SECTION 16: SUSPENSION

CONTENTS

LIST OF ILLUSTRATIONS

1. DESCRIPTION

The vehicle is provided with an air suspension system. The system consists of air springs, height control valves, radius rods, sway bars, tripod and shock absorbers (Fig. 1 and 2). The system operation is fully automatic and maintains a constant vehicle height regardless of load, or load distribution. The vehicle can also be equipped with systems such as :

- Front Kneeling (w/ Front High-Buoy);
- Front Kneeling (w/ Front High-Buoy) with Rear High-Buoy Combination;
- Front Kneeling (w/ Front High-Buoy) with Rear Low-Buoy Combination;
- Front Kneeling (w/ Front High-Buoy) with Rear High-Buoy/Low-Buoy Combination; and
- Level-Low.

For a description of all these systems, refer to the appropriate heading in this section.

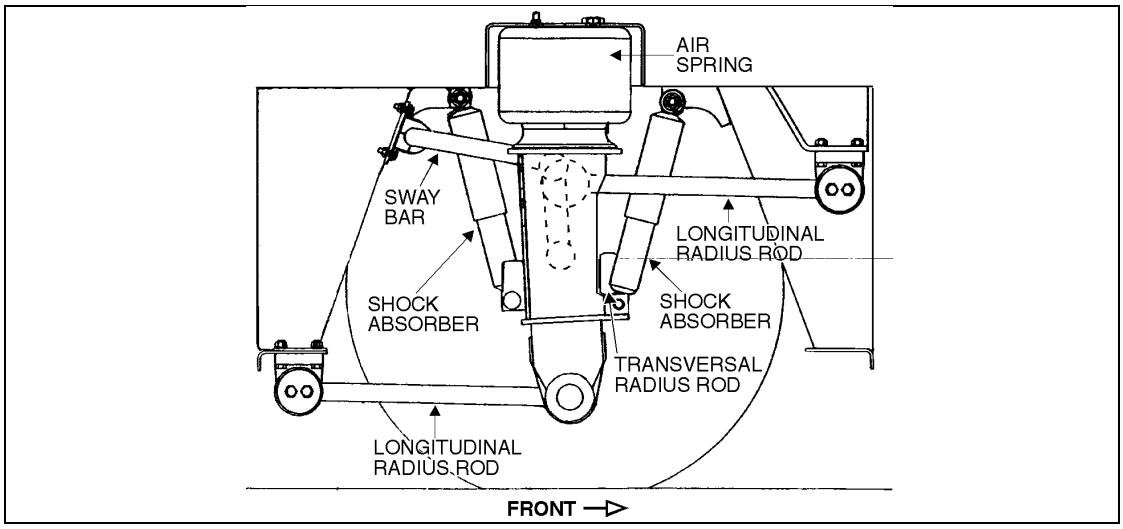


FIGURE 1: FRONT SUSPENSION COMPONENTS 16002

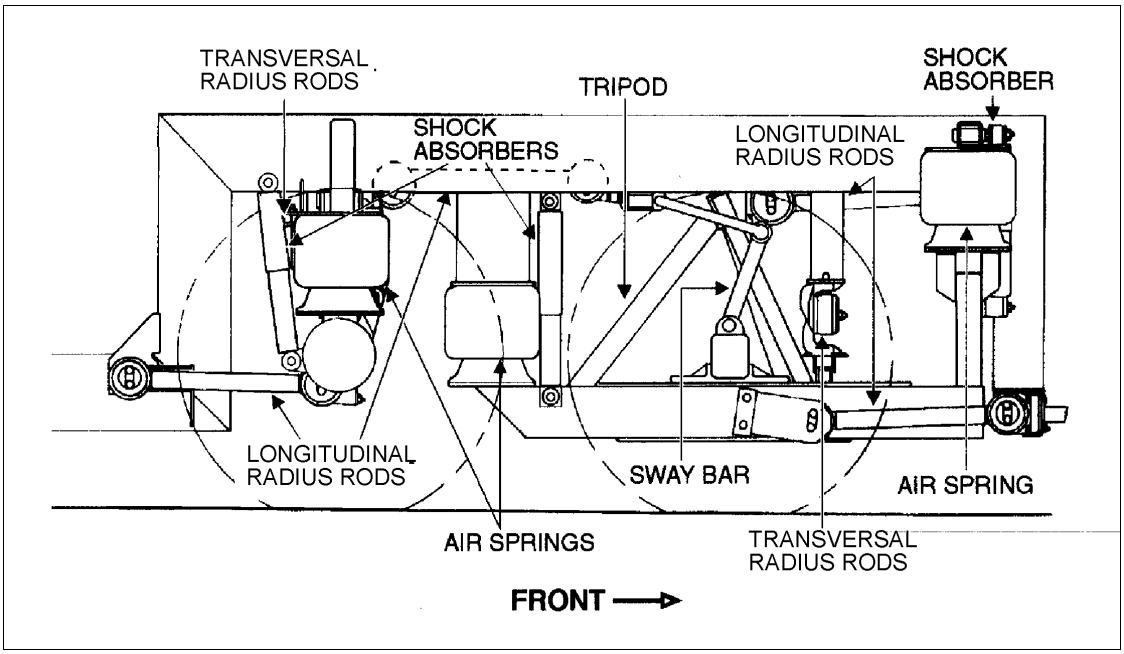


FIGURE 2: REAR SUSPENSION COMPONENTS 160003

2. AIR SPRING

The *"rolling lobe"* type air springs are made from a special compound rubber molded to the proper contour and dimensions. The entire vertical load of the vehicle is supported by these springs. Each of the three axles is provided with air springs that are attached to the subframe and to the axles (Fig. 3).

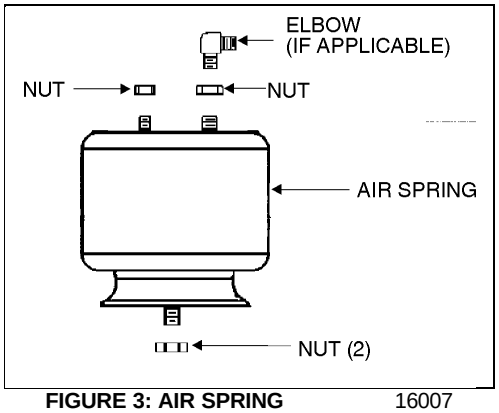


FIGURE 3: AIR SPRING 16007

2.1 Inspection

1. Check operation of bellows.
2. Visually inspect bellows for evidence of cracks, punctures, deterioration, or chafing. Replace the bellows if any damage is evident.
3. With the primary air system at normal operating pressure (95 - 125 psi (655 - 860 kPa)), coat all suspension air line connections and bellows mounting areas with a water and soap solution. Bubbles will indicate an air leak, and none is permissible. Repair or replace defective parts.

Note: *If air spring is removed from vehicle, bellows can be lightly inflated and submerged in water to detect any leakage. If any leakage is detected, replace bellows.*

Warning: *To prevent personal injury, do not apply more than 10 psi (69 kPa) air pressure with the air spring unmounted.*

2.2 Removal

Note: *Suspension air springs (front, drive, and tag axles) can be removed without removing the entire axle assembly.*

1. Safely support vehicle at the recommended body jacking points.

   To gain access to a given air spring, the corresponding wheel can be removed as follows:

   a) Jack vehicle until the tire clears the ground, and place safety supports underneath body.

Caution: *Only the recommended jacking points must be used as outlined in Section 18, "Body".*

   b) Support the axle with a suitable hydraulic floor jack at the recommended jacking point.

   c) Remove wheel.

2. Exhaust compressed air from accessory air tank by opening drain cock under reservoir.
3. Disconnect the height control valve link and pull down the overtravel lever to ensure all air is exhausted from air springs.

Note: *While performing this step, do not change the height control valve overtravel lever adjustment.*

4. Disconnect air line from air spring, remove elbow (if applicable), and cover both the line end and fitting to prevent the entry of foreign matter.
5. Remove the two air springs upper nuts, and then the two lower nuts. Remove air spring.

2.3 Installation

1. Compress air spring as necessary, then aligning studs with their holes, position air spring between both the lower and upper supports. Thread the lower nuts and the small upper nut a few turns.
2. Tighten and torque the lower stud nuts, and then the upper one to 20 - 25 lbf·ft (27 - 34 N·m).
3. Thread the remaining upper nut (large nut) and tighten to 20 - 25 lbf·ft (27 - 34 N·m).
4. Install elbow (if applicable), then connect air line.
5. Connect the height control valve link.
6. Build up air pressure in system.

Note: *To accelerate this operation, air reservoirs can be filled from an exterior air supply connected to the accessory tank fill valve or to the emergency fill valve.*

7. Check operation of bellows, and with the primary air system at normal operating pressure (95 - 125 psi (655 - 860 kPa)), coat the air line connections and air spring mounting areas with a water and soap solution. Bubbles will indicate an air leak, and none is permissible. Repair or replace defective parts.

8. Remove the hydraulic floor jack from under the axle, then lower vehicle to ground.

3. SHOCK ABSORBER

Double-action, telescoping-type shock absobers ensure a smooth ride and enhance vehicle sta-bility on the road. All shock absorbers are eye-type mountings. The front and tag axles are each provided with two shock absorbers while the drive axle is provided with four of them.

Shock absorbers are non-adjustable and non-repairable. Maintenance requirements involve replacement of the rubber mounting bushings, and tightening of all shock absorber pins at the proper torque (350 - 400 lbf·ft (475 - 545 N·m)) when shock absorber replacement occurs. If a shock absorber becomes inoperative, complete unit must be replaced.

Caution: *When a shock absorber is found defective, always replace with a new set on affected axle, except if there has been a recent replacement of one unit. The following method will help in determining if both shock absorbers on the same axle have to be replaced.*

3.1 Inspection

Loosen lower mounting of both shocks, then carefully attempt to raise and lower the bottom portion of each shock. Note the rate of effort for distance of travel. Replace both shocks if a definite differential rate is found.

The shock must be bench checked in an upright, vertical position. If checked in any other position, air will enter the cylinder tube and make the shock absorber appear defective.

Proceed as follows to check shock absorbers:

1. With the shock absorber in a vertical pos tion (top end up), clamp the bottom mount in a vise.

Caution: *Do not clamp the reservoir tube or the dust tube.*

2. Rotate the dust tube. Notice any binding condition (may be compared with new unit). Binding condition indicates a scored rod. Units with scored rods should be replaced.
3. Fully extend shocks and check for leaks in the seal cover area. Shock fluid is a very thin hydraulic fluid that has a characteristic odor and dark brown tint. A slight trace of shock fluid around the seal cover area is not a cause for replacement. The shock seal is designed to permit a very slight see-page to lubricate the rod. Units which leak should be replaced.
4. Visually check shock for dents that could cause the shock to bind. Also, check for a bent rod.
5. Extend and collapse shock to determine that it has control (resistance) in both rebound and compression.
6. Visually inspect the shock mountings and vehicle mountings for:
   a) Broken mounts;
   b) Extreme bushing wear;
   c) Shifted bushing or sleeve;
   d) Deep cracks in bushing material (shallow surface cracks are normal);
   e) Loose shock absorber pins;
   f) Presence of convex washers, and position of them according to the rubber bushing.

3.2 Removal

1. Remove nuts and washers from shock absorbers on upper and lower mounting pins, taking care to identify the inner and outer washers to ease reinstallation. Refer to figure 4 for details.

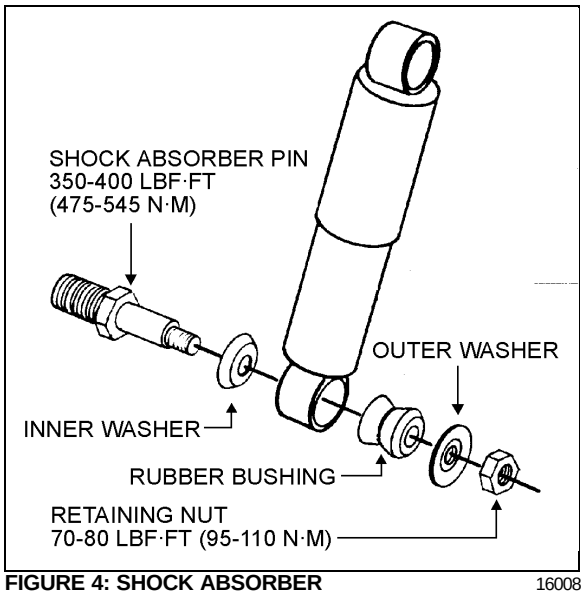


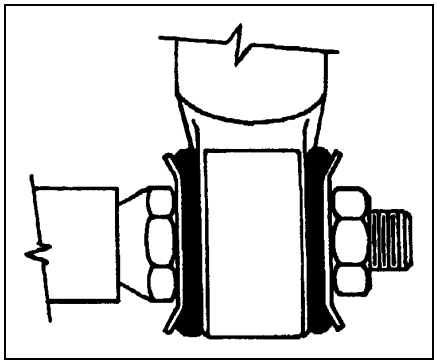
FIGURE 4: SHOCK ABSORBER 16008

2. Remove the shock absorber assembly from pins.

3. Remove the two inner bushings from the shock absorber, and discard them.

3.3 Installation

1. Ensure that the shock absorber mounting pins are tight and that the threads are not stripped.
2. Install new rubber mounting bushings on shock absorbers (upper and lower).
3. Place the inner washers (with washer convex side facing the shock absorber rubber bushing) on each shock absorber pin (Fig. 5).



16009

FIGURE 5: TYPICAL SHOCK ABSORBER SETUP

4. Install the shock absorber eyes over the mounting pins, then the outer washers (with washer convex side facing the shock absorber rubber bushing) on each shock extremity.
5. Place the lower and upper mounting pin stud nuts and torque them to 70 - 80 lbf·ft (95 - 110 N·m).

4. RADIUS ROD

Radius rods are used to secure the axles in the proper transversal and longitudinal positions. Five radius rods are provided on the front axle suspension (four longitudinal and one transversal), four on the drive axle suspension (three longitudinal and one transversal) and also four on the tag axle with a layout similar to the drive axle. Refer to figures 1 and 2 for details. These rods transmit both braking and driving forces from the axles to the vehicle body.

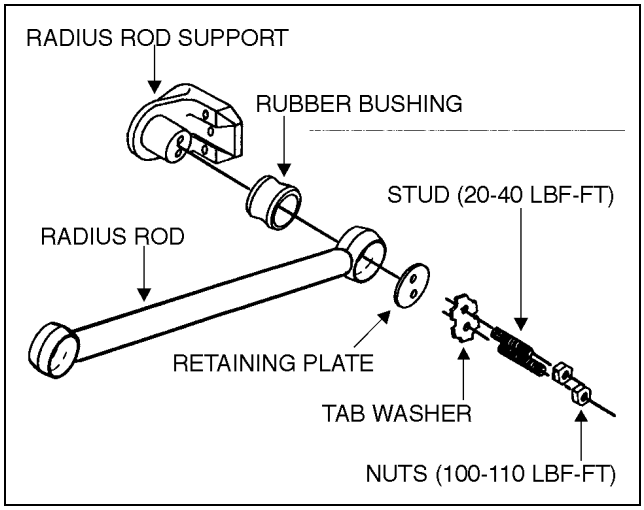


FIGURE 6: TYPICAL RADIUS ROD SETUP 16010

4.1 Inspection

The following instructions apply to all radius rods used on this vehicle:

1. Clean all parts thoroughly.
2. Inspect radius rods for distortion and cracks. We recommend the *"Magnaflux"* process to detect cracks in the radius rod. Any damaged part should be replaced with a new one.

Note: *New bushings should be used when rods are replaced.*

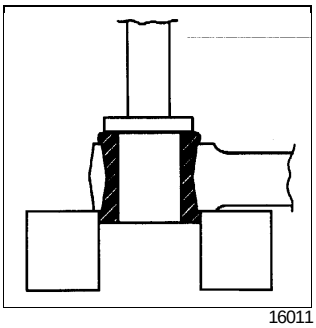
3. The radius rod bushings should be checked periodically for signs of shearing, deterioration, or damage. Any defective part should be replaced with a new one.

4.2 Removal

1. Flatten the tab washer which secures the two retaining nuts (or bolts), then unscrew the nuts (or bolts) at each extremity of the radius rod (Fig. 6).
2. Remove the retaining plates and radius rod ends from anchor pins, then remove the radius rod.

4.3 Bushing Removal

1. Safely support the radius rod as shown in figure 7.



16011

FIGURE 7: RADIUS ROD BUSHING REMOVAL

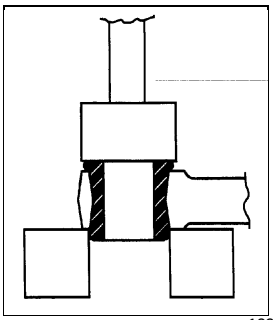
2. Place a flat steel disc, slightly smaller than the outside diameter of the bushing (Fig. 7).
3. Using an arbor press or a suitable driving tool, press or drive the old bushing out of the rod and discard the bushing.

4.4 Bushing Installation

1. Lightly Spray the inner and outer surfaces of radius rod bushing with water.

Caution: *No lubricant whatsoever is to be used on the rubber bushing.*

2. Safely support the radius rod, and place new bushing on top of the radius rod end.
3. Place a block of wood on top of bushing and press on it manually.
4. If necessary, use an arbor press or a suitable driving tool. Press or drive the bushing into the radius rod end until it extends equally on both sides of the rod (Fig. 8).
5. It is also possible to proceed differently. Place radius rod bushing on a plane surface. Spray a light coat of water on the inner and outer surfaces of radius rod bushing.
6. Take radius rod, align the bushing. Tap radius rod on bushing until latter is positioned correctly.



16012

FIGURE 8: RADIUS ROD BUSHING INSTALLATION

4.5 Installation

1. Lightly Spray the anchor pin with water. Place the radius rod end over the anchor pin (Fig. 9).

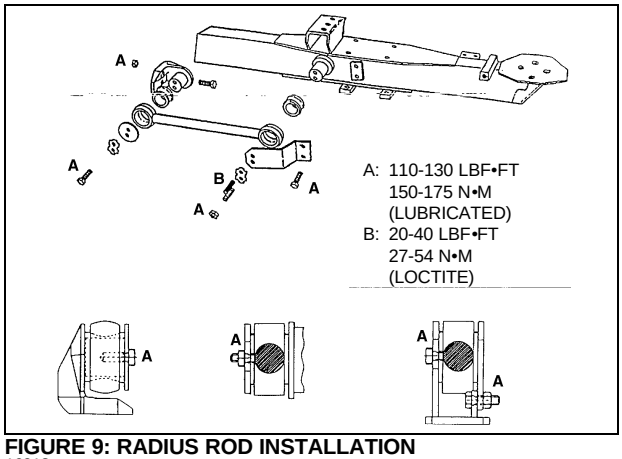


FIGURE 9: RADIUS ROD INSTALLATION
16013

2. Position the retaining plate. Install the tab washer and nuts (or bolts).

Caution: *Always use new tab washers at installation.*

3. Tighten the nuts (or bolts) lightly, and repeat at the other end.
4. Refer to paragraph "7. SUSPENSION HEIGHT ADJUSTMENT" later in this section, and set the vehicle to normal ride height.
5. With the vehicle at normal ride height, apply oil on threads and tighten all radius rod anchor pin nuts or bolts to 110 - 130 lbf·ft (150 - 175 N·m).

Caution: *It is extremely important upon reconnection of the rods that the proper clearance height between the axle and body is maintained. Otherwise, the rubber bushings in radius rod ends will become preloaded, thus reducing the life of these parts.*

5. SWAY BAR

A sway bar is provided on the front and drive axles to increase vehicle stability. It controls lateral motion (swaying movement) of vehicle (Fig. 10).

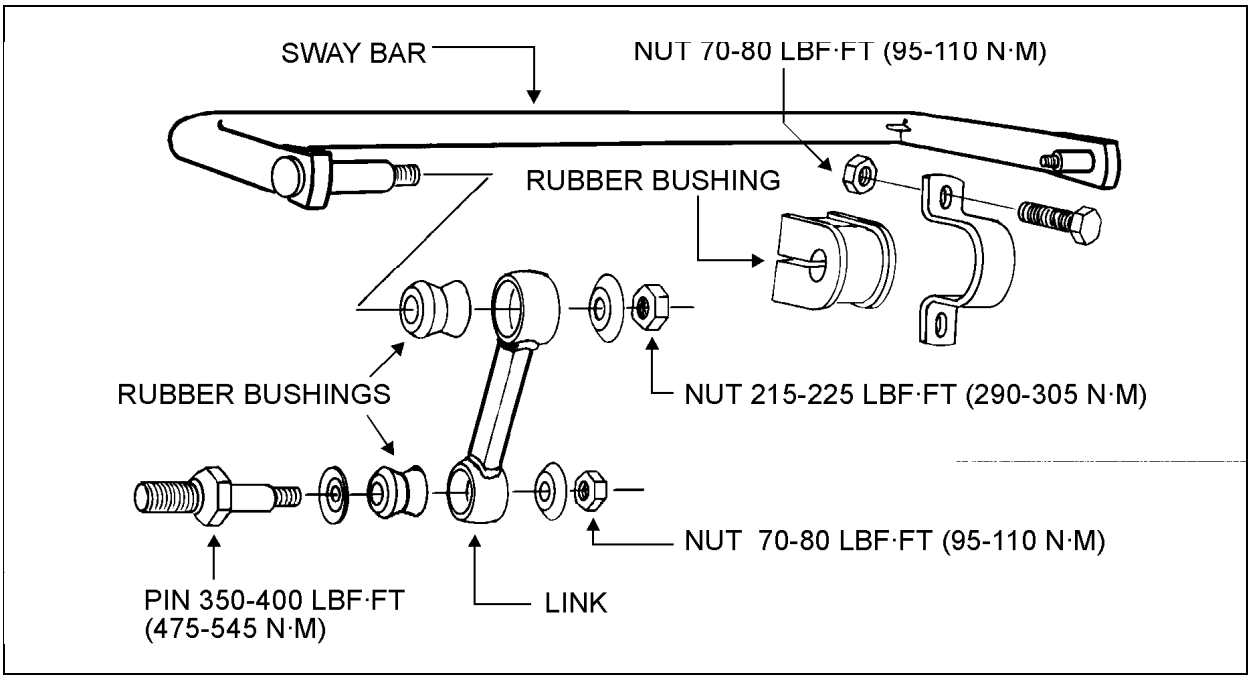


FIGURE 10: SWAY BAR 16014

5.1 Removal

1. Disconnect the two links from sway bar.
2. Safely support the sway bar. Unbolt the four bushing collars from subframe.
3. Remove sway bar.

Note: *Sway bar bushings are slitted to ease their removal.*

5.2 Installation

1. Loosely install the sway bar.
2. Tighten the eight bushing collar nuts to 70 - 80 lbf•ft (95 - 110 N•m).
3. Tighten sway bar link upper nuts to 215 - 225 lbf•ft (290 - 305 N•m) and lower nuts to 70 - 80 lbf•ft (95 - 110 N•m).

6. SUSPENSION AIR SYSTEM

6.1 Description

The suspension air system has its own air reservoir (accessory tank) which is located in the reclining bumper compartment. Pressurized air from the main tank (wet tank) flows through a pressure protection valve (PR-2) and an air filter which are both located in front service compartment, and then flows to the accessory air tank.

The pressure protection valve (PR-2) is moun-ted to the supply port of the air filter. This valve controls the pressure at which compressed air would be delivered to the accessory air tank. The valve remains closed until a preset pressure is reached (approximately 70 psi (485 kPa)). It then opens and passes air out the delivery port.

The main use for this valve is to protect the main air system by ensuring at all times a sufficient air pressure in the main system (i.e. air delivered to the accessories will be shut off in case of a decrease in pressure). Maintenance and repair information on the pressure protection valve is supplied in the applicable booklet, annexed to Section 12, *"Brakes and Air System"* under reference number SD-03-55.

Warning: *Depressurize parts prior to remove them.*

6.2 Inspection

The following inspection should be performed at established service inspection periods. Performing these procedures will allow substandard performance to be discovered before the condition becomes bad enough to cause operator complaints and failure on a run.

1. Visually inspect the suspension air lines for evidence of chafing on metal parts or other damage.
2. Visually inspect the air springs for cracks, abrasion or other damage.
3. Replace any parts found to be damaged.

6.3 Air Line Test

With the main air system at normal operating pressure, coat all suspension air line connections and air spring mountings with a solution of soap and water. Air leakage will produce soap bubbles. Any leak found must be corrected as no air leakage is permissible.

6.4 Air Tank Maintenance

Refer to Section 12, *"Brakes and Air System"* under heading *"*2.2 MAINTENANCE*"* for complete instructions on air tank maintenance.

7. SUSPENSION HEIGHT ADJUSTMENT

The flow of pressurized air from the accessory air tank to the air springs is controlled by three height control valves. These valves are mounted to the subframe and connected to the axles through an arm and link connection. This connection allows the valves to apportion air pressure in the springs to the vehicle load, maintaining normal ride height.

Immediate response height control valves increase or decrease the air pressure in the suspension system as required. One height control valve is located at center of front axle, and regulates air to front axle air springs in order to maintain the vehicle at the required height. Two are located at the drive axle, one on each inner side of rear wheelhouse. Refer to figure 11.

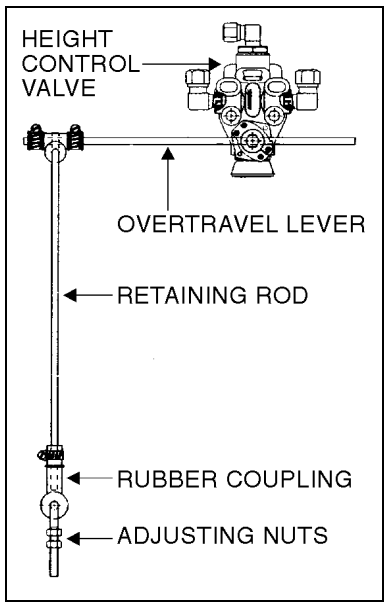


FIGURE 11: HEIGHT CONTROL VALVE **16015**

The appropriate vehicle body height is obtained by measuring the clearance of the air springs installed on the front and drive axles. The clearance should be 12 ± 0.25" (305 ± 6 mm) for the air springs installed on the front axle and 11.5 ± 0.25" (292 ± 6 mm) for those installed on the drive axle. Refer to figure 12 to identify the correct location where the measure has to be taken. At this point, it should not be necessary to make an adjustment under normal service conditions. However, if an adjustment is required, change the position of the overtravel lever in relation to the overtravel control body. The lever should be moved up to raise the height of vehicle, and down to lower it. Check that main air pressure is at normal operating pressure and raise the vehicle to the speci**fied height.**

Caution: *Always adjust on "fill cycle". If it is necessary to lower vehicle height, release sufficient air to be well below height, and adjust to height or fill cycle.*

To adjust suspension height, proceed as follows:

1. With the vehicle at normal operating air pressure, check the air spring clearance as illustrated in figure 13. This clearance should be 12 ± 0.25" (305±6 mm) for the front axle air springs and 11.5 ± 0.25" (292 ± 6 mm) for those on the drive axle.

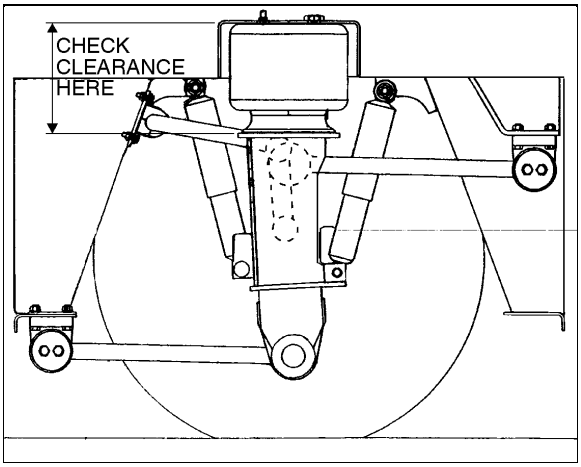


FIGURE 12: TYPICAL AIR SPRING CLEARANCE 16002

Note: *The measure should be taken from under the upper air spring support on subframe to top of the lower air spring support on axle (refer to fig. 12 for more details). If adjustment is required, begin with the drive axle.*

2. Loosen the two adjusting nuts on the connecting rod of height control valve to raise or lower the overtravel lever until the desired clearance is reached.
3. If there is not enough play on adjusting nuts, it is possible to make further adjustments by loosening the clamp on the rubber coupling and bringing it up or down.

Note: *Allow suspension to stabilize before taking reading.*

4. When the desired height is obtained, tighten adjusting nuts and clamp.

8. HEIGHT CONTROL VALVE

8.1 Operation

The height control valves automatically add air to, or release air from air springs to maintain constant suspension height regardless of load, or load distribution. Each valve adjusts independently according to the following conditions:

8.1.1 Loading Position

As the load increases and lowers the vehicle body, the overtravel lever commands the height control valve to add air to air springs.

8.1.2 Neutral Position

When vehicle body reaches the normal ride height, the height control valve overtravel lever reaches the "neutral" position and keeps both the supply and exhaust ports closed to ensure normal ride height is maintained. This condition remains static until the vehicle load is altered.

8.1.3 Unloading Position

As the load decreases and raises the vehicle body, the overtravel lever commands the height control valve to release air from air springs.

8.2 Maintenance

The height control valve requires no periodic maintenance. Height control valve linkage operates on rubber bushings and no lubrication should be attempted at this point.

8.2.1 Removal and Installation

Before disconnecting any height control valve air lines, securely support the vehicle by its jacking points on the body. Refer to paragraph *"*16. VEHICLE JACKING POINTS*"* in Section 18, *"Body"*.

1. Exhaust air from air system by opening the drain cock on accessory air reservoir. Remove height control valve as follows.
2. Disconnect overtravel lever from link and pull down lever to exhaust remaining air from air springs.
3. Disconnect air supply and delivery lines from the height control valve. Cover ends of the lines with tape.
4. Remove the two nuts retaining the height control valve to the mounting bracket, then remove valve assembly.

Reverse removal procedure to replace height control valve. After installation, check for leakage using a soap and water solution.

8.2.2 Air Leakage Test

Note: *The following procedure applies when valve assembly has been removed from vehicle.*

1. Clean the exterior of valve assembly.
2. Connect air pressure line to air inlet port, then allow air pressure build-up 70-100 psi (480-690 kPa).
3. Dip the valve assembly in a container of water, and watch for air bubbles when the overtravel lever is in the center position. No air should escape from any point of the valve assembly.
4. If bubbles appear from the air spring port, this is an indication that the air inlet valve assembly is defective and must be replaced.
5. Remove air pressure line from air inlet fitting and connect it to the air spring port. If bubbles appear at the air inlet check valve port, this is an indication that check valve unit is defective and must be replaced.
6. If bubbles appear at the exhaust port, this is an indication that the exhaust valve assembly is defective and must be replaced.
7. If bubbles appear around edge of valve cover plate, the cover plate gasket must be replaced.
8. If no leaks are found, remove valve assembly from water, then with air pressure still connected to the air spring port, actuate overtravel lever to remove any excess water which may have entered exhaust valve chamber. Remove air line, connect it to the air inlet port, and repeat operation to remove water from the air inlet valve chamber.

9. FRONT KNEELING (W/ FRONT HIGH-BUOY) SYSTEM

The kneeling system is used to lower front of vehicle. This allows passengers to board the vehicle with greater ease. The kneeling action is achieved by exhausting air from the front air springs (bellows). This system bypasses the height control valve to provide a fast up and down movement of the front suspension. Only seven seconds are required to lower vehicle from normal level to the lower position, and approximately the same time to raise the vehicle from lower position to normal level. The quick response is achieved by an auxiliary air tank installed beside the secondary air reservoir (for exact position, refer to Section 12, *"Brake and Air System"*). This tank provides sufficient air supply to the kneeling system for some successive operations.

The system is provided with two safety features; first, a speed switch will enable the kneeling system to work only under 5 mph (8 km/h). Secondly, the parking brake is automatically applied, and a limit switch will keep it applied as long as the vehicle has not returned to a certain height where the driver will be able to manually remove the parking brake.

The purpose of the high-buoy function in this system is to raise the front end of the vehicle to allow passengers to board the vehicle with greater ease. It is also used to allow an extra ground clearance for particular situations. In normal conditions, the height control valve is in operation and only the high-buoy can be operated.

9.1 Principle of Operation

Refer to the air system schematic diagram annexed at the end of Section 12, "*Brake and Air System*".

DOWN (FRONT KNEELING):

Both the bellows control and bellows exhaust solenoid valves are energized, so the air control valves release air from front air springs. The height control valve is bypassed to ensure no air is forwarded to air springs while lowering the front suspension.

UP (FRONT HIGH-BUOY):

Only the bellows control solenoid valve is energized, so the air coming from the kneeling air tank is routed through air control valves, and up to front air springs. The height control valve is bypassed until the kneeling proximity switch signals the kneeling module to cut off the bellows control solenoid valve, about 1" (25 mm) below normal ride height. The final height adjustment is achieved by the height control valve.

9.2 Maintenance

Since the kneeling action is issued from both the air system and electrical system, refer to

Section: 12, *"Brake and Air System"* and Section 06, *"Electrical System"*.

For diagnosis and understanding of the system, refer to wiring diagrams, and to the appropriate air system schematic diagram annexed to Section 12, *"Brake and Air System"*.

9.3 Bellows Control and Bellows Exhaust Solenoid Valves

9.3.1 Removal and Installation

1. On the rear side of steering compartment, locate both the bellows control and bellows exhaust solenoid valves.
2. Identify hoses and wires to ease reinstallation. Disconnect solenoid wires and the three flexible black hoses from solenoid valves.
3. Unscrew and remove the control solenoid valve and exhaust solenoid valve assembly. Place on a clean working place.

Reverse removal procedure to reinstall.

Caution: *Any cable tie that has been cut during removal procedure should be replaced with a new one.*

10. REAR HIGH-BUOY SYSTEM

The purpose of the rear high-buoy system is the raise vehicle body about 4" (100 mm) in order to increase ground clearance to board a ferryboat, to avoid a curb, etc.. This system can be put into service during normal vehicle operation.

10.1 Principles of Operation

The rear high-buoy system is added over the front kneeling (with front high-buoy). The front end uses the same valves as the front kneeling (with front high-buoy). A solenoid valve is added to send air to the double shuttle valves for the rear end. It uses the same dash switch as the kneeling (with front high-buoy).

UP:

The air coming from the control valve, flows through double shuttle valves, to supply air springs. The double shuttle valves prevent height control valves from releasing air from air springs.

DOWN:

The control valve, on the dashboard, cuts off air supply, so the double shuttle valves allow height control valves to accomplish their function. Height control valves release air from air springs until suspension

10.2 Maintenance

Refer to the air system schematic diagram " OPT. FRONT KNEELING WITH REAR HIGH-BUOY COMBINATION" annexed at the end of this Section.

10.3 High-Buoy - Pressure Regulating Valve

The regulating valve is located on ceiling of the spare wheel and tire compartment and is accessible through the reclining bumper. This valve should be adjusted to 90 psi (621 kPa).

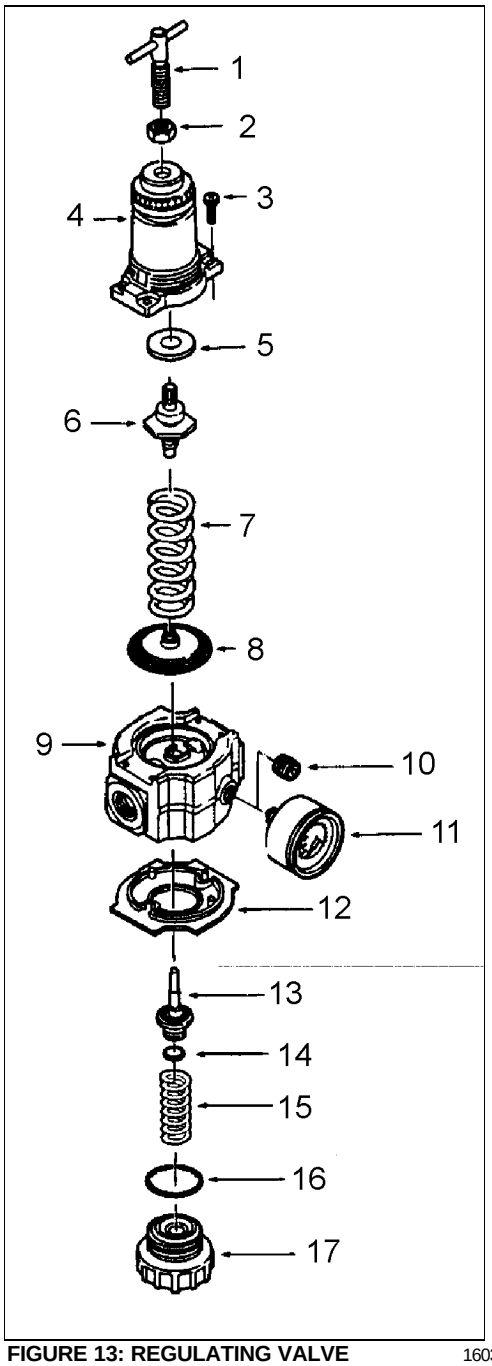


FIGURE 13: REGULATING VALVE 16035

10.3.1 Adjustment

1. Before turning on system air pressure, turn regulator adjustment counterclockwise until all load is removed from the regulating spring.
2. Turn on system pressure.
3. Turn regulator adjustment clockwise until the desired outlet pressure is reached.
4. To avoid minor readjustment after making a change in pressure setting, always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce the pressure at a lower pressure, then increase it to the desired level of pressure.
5. Tighten jam nut (2, Fig. 13) to lock pressure setting.

10.3.2 Disassembly

1. Shut off inlet pressure and reduce pressure in inlet and outlet lines to zero. Turn regulator adjustment (1, Fig. 13) counterclockwise until all load is removed from regulating spring. Regulator can be disassembled without removal from air line.
2. Disassemble regulator in accordance with the item numbers on the exploded view.

10.3.3 Cleaning

1. Clean parts with warm water and soap. Dry parts and blow out internal passages in body using clean, dry compressed air.
2. Inspect parts. Replace those found to be damaged.

10.3.4 Reassembly

1. Lubricate o-ring (14 and 16, Fig. 13), valve stem (13, Fig. 13), tip of adjusting screw (1, Fig. 13), and the outer circumference and both sides of the thrust washer (9, Fig. 13) with a light coat of good quality o-ring grease.
2. Assemble the regulator as shown on the exploded view.

Torque Table	
Item	**Torque in Inch-Pound (N•m)**
3 (Screw)	25-35 (2.8-3.9)
17 (Bottom plug)	20-25 (2.3-2.8)

11. REAR LOW-BUOY SYSTEM

The purpose of the rear low-buoy system is to lower the whole suspension about 4" (100 mm) in order to reduce the overall height for low clearances. This system can be put into service during normal vehicle operation.

11.1 Principles of Operation

On H3-41 and H3-45, the rear low-buoy is added over the front kneeling (w/ Front High-Buoy). The control valve on the right console panel sends an electric signal from its pressure switch to control the front suspension as at kneeling. It also removes air from a relay valve that exhausts air supply to all leveling valves and the quick release in the rear section. Air from the rear suspension can then be depleted through the check valve-quick release assembly.

DOWN:

The control valve, on the dashboard, cuts off air supply, so air is released from air springs. A relay valve prevents height control valves from supplying air springs.

UP:

The control valve, on the dashboard, supplies air to close the passage between both the delivery and supply ports. A relay valve opens and provides air springs until the suspension reaches the normal ride height.

11.2 Maintenance

Refer to the air system schematic diagram " OPT. FRONT KNEELING WITH REAR LOW-BUOY COMBINATION" annexed at the end of this Section.

12. "LEVEL-LOW" LEVELING SYSTEM

The purpose of the *"level-low"* leveling system is to adjust suspension in three separate points (front, rear right and rear left) in order to level vehicle body. This system can be put into service when the ignition key is turned to the *"ON"* position, and must be used only when the parking brake is applied.

The *"level-low"* warning light on the dashboard indicates that the selector knob is not in the *"DRIVE"* position.

12.1 Principles of Operation

DOWN:

The (front/rear right/rear left) control solenoid valve supplies air to the (front/rear right/rear left) five-way three-position air control valve, which bypasses the (front/rear right/rear left) height control valve, and opens a passage to allow the air control and exhaust valve to release air from (front/rear right/rear left) air springs.

UP:

The (front/rear right/rear left) control solenoid valve supplies air to the (front/rear right/rear left) five-way three-position air control valve, which bypasses the (front/rear right/rear left) height control valve, and opens a passage to allow the air control and exhaust valve to supply air to (front/rear right/rear left) air springs.

DRIVE:

When the ignition key is turned to the *"ON"* position with selector knob in the *"DRIVE"* position, the drive control solenoid valve supplies air to all five-way three-position air control valves, each one opening a passage to allow height control valves to accomplish their function.

When the ignition key is turned to the *"OFF"* position and selector knob to the *"DRIVE"* position, the air is entrapped between air springs and five-way three-position air control valves to ensure the adjusted level will be kept.

Warning: *Never move vehicle with selector knob in any other position than the "DRIVE" position.*

12.2 Maintenance

Since the kneeling action is issued from both the air system and electrical system, refer to Section: 12, *"Brake and Air System"* and Section 06, *"Electrical System"*.

For diagnosis and understanding of the system, refer to wiring diagrams, and to the appropriate air system schematic diagram annexed to Section 12, *"Brake and Air System"*.

13. TROUBLESHOOTING

Condition	Cause	Correction
Bellows deflate over time	1. Defective check valve assembly. 2. Defective exhaust valve assembly. 3. Leak in air line and/or bellows. 4. Defective valve cover, rubber O- rings or gasket.	1. Replace check valve assembly. 2. Replace exhaust valve assembly. 3. Replace air line or bellows. 4. Replace valve cover, O-rings or gasket.
Bellows raise to full height and fail to exhaust air pressure	1. A clogged exhaust screen in height control valve assembly. 2. A combination clogged exhaust. 3. screen and defective air inlet valve assembly.	1. Remove and clean screen. 2. Clean exhaust screen and replace air inlet valve assembly.
Erratic valve action	1. Dirt or foreign matter in the air valve lever chamber. 2. Defectives valves.	1. Remove valve cover and blow out dirt. Install cover using new gasket 2. Overhaul height control valve assembly
Vehicle body fails to level to satisfactory ride height	1. Improper height control valve over travel lever adjustment	1. Adjust lever as directed

14. PARTS SPECIFICATIONS

Front and tag axle air springs
Make .....Goodyear Tire and Rubber
Model ..... May-West
Type..... 1100
Nominal diameter..... 12" (304 mm)
Supplier number.....1R12-319
Prévost number..... 630125

Drive axle air springs
Make .....Goodyear Tire and Rubber
Model .....Roll-over volume can
Type..... 1100
Nominal diameter..... 11" (279 mm)
Supplier number.....1R11-089
Prévost number..... 630105

Front axle shock absorbers
Make .....Gabriel
Color .....White
Collapsed length15.47±0.125" (39,29±0,32 cm)
Extended length.. 24.5±0.125" (33,32±0,32 cm)
Supplier number..... 680422
Prévost number..... 630134

Drive and tag axle shock absorbers
Make.....Monroe
Type .....Gas Magnum
Collapsed length.....15.38" (39,05 cm)
Extended length .....23.63" (60,01 cm)
Supplier number 650407
Prévost number 630127

Height control valve
Make.....Neway
Quantity used 3
Supplier number 905-54-241
Prévost number 630120

Bellows control and exhaust solenoid valve assembly
Make.....Norgren
Solenoid valve manifold
Supplier number D0043B
Prévost number 641130
Coil
Voltage ..... 24 V DC
Current draw..... .29 amperes
Supplier number 54932-27
Prévost number 641144

Valve (3 ways, 2 positions)
Type..... N/C
Supplier number..... 411-C-456235W
Prévost number..... 641357
Type..... N/O
Supplier number..... 411-D -456236X
Prévost number..... 641356

Radius rod bushing
Make ..... Prévost
Prévost number..... 630021

Sway bar bushing
Make.....Prévost
Prévost number 130953

Shock absorber and sway bar link bushings
Make.....Monroe
Supplier number 45380
Prévost number 630062

Air Regulator
Make.....Norgren
Recommended pressure setting90 psi (621 kPa)
Supplier number R74G-4AT-RMN
Prévost number 641352

15. TORQUE SPECIFICATIONS

1- Shock absorber pin..... 350-400 lbf·ft (475-545 N·m)

2- Shock absorber pin nut..... 70-80 lbf·ft (95-110 N·m)

3- Radius rod stud ..... 20-40 lbf·ft (27-54 N·m)

4- Radius rod retaining nut or bolt .....110-130 lbf·ft lubricated (150-175 N·m lubricated)

5- Radius rod support nut .....110-130 lbf·ft lubricated (150-175 N·m lubricated)

6- Axle attachment nut..... 425-475 lbf·ft (580-645 N·m)

7- Air spring stud nut..... 20-25 lbf·ft (27-34 N·m)

8- Sway bar link pin stud..... 350-400 lbf·ft (475-545 N·m)

9- Sway bar link lower nut..... 70-80 lbf·ft (95-110 N·m)

10- Sway bar link upper nut .....215-225 lbf•ft (290-305 N•m)

11- Sway bar bushing collar bolt..... 70-80 lbf·ft (95-110 N·m)

Note: *During assembly, use "Loctite 242" (Prévost # 680038) with item 1, 3 and 8. After assembly, apply "anti-seize compound" (Prévost # 680064) on all threads nuts.*