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Bench Seat 91.00

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Bench Seat 91.00

Seat Removal and Installation

Removal

- Park the vehicle, apply the brakes, and chock the tires.
- 2. Push the seat belt buckles back behind the seat.
- Remove the bolt and spacer from the center seat belt where it is attached to the cab floor.
- Remove the center shoulder harness and lap belt from the bench seat.

NOTE: The far-right rear fastener that attaches the bench seat support to the cab floor is also used to secure the windshield washer reservoir to the cab.

- From under the cab, remove the nut that attaches the windshield washer reservoir to the cab. Support the washer reservoir while the bench seat is being removed.
- From inside the cab, remove the capscrews that attach the bench seat supports to the cab floor.
- 7. Remove the seat from the cab.

- 1. Using capscrews, install the bench seat in the cab. Torque the capscrews 12 to 14 lbf·ft (16 to 19 N·m).
- Using a nut, attach the windshield washer reservoir to the cab.
- 3. Install the center shoulder harness and lap belt.
- Using the same bolt and spacer that were removed from the seat belt, attach the center seat belt to the cab floor. Torque the bolt 35 to 45 lbf·ft (47 to 61 N·m).
- 5. Push the seat belt buckles forward to the front of the seat back.
- 6. Remove the chocks from the tires.

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General Information

General Information

WARNING

Inspect and maintain seat belts. When any part of a seat belt system needs replacement, the entire seat belt must be replaced, both retractor and buckle side. Any time a vehicle is involved in an accident, and the seat belt system was in use, the entire vehicle seat belt system must be replaced before operating the vehicle. Do not attempt to modify the seat belt system; doing so could change the effectiveness of the system. Failure to replace worn or damaged seat belts, or making any modifications to the system, may result in personal injury or death.

Although the three-point seat belts installed in Freightliner vehicles appear similar to the seat belts used in passenger cars, there are some important differences that can affect service life:

- A heavy truck can travel more miles in a year than a car might go in its lifetime.
- There is more movement in a truck seat belt system, especially with air ride seats.
- Trucks often operate in more severe environments than cars, such as gravel pits, cement plants, and grain elevators, where the belts are exposed to abrasive dirt and dust.

Because of these factors, truck seat belt systems need to be inspected regularly to ensure that they are in proper condition; see **Subject 100**.

IMPORTANT: When any part of a seat-belt system needs replacement, the entire seat-belt system must be replaced—both the retractor side and the buckle side and, if equipped, both tether belts.

Seat Belt and Tether Belt Inspection

Inspection

A WARNING

Inspect and maintain seat belts. When any part of a seat belt system needs replacement, the entire seat belt must be replaced, both retractor and buckle side. Any time a vehicle is involved in an accident, and the seat belt system was in use, the entire vehicle seat belt system must be replaced before operating the vehicle. Do not attempt to modify the seat belt system; doing so could change the effectiveness of the system. Failure to replace worn or damaged seat belts, or making any modifications to the system, may result in personal injury or death.

Seat belts and tether belts have a finite life which may be much shorter than the life of the vehicle. Regular inspections and replacement as needed are the only assurance of adequate seat belt security over the life of the vehicle.

- 1. Check the web for fraying, cuts, extreme dirt and dust, or for severe fading from exposure to sunlight, especially near the buckle latch plate and in the D-loop guide area.
- Check operation of the buckle, latch, Komfort Latch or Sliding Komfort Latch (if equipped), web retractor, and upper seat belt mount on the door pillar. Check all visible components for wear or damage.
- 3. Check the seat belt and tether belt connection points, and tighten any that are loose.

Seat Belt System Replacement

IMPORTANT: When any part of a seat-belt system needs replacement, the entire seat-belt system must be replaced—both the retractor side and the buckle side and, if equipped, both tether belts.

Any time a vehicle is involved in an accident, and the seat belt system was in use, the entire seat-belt system must be replaced before operating the vehicle.

Air Suspension Seat

- 1. Apply the parking brakes and chock the tires.
- 2. Remove the tread plate and the lower B-pillar cover, as follows.
 - 2.1 Remove the four screws and washers that attach the tread plate to the doorway and the lower B-pillar cover; see **Fig. 1**.
 - 2.2 Remove the screw that attaches the lower B-pillar cover to the doorway, and the screw and washer that attaches it to the B-pillar. Remove the B-pillar cover.
- Disconnect the seat and tether belts from the seat by removing the capscrew from each end of the intermediate-connection-point (ICP) bar; see Fig. 2. Remove and discard the buckle side of the seat belt.
- Remove the capscrews that attach the tether belts to the cab deck. Remove and discard the tether belts.
- 5. Remove the screw that attaches the seat-belt retractor to the lower B-pillar.
- Remove the capscrews that attach the height adjuster to the upper B-pillar. Remove and discard the retractor side of the seat belt.
- 7. Install the height adjuster of the new seat belt on the upper B-pillar. Tighten the capscrews 35 to 45 lbf-ft (48 to 61 N·m).
- 8. Install the seat-belt retractor on the lower B-pillar. Tighten the screw 35 to 45 lbf-ft (48 to 61 N·m).
- 9. Attach the angle brackets of the new tether belts to the cab floor. Tighten the capscrews 35 to 45 lbf·ft (48 to 61 N·m).
- On both sides of the seat, first place the tether bracket against the ICP bar, then place the seat-

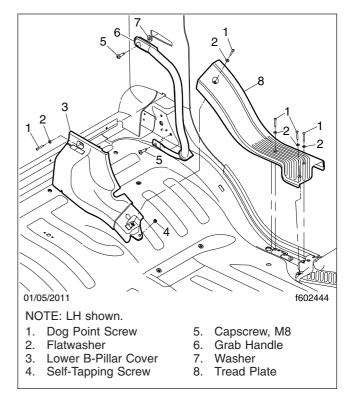


Fig. 1, Tread Plate and Lower B-Pillar Cover Installation

belt bracket on top of the tether bracket. Insert the capscrew through the brackets into the ICP bar. Tighten both capscrews 35 to 45 lbf·ft (48 to 61 $N\cdot m$).

11. Install the lower B-pillar cover and the tread plate.

Static Seat

- 1. Apply the parking brakes and chock the tires.
- Remove the tread plate and the lower B-pillar cover, as follows.
 - 2.1 Remove the four screws and washers that attach the tread plate to the doorway and the lower B-pillar cover; see **Fig. 1**.
 - 2.2 Remove the screw that attaches the lower B-pillar cover to the doorway, and the screw and washer that attaches it to the B-pillar. Remove the B-pillar cover.

Seat Belt System Replacement

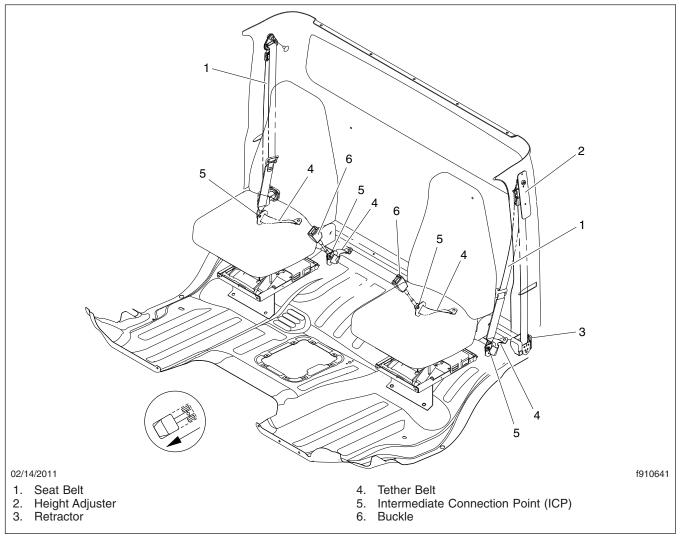


Fig. 2, Seat Belt Installation, Air Suspension Seats (typical)

- Remove the capscrews that attach the seat-belt brackets to the cab deck. Remove and discard the buckle-side of the seat belt.
- 4. Remove the screw that attaches the seat-belt retractor to the lower B-pillar.
- Remove the capscrews that attach the height adjuster to the upper B-pillar. Remove and discard the retractor side of the seat belt.
- 6. Install the height adjuster of the new seat belt on the upper B-pillar. Tighten the capscrews 35 to 45 lbf·ft (48 to 61 N·m).

- 7. Install the seat-belt retractor on the lower B-pillar. Tighten the screw 35 to 45 lbf·ft (48 to 61 N·m).
- 8. Attach both seat-belt brackets to the cab deck. Tighten the capscrews 35 to 45 lbf-ft (48 to 61 N·m).
- 9. Install the lower B-pillar cover and the tread plate.

Seat Belt Retractor Unlocking

Unlocking an Installed Retractor

Seat belt retractors are locking up and preventing the webbing from being extracted. This condition is known as reverse lock-up and is caused by excessive webbing spooling into the retractor before installation in the vehicle.

- Park the vehicle, apply the parking brake, shut down the engine, and chock the front and rear tires.
- 2. Verify that the retractor is mounted in the 90-degree position. See **Fig. 1**.
- 3. Firmly grasp the web close to the retractor. See Fig. 2.

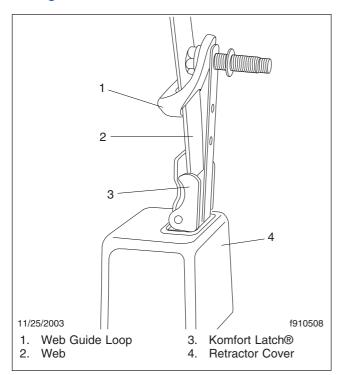


Fig. 1, Retractor in the 90-Degree Position

- 4. Pull on the web with enough force to tighten the web onto the spool until the webbing locks back onto the retractor. The retractor should unlock when tension is released.
- 5. Remove the chocks from the tires.

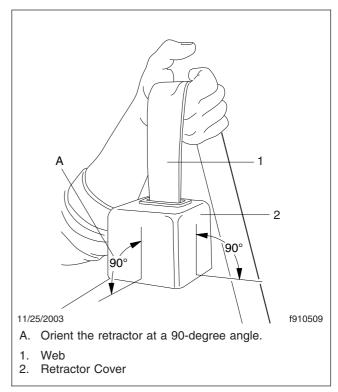


Fig. 2, Firmly Grasp the Webbing

Unlocking an Uninstalled Retractor

- Clamp the retractor in a vice at a 90-degree angle. See Fig. 3.
- 2. Pull on the web with enough force to tighten the web onto the spool.
- 3. Release the web. This allows 1/2-inch (12.7-mm) of the webbing to feed back into the retractor storage housing and unlock the retractor.
- 4. Pull all the webbing out of the retractor, and allow only 12 to 15 inches (304 to 381 mm) to retract. Lock the Komfort Latch on the web. See Fig. 4.

91.01 Seat Belts

Seat Belt Retractor Unlocking

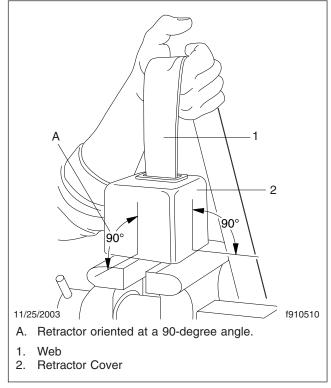


Fig. 3, Place the Retractor in a Vice

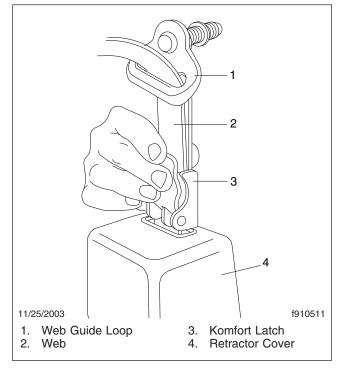


Fig. 4, Lock the Komfort Latch

Troubleshooting

Troubleshooting

WARNING

Inspect and maintain seat belts. When any part of a seat belt system needs replacement, the entire seat belt must be replaced, both retractor and buckle side. Any time a vehicle is involved in an accident, and the seat belt system was in use, the entire vehicle seat belt system must be replaced before operating the vehicle. Do not attempt to modify the seat belt system; doing so could change the effectiveness of the system. Failure to replace worn or damaged seat belts, or making any modifications to the system, may result in personal injury or death.

Replace the entire seat belt system if:

- the shoulder harness or lap belt is cut, frayed, or showing signs of extreme wear;
- the buckle and latch do not engage with a solid sounding click or do not release freely when the button is pressed;
- the retractor locks up at improper times or the lap belt or shoulder harness does not move freely to and from the retractor when the vehicle is not moving. Whether the seat belt is fastened or not, the retractor should not lock unless the seat belt is jerked;
- the shoulder harness or lap belt has been exposed to extreme sun light, dust, or dirt, causing the webbing color to fade and deteriorate the strength of the webbing;
- the plastic around the buckle is deformed, cracked, or broken exposing the internal mechanism;
- the retractor cover is cracked or broken exposing the internal mechanism or stored webbing;
- the metal or plastic area of the latch is deformed, cracked, corroded, or broken;
- the D-loop is deformed, cracked, or broken.

For seat belt replacement instructions, see **Subject 110**.

Replace, adjust, or tighten as necessary if:

 the tethers are missing, extremely loose, or are not attached to the seat;

- the D-loop webbing guide does not rotate freely;
- the hardware is missing, rusted, corroded, or damaged;
- the hardware is not tight.

Replace hardware with only Freightliner authorized parts.

Specifications

Unless listed in **Table 1**, tighten all fasteners using the torque specifications found in **Section 00.04**.

Torque Specifications				
Fastener Description	lbf∙ft	N⋅m		
Height Adjuster Mounting Screws				
Seat Belt Retractor Mounting Screw	35–45	48–61		
Tether Belt Angle Bracket Screws	35–45	40-01		
Intermediate-Connecting-Point (ICP) Bar Screws				

Table 1, Torque Specifications

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91.02 **Bostrom Seats**

General Information

General Information

Bostrom T-Series air suspension seats offer weight/ height adjustment, infinite adjustment Parabar II® lumbar support, and a fore-and-aft roller-track isolator system. See Fig. 1.



- 3. Height Adjustment Switch
- 4. Seat Cushion Tilt Knob
- 5. Fore-and-Aft Seat Adjustment and Isolator Lever
- 6. Lumbar Support Knob (optional)

Fig. 1, Bostrom T-Series Air Suspension Seat

For complete operating instructions, refer to **Chapter** 5 in the Business Class M2 Driver's Manual or the seat manufacturer's operating manual.

Seat Removal and Installation

Removal

- Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.
- 2. Adjust the seat to the maximum height.
- Remove the suspension shroud (if equipped) from the seat base.
- To secure the seat suspension in the extended position, bind the two cross-rods together with a large tie strap, at either the top or bottom of the fully extended scissor arms.

NOTE: If the seat is removed for a suspension rebuild (**Subject 150**), use a spacer block instead of tie straps to secure the seat in the extended position.

5. Release the air pressure from the seat air spring.



CAUTION

Do not remove the seat without first draining the seat air spring, and holding the seat suspension extended by securing the cross-rods together at either the top or bottom of the fully extended scissor arms. If the seat suspension is not properly secured, the seat could lower unexpectedly, pinching a hand or finger between the suspension parts, resulting in personal injury.

6. Drain the vehicle air reservoirs.



WARNING

Air lines under pressure can whip dangerously if disconnected. Drain all air from the air tanks before disconnecting air lines. Disconnecting pressurized air lines can cause personal injury and/or property damage.

- 7. If equipped with a seat heater, disconnect the power supply from the seat.
- 8. Disconnect the air valve air supply hose.
- 9. Remove the capscrews that attach the seat belt and tether belts to the intermediate-connection-point (ICP) bar.
- 10. Remove the capscrews and washers that attach the seat to the cab deck. Remove the seat from the cab. See **Fig. 1**.

- Position the seat on the cab deck. Insert the capscrews through the washers and the seat base.
 See Fig. 1. Tighten the capscrews 25 to 29 lbf-ft (34 to 39 N·m).
- 2. Attach the seat belt and tether belts to the intermediate-connection-point (ICP) bar. Tighten the capscrews 35 to 45 lbf-ft (48 to 61 N·m).
- 3. Attach the air valve air supply hose.
- 4. If equipped with a seat heater, plug in the power supply to the seat.
- 5. Start the engine and allow the air reservoirs to fill. Adjust the seat to its maximum height, then remove the tie strap that binds either the top or bottom cross-rods together.
- Install the suspension shroud (if equipped) on the seat base.

Seat Removal and Installation

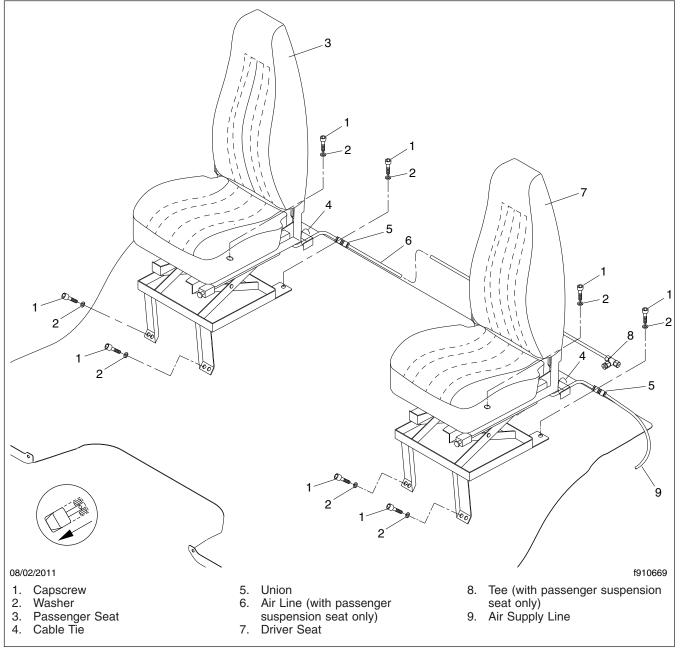


Fig. 1, Seat Installation

Air Spring Removal and Installation

Removal

- Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.
- Remove the seat from the vehicle; see Subject 100.
- If not already done, secure the seat suspension in the extended position by binding the two cross-rods together with a large tie strap, at either the top or bottom of the fully extended scissor arms.



Do not remove the seat without first draining the seat air spring, and holding the seat suspension extended by securing the cross-rods together at either the top or bottom of the fully extended scissor arms. If the seat suspension is not properly secured, the seat could lower unexpectedly, pinching a hand or finger between the suspension parts, resulting in personal injury.

4. Release the air pressure from the air spring.

A WARNING

Air lines under pressure can whip dangerously if disconnected. Drain all air from the air tanks before disconnecting air lines. Disconnecting pressurized air lines can cause personal injury and/or property damage.

- 5. Disconnect the air line from the air spring by loosening the air fitting while pulling the air line out of the fitting.
- 6. Remove the top and bottom capscrews from the air spring. Remove the air spring from the suspension. See **Fig. 1**.

- Position the air spring in place so the fitting at the bottom of the air spring is toward the back of the seat. See Fig. 1.
- 2. Install the top capscrew. Tighten the capscrew 60 to 84 lbf-in (680 to 950 N·cm).
- 3. Install the bottom capscrew. Tighten the capscrew 24 to 48 lbf·in (270 to 540 N·cm).

- 4. Connect the air line to the fitting in the air spring by pushing the tube into the fitting.
- 5. Install the seat in the vehicle; see Subject 100.

91.02 Bostrom Seats

Air Spring Removal and Installation

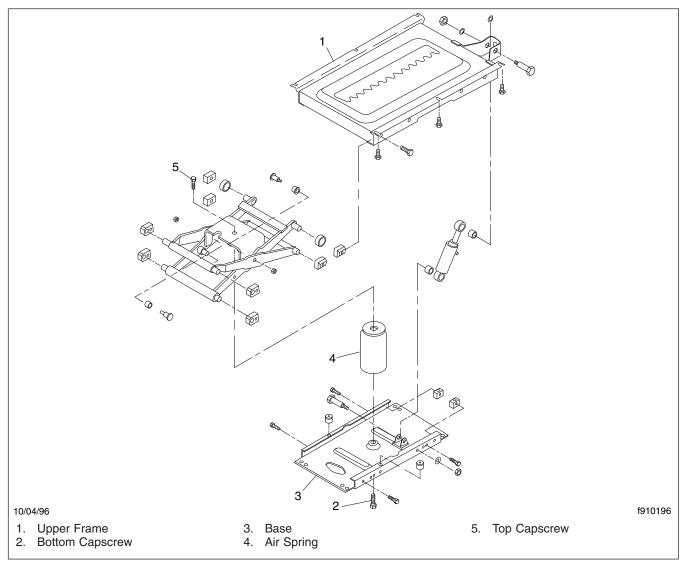


Fig. 1, Seat Air Spring Installation

Seat/Back Assembly Removal and Installation

Removal

- Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.
- Adjust the seat/back assembly to the most rearward position
- 3. Remove the two nuts and flatwashers from the underside of the channel assembly. See Fig. 1.
- 4. Remove the two shoulder bolts from the channel assembly.
- 5. Disconnect the air lines to the lumbar supports.
- 6. Remove the seat/back assembly.

- 1. Place the seat/back assembly onto the channel assembly. See Fig. 1.
- 2. Connect the air lines to the lumbar supports.
- 3. Install the two shoulder bolts in the channel assembly.
- 4. Install the two nuts and flatwashers in the underside of the channel assembly.

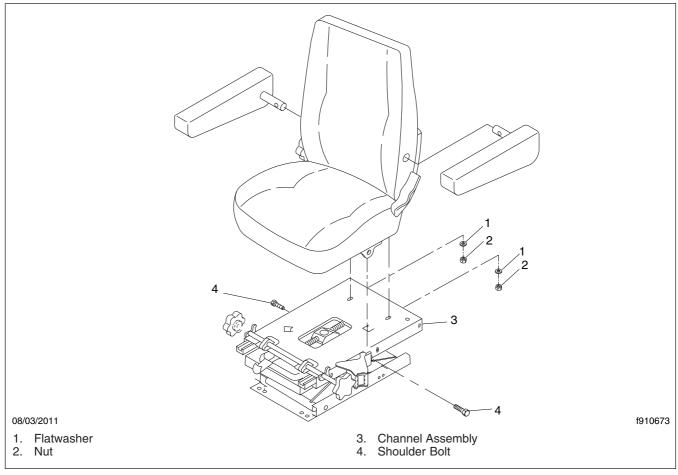


Fig. 1, Seat/Back Assembly Installation

Slide Rail Replacement

Replacement

- Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.
- Remove the seat/back assembly; see Subject 120.
- 3. Move the isolator assembly to the rear. Remove the front screws and nuts that attach the rails to the upper frame. See **Fig. 1**.
- 4. Using care, move the isolator assembly to the front. Remove the rear screws and nuts that attach the rails to the upper frame.
- 5. Remove the screws that attach the rails to the isolator assembly.
- 6. Remove and install one slide rail at a time.
- 7. Using new screws, attach the slide rails to the isolator assembly.

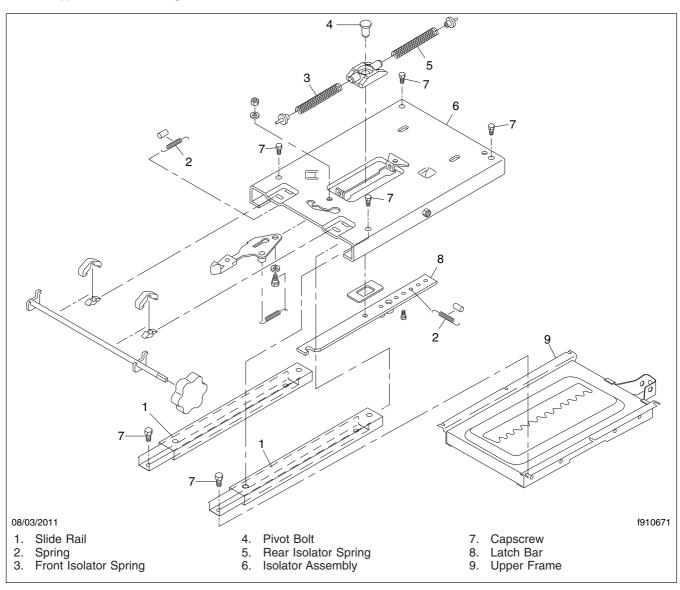


Fig. 1, Slide Rail Installation

91.02 Bostrom Seats

Slide Rail Replacement

- 8. Using new screws and nuts, attach the slide rails to the upper frame.
- 9. Install the seat/back assembly; see Subject 120.

Damper Removal and Installation

Removal

NOTE: The seat/back assembly does not need to be removed.

- 1. Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.
- Remove the suspension shroud (if equipped) from the seat base.

- 3. Adjust the seat to the maximum height.
- Move the isolator assembly to the fully forward position to provide access to the damper assembly.
- 5. Remove the shoulder bolts, hexnuts and washers at the top and bottom of the damper. Remove the damper. See Fig. 1.

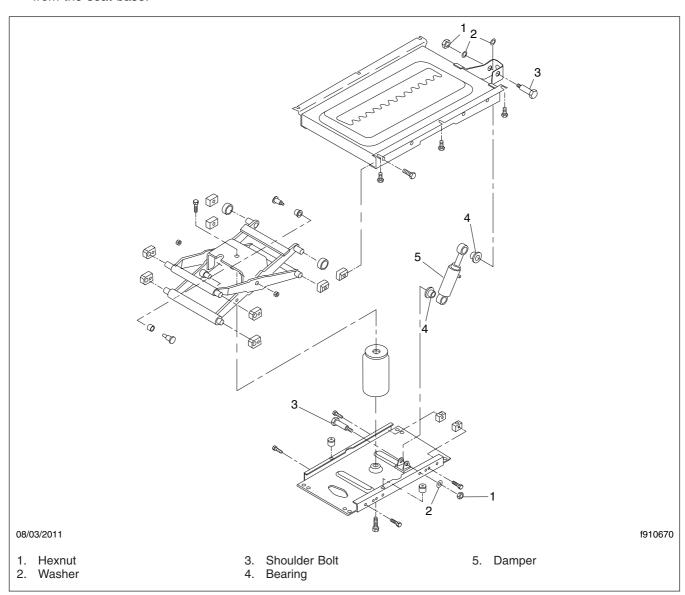


Fig. 1, Damper Installation

91.02 Bostrom Seats

Damper Removal and Installation

- Install the new damper with the flanges of the bearings to the outside of the suspension. See Fig. 1.
- 2. Install the shoulder bolts, washers, and hexnuts at the top and bottom of the damper.
- 3. Install the suspension shroud (if equipped) on the seat base.

Suspension Rebuild—Bearing/Slide Block Removal and Installation

Removal

 Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.

A WARNING

Air lines under pressure can whip dangerously if disconnected. Drain all air from the air tanks before disconnecting air lines. Disconnecting pressurized air lines can cause personal injury and/or property damage.

- 2. Bleed all air from the supply line. Disconnect the air supply line from the seat.
- Remove the seat from the vehicle; see Subject 100.
- 4. With the seat suspension secured in the extended position with a spacer block, use the air valve to exhaust all air from the air spring.
- Remove the seat/back assembly; see Subject 120.
- 6. Remove the ICP brackets. See Fig. 1.

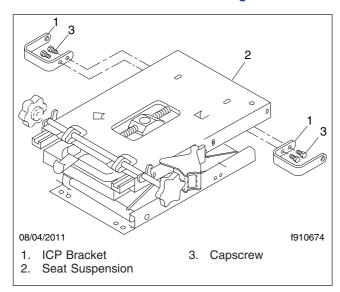


Fig. 1, ICP Brackets

- 7. Remove the air spring. See Subject 110.
- 8. Remove the damper. See Subject 140.
- 9. Remove the capscrews from the upper front bearing blocks. See Fig. 2.

- Remove the capscrews from the lower rear stop blocks.
- 11. Remove the isolator assembly by lifting and sliding it forward until the bearing blocks can be removed from the cutouts in the channels on the upper frame. Then slide the channel rearward until the slide blocks can be removed.
- 12. Remove the capscrews from the lower front bearing blocks.
- 13. Slide the lever assemblies forward until the bearing blocks can be removed from the channels on the base. Then slide the lever assemblies rearward until the slide blocks can be removed from the channels.
- 14. Remove the shoulder bolts and nuts from the pivots of the lever assemblies and inspect the bolts. If the bolts are worn, replace them.

- 1. Replace the bearings at the pivots on the lever assembly by pushing out the old bearings and pressing in the new bearings. The flange of the bearings should be on the outside of the lever assembly. See Fig. 2.
- Install the shoulder bolts and nuts into the pivots of the lever assemblies. Tighten the bolts 16 to 20 lbf·ft (22 to 27 N·m).
- Install new bearing blocks, spacers and slide blocks on the levers with the beveled surfaces outward. Slide the levers with blocks into the channel on the base assembly. Tighten the capscrews 23 to 27 lbf·ft (30 to 37 N·m).
- Slide the isolator assembly over the blocks. Line up the capscrews with the bearing blocks. Tighten the capscrews 23 to 27 lbf-ft (30 to 37 N·m).
- 5. Manually move the suspension up and down to make sure there are no clearance problems.
- Block the suspension up with a spacer block placed between the base riser and the upper frame.
- 7. Install the air spring; see Subject 110.
- 8. Install the damper; see Subject 140.
- 9. Install the ICP brackets.
- 10. Install the seat/back assembly; see Subject 120.

91.02 Bostrom Seats

Suspension Rebuild—Bearing/Slide Block Removal and Installation

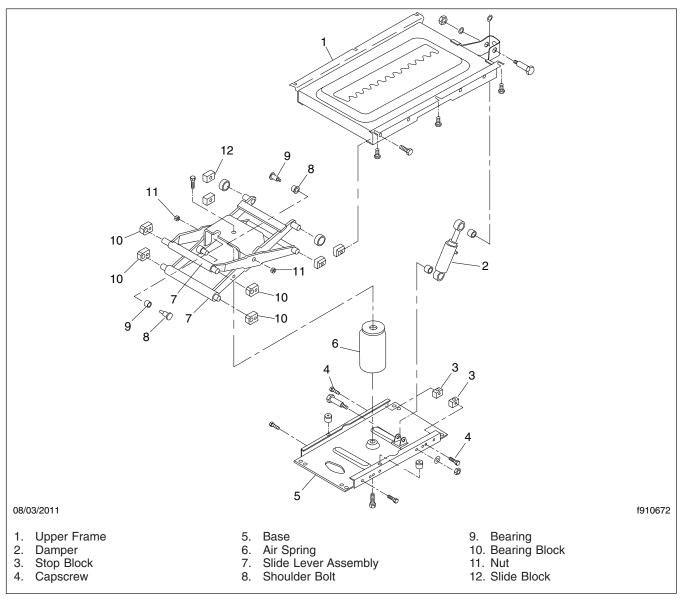


Fig. 2, Seat Suspension

11. Install the seat in the vehicle; see Subject 100.

Specifications

For fastener torque values, see Table 1.

Torque Values				
Description	Torque: lbf·in (N·cm)	Torque: lbf·ft (N·m)		
Seat Mounting Capscrews	_	25–29 (34–39)		
Seat/Tether Belt-to-ICP Bar Capscrews	_	35–45 (48–61)		
Airspring Bottom Capscrew	60-84 (680-950)	_		
Top Airspring Capscrew	24-48 (270-540)	_		
Pivot Shoulder Bolt	_	17–19 (22–27)		
Slide Block Capscrews	_	23–27 (30–37)		
Bearing Block Capscrews	_	23–27 (30–37)		

Table 1, Torque Values