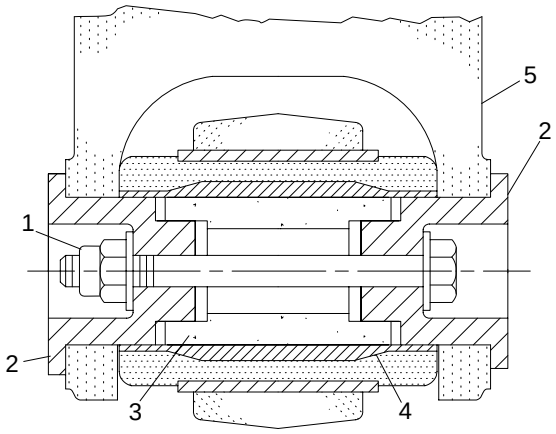
1. Park the vehicle on a level surface. Apply the parking brakes and chock the rear tires.
2. Start the engine and check that the transmission fluid temperature is 160 to 200°F (71 to 93°C) before draining the fluid. Shift the gear selector to neutral and shut down the engine.
3. Place a suitable container under the transmission, then remove the drain plug and gasket from the transmission oil pan. Allow the fluid to drain.
4. Remove the nut that secures the oil filler tube to the transmission pan.
5. Remove the 21 capscrews that secure the transmission oil pan to the transmission housing, then remove the transmission oil pan and gasket from the transmission. Discard the gasket.
6. Clean the oil pan of any debris and residual fluid in an approved cleaning tank.
7. Remove the washer-head capscrew that secures the filter to the transmission, then remove the filter and the filter intake pipe from the transmission. See **Fig. 6**.
8. Separate the filter intake pipe from the filter, discard the O-ring, then clean the tube.
9. Install the filter intake pipe on the new filter. Install a new O-ring on the filter intake tube, then lubricate the O-ring with a light coat of transmission fluid.
10. Insert the filter intake pipe into the orifice on the bottom of the transmission, then secure the filter with the 5/16–18 x 5/8 inch washer-head capscrew. Tighten the capscrew 10 to 15 lbf·ft (14 to 20 N·m).
11. Place a new oil pan gasket on the oil pan. If desired, a sealant may be used on the gasket, but it must be applied carefully; sealant must be pre-



05/27/93 f320039a

1. Beam Hanger
2. Equalizer Beam
3. Jack

Fig. 5, Raising the Beam End



05/27/93 f320110a

NOTE: Do not use the three-piece adapter without the intermediate tube.

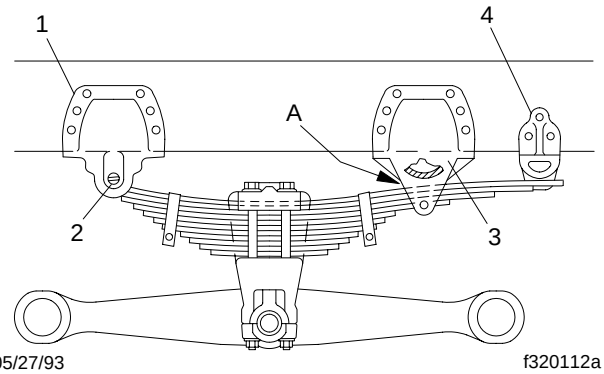
1. Nut
2. Adapter
3. Intermediate Tube
4. Inner Metal of Beam End Bushing
5. Beam Hanger

Fig. 6, Three-Piece Adapter-Type Beam End Connection

cause loss of vehicle control resulting in property damage, serious personal injury or death.

Hendrickson Leaf Spring Assembly Inspecting

NOTE: See **Fig. 7** for this procedure.



05/27/93 f320112a

A. Minimum gap of 3/8 inch (9.5 mm).
1. Forward (no. 1) Spring Hanger
2. Spring Eye Pin
3. Rear (no. 2) Spring Hanger
4. Rear (no. 3) Extension

Fig. 7, Unloaded RTE or UE Spring Suspension

1. Inspect the spring hangers for wear of the spring pin holes, cams, and the spring hanger legs.
2. If equipped with the "RTE" or "UE" series, the gap between the rear (No. 2) spring hanger and the top spring leaf should measure at least 3/8 inch (9.5 mm) in an unloaded condition.

   If the measurement is less than 3/8 inch (9.5 mm), install new rear (No. 3) extension hangers. Lubricate the bolt threads with SAE 20 oil. Tighten the 1/2–13 locknuts with hardened washers 85 lbf·ft (115 N·m).
3. Inspect the spring leaves for cracks, gouges, wear, or abnormal bends. The no. 1 main and no. 2 wrapper spring leaves (the top two spring leaves) may be individually replaced. If equipped with the "RTE" or "UE" series suspension, the nos. 1, 2, and 3 spring leaves (the top three spring leaves) may be individually replaced. If a spring leaf is damaged below these numbers in a pack, replace the spring assembly. In addition, replace both spring assemblies to ensure even spring deflection.

Hendrickson Radius Rod Bushing Checking

1. Without detaching the torque arms, attempt to move (by hand) each of the radius-rod ends up,

40–01 Wheel Nut Checking

IMPORTANT: In addition to the maintenance interval in this manual, check the wheel nut torque the first 50 to 100 miles (80 to 160 km) of operation after a wheel has been removed and installed.

When checking wheel nuts on a dual disc assembly, remove one outer nut at a time, tighten the inner nut, then reinstall the outer nut. Repeat this procedure for all of the inner wheel nuts in the sequence shown in **Fig. 1**, then tighten all of the outer wheel nuts in the same sequence.

⚠ CAUTION

Too little wheel nut torque can cause wheel shimmy, resulting in wheel damage, stud breakage, and extreme tire tread wear. Too much wheel nut torque can break studs, damage threads, and crack discs in the stud hole area.

See **Table 1**, **Table 2**, or **Table 3** for wheel nut torque specifications.

Fastener Torque for 10-Hole Disc Wheel With Inner and Outer Locknuts			
Description	**Nut Size**	**Wheel Manufacturer**	**Torque (dry threads): lbf·ft (N·m)**
Front Wheel Nut	3/4–16, 1-1/8–16	Accuride	450–500 (610–680)
Rear Wheel Inner Nut	3/4–16	Accuride	450–500 (610–680)
Rear Wheel Outer Nut	1-1/8–16	Accuride	450–500 (610–680)
Wheel Stud Retainer Nut	3/4–16	Accuride	175–200 (235–270)

Table 1, Fastener Torque for 10-Hole Disc Wheel With Inner and Outer Locknuts

Fastener Torque for 8-Hole Disc Wheel With Cone Locknuts		
Description	**Nut Size**	**Torque (lubricated threads): lbf·ft (N·m)**
Front and Rear Wheel Nuts	M20	280–310 (380–420)

Table 2, Fastener Torque for 8-Hole Disc Wheel With Cone Locknuts

Spoke-Type Wheel Fastener Torque			
Description	**Size**	**Wheel Manufacturer**	**Torque (dry threads): lbf·ft (N·m)**
Front Wheel Nut, 5- and 6-Spoke	3/4–10	Gunite	200–225 (270–305)*
Rear Wheel Nut, 5- and 6-Spoke With Channel Spacer	3/4–10	Gunite	200–225 (270–305)
Rear Wheel Nut, 5- and 6-Spoke With Corrugated Channel Spacer	3/4–10	Gunite	240–260 (325–350)

* On front axles with over 12,000 lbs (5448 kg) capacity, tighten the wheel nuts 240 to 265 lbf·ft (325 to 359 N·m). Gunite part number W–854 nut with a phosphate and oil coating must be used.

Table 3, Spoke-Type Wheel Fastener Torque