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General Information

IMPORTANT: This service manual *does not cover* the procedures and calculations necessary to perform frame modifications. For basic information, see the *Freightliner Body Builder's Manual*; for more extensive frame modifications, be sure to consult with the Freightliner Engineering Department.

The main body of the frame is two non-heat-treated steel frame rails secured together by crossmembers. See **Fig. 1**. The frame assembly is supported on the front and rear axles, and supports the rest of the chassis and body.

Both frame rails have identical specifications. Each has an upper flange, lower flange, and web (the surface area between the flanges). The inside area of the frame rail is called the channel. See **Fig. 2**.

Crossmembers control axial rotation and longitudinal motion of the rails, and reduce torsional stress transmitted from one rail to the other. Crossmembers are also used for vehicle component mounting, and for protection of the wires and tubing that are routed from one side of the vehicle to the other.

FRAME STATIONS

A frame station is a reference point along each frame rail from which the location of each component (mounted on that frame rail) is measured. There are two frame stations along the frame rails: station zero and station 1000. See **Fig. 3**.

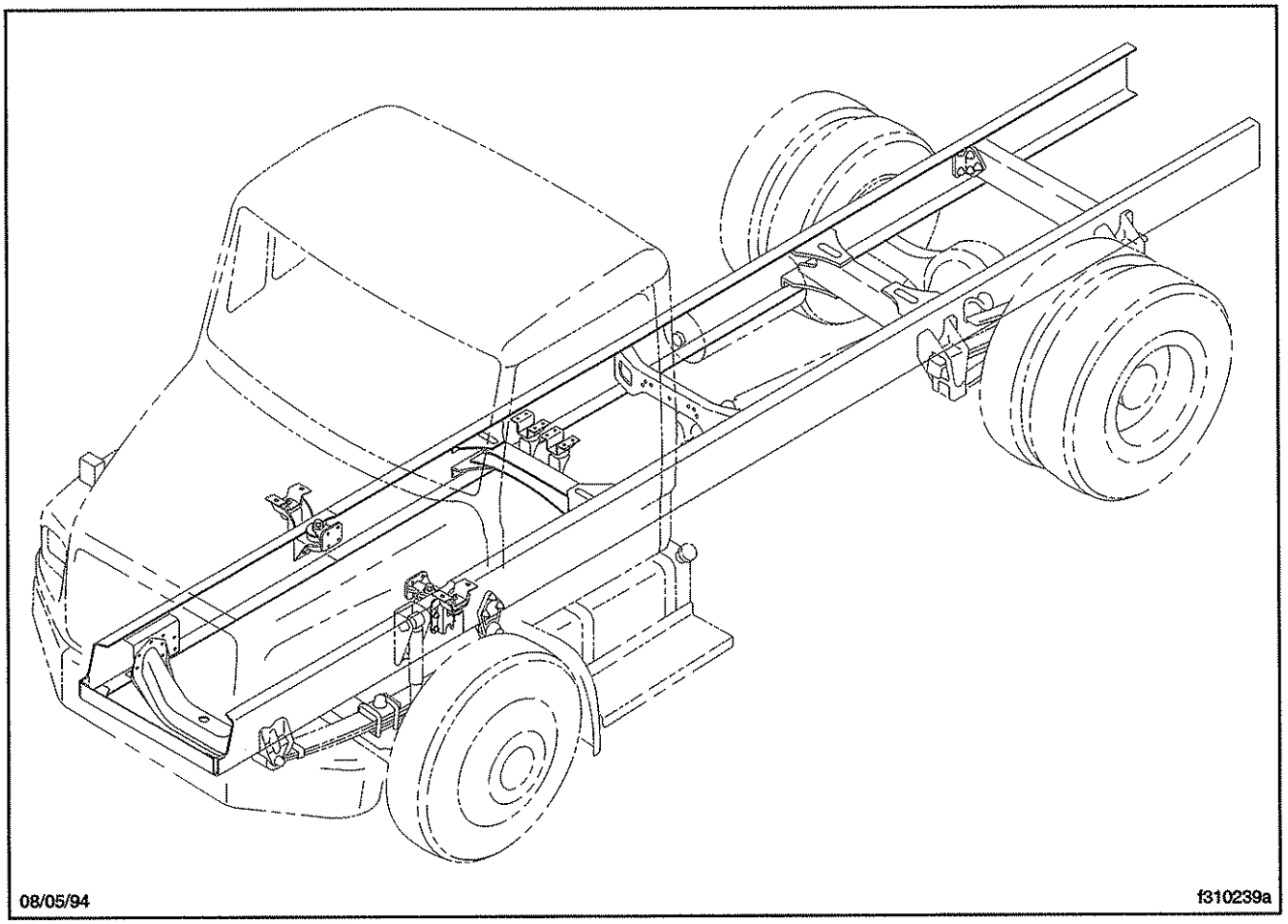
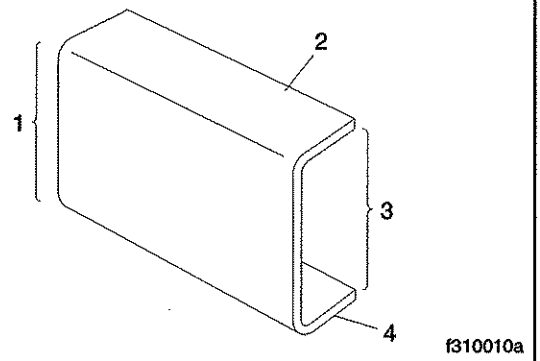


Fig. 1, Frame Assembly

General Information



1. Web
2. Upper Flange
3. Channel
4. Lower Flange

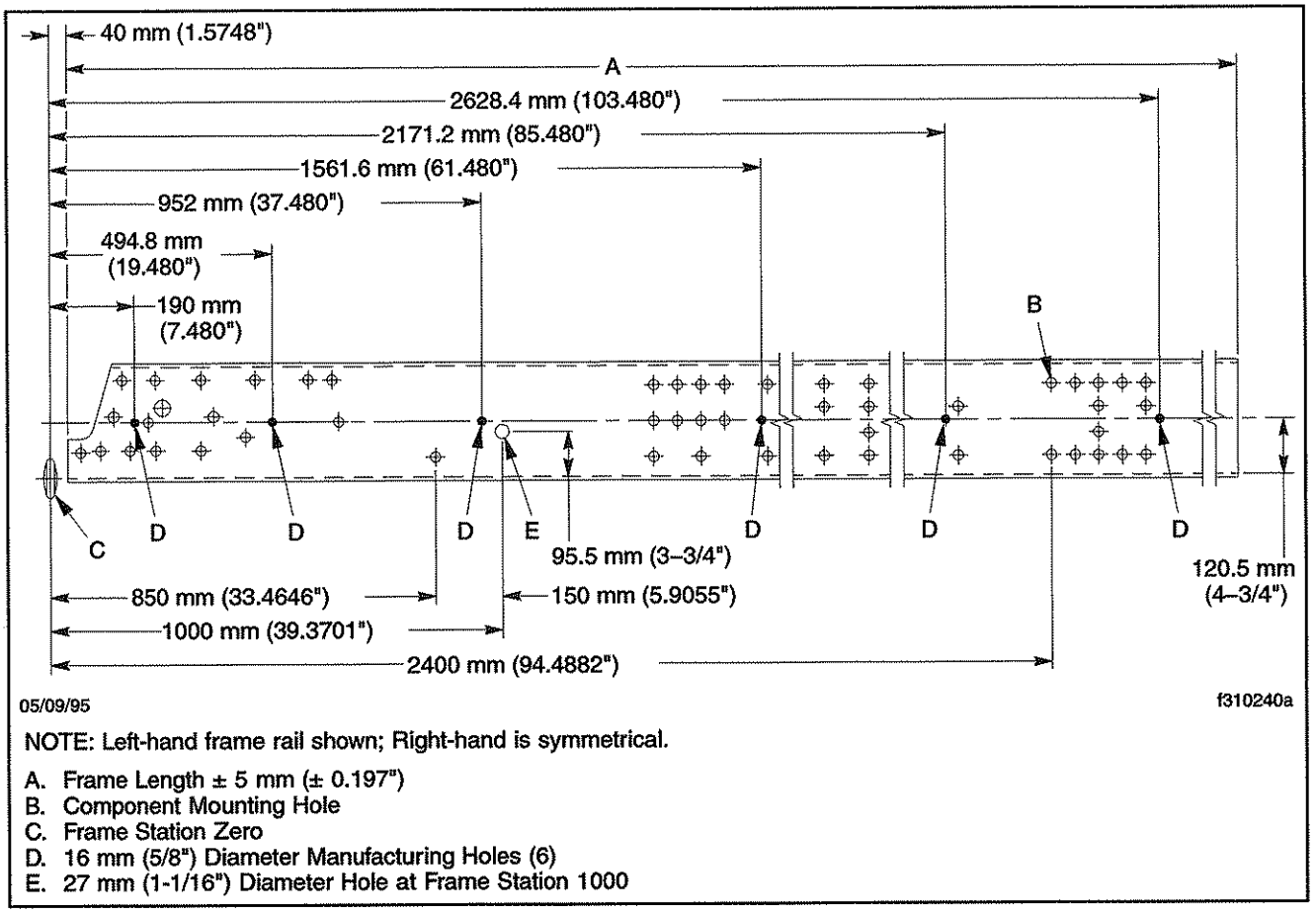
Fig. 2, Frame Terminology

There is no identifying mark for station zero; it is located 40 mm (about 1.6 inches) forward of the forward end of the frame rail, and 290 mm (about 11.4 inches) forward of the centerline of the front suspension's forward spring pin. Station 1000 is located 1000 mm (about 39.4 inches) to the rear of station zero, and is directly above the centerline of the front axle.

Station 1000 is used when station zero is not accessible because of vehicle assembly. Station 1000 is identified by a 27 mm (1-1/16 inch) diameter hole near the bottom third of the frame rail web. A bulkhead fitting for the air or hydraulic brake lines is installed in the hole.

The vehicle's frame drilling chart lists the location of each frame rail component. For example: if a component is given a location of 850, then that component is installed on the frame rail 850 mm (33-15/32 inches) aft of station zero, or 150 mm (5-29/32 inches) forward of station 1000.

In addition to frame stations zero and 1000, each frame rail has six manufacturing holes along the centerline of the frame rail web. All six holes are 16-mm (5/8-inch) diameter. See **Fig. 3**. These holes can be used for location and measurement in the same manner as the hole at frame station 1000.



NOTE: Left-hand frame rail shown; Right-hand is symmetrical.

A. Frame Length ± 5 mm (± 0.197")
B. Component Mounting Hole
C. Frame Station Zero
D. 16 mm (5/8") Diameter Manufacturing Holes (6)
E. 27 mm (1-1/16") Diameter Hole at Frame Station 1000

Fig. 3, Frame Stations

General Handling

Whenever the frame rails are lifted or moved, take care to avoid anything that may scratch, cut, or damage the exposed frame assembly. Cushion all chain hoists or cable slings with a section of heavy hose. If the frame rail is raised with a jack, place a block of wood between the jack and the frame rail.

Never heat the frame rails for straightening purposes; such work should be done cold.

⚠ CAUTION

CAUTION: Heating the frame rail for straightening purposes will reduce the strength of the rail in localized areas, which can result in structural failure of the frame rail.

Use pencil lines or soapstone marking for any work that requires marking of the frame rail. High visibility can be obtained by first chalking the surface of the frame rail, then making the pencil marks.

⚠ CAUTION

CAUTION: Before performing any electric welding on a vehicle, disconnect the battery power and ground cables and any electronic control units (ECUs) installed on the vehicle. Electric currents produced during electric welding can damage various electrical components on the vehicle, such as alternator diodes and ECUs.

Freightliner vehicle components that typically use ECUs include electronic engine, electronic automatic transmission, and ABS (antilock braking system).

For any ECU with a battery power harness, disconnect its ground terminal from the chassis ground, and disconnect its power terminal from the battery positive post. Or else disconnect the main connection at the ECU.

Apply Alumilastic® Compound or a paintable, air-cured synthetic rubber or moisture-cured polyurethane, flexible weather-sealant between any dissimilar metal surfaces that contact each other (except nuts, bolts, and zinc or cadmium plated washers), regardless of whether the surfaces are primed or painted.

Drilling Holes

During vehicle manufacture, holes are drilled or punched in the frame rail only as specified on the vehicle frame drilling chart. If any additional holes need to be drilled, Freightliner dealers must obtain approval from their Regional Service Office. All others must contact a Freightliner dealership, which will contact the Regional Service Office for approval.

A single exception to this rule is that holes may be drilled for tubing clips and the like through the web portion of the channel only. The edge (not the center) of the hole must be no closer than 42 mm (1-11/16 inches) from the outer face of the flange. **See Fig. 1** for the minimum distance to the flanges that holes can be placed on the web.

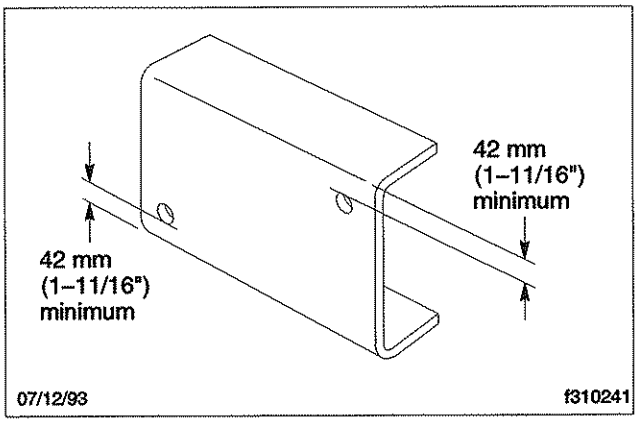


Fig. 1

Frame Fasteners

Either Huckbolts® or grade 8 hexhead bolts and grade C prevailing torque locknuts are used for frame attachments. **See Fig. 1and Fig. 2**. For attachments where clearance is minimal, low-profile hexhead bolts and grade C prevailing torque locknuts are used. For some components, grade 8.2 flanged hexhead bolts and grade G prevailing torque locknuts are used for frame attachments.**See Fig. 3** . Prevailing torque locknuts of all three bolt types have distorted sections of threads to provide torque retention.

When nonflanged hexhead bolts and locknuts are used on an attached aluminum part, a hardened flatwasher is required to prevent the bolt head or nut from embedding in the part. In general, hardened washers are used to distribute the load, and to prevent localized overstressing of the frame rails, brackets, and other parts. They are placed directly against the part, under the nut or bolt head. These special hardened washers are used on frame rails, and for the engine rear supports, rear suspension brackets, and fifth wheel mountings. They are cadmium-or zinc-plated, and have a hardness rating of 38 to 45 HRC.

Flanged hexhead bolts and locknuts have integral flanges which eliminate the need for washers on steel and aluminum surfaces. The fasteners are placed directly against the frame where the part is attached.

HEXHEAD BOLT REPLACEMENT

Replace hexhead bolts and locknuts with identical fasteners. Refer to the Freightliner *Parts Book* for fastener specifications.

Apply Alumilastic® compound, or an equivalent, to all bolts, nuts, and washers that contact aluminum parts.

⚠ CAUTION

CAUTION: Failure to apply Alumilastic compound, or an equivalent, to areas where aluminum and steel parts contact each other, could lead to corrosion of the metals, resulting in damage to the frame or parts.

Never hammer or screw bolts into place. Align the holes of the frame and the part being attached to it, so that the nut and bolt surfaces are flush against the frame and the part. For bolts 4 inches (102 mm) or less in length, make sure that at least 1-1/2 threads and no more than 5/8-inch (16 mm) bolt length extend through the self-locking nut after it has been tightened. For bolts longer than four inches (102 mm), allow a minimum of 3 threads and a maximum of 3/4-inch (19 mm) bolt length.

HUCKBOLT REMOVAL

Huckbolt HP 8® frame fasteners **(see Fig. 1)**have parallel locking grooves on the lockbolt pintail. The swaged collar cannot be unscrewed. Use the Huck Collar Cutter to remove HP8 fasteners. If the Collar Cutter isn't available, split the collar with an air chisel while supporting the opposite side of the collar with an anvil. **Refer to Fig. 4.** Then, drive out the lockbolt with a punch. Discard the fastener after removing it.

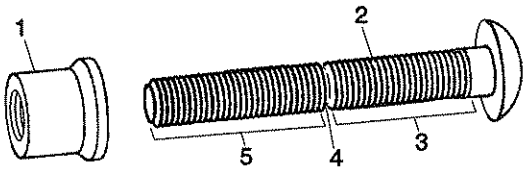
HUCK-FIT® frame fasteners have locking threads instead of grooves; the collar can be removed using a standard impact wrench and sockets. Discard the fastener after removing it.

⚠ CAUTION

CAUTION: Never attempt to reuse any Huck fastener that has been removed. Even though HUCK-FIT fasteners can be removed with a socket wrench, they cannot be correctly installed again. Reusing any Huck frame fastener can result in damage to the vehicle frame or components attached to the frame.

HUCKBOLT INSTALLATION

NOTE: Huckbolts cannot be installed without the proper Huckbolt installation equipment.

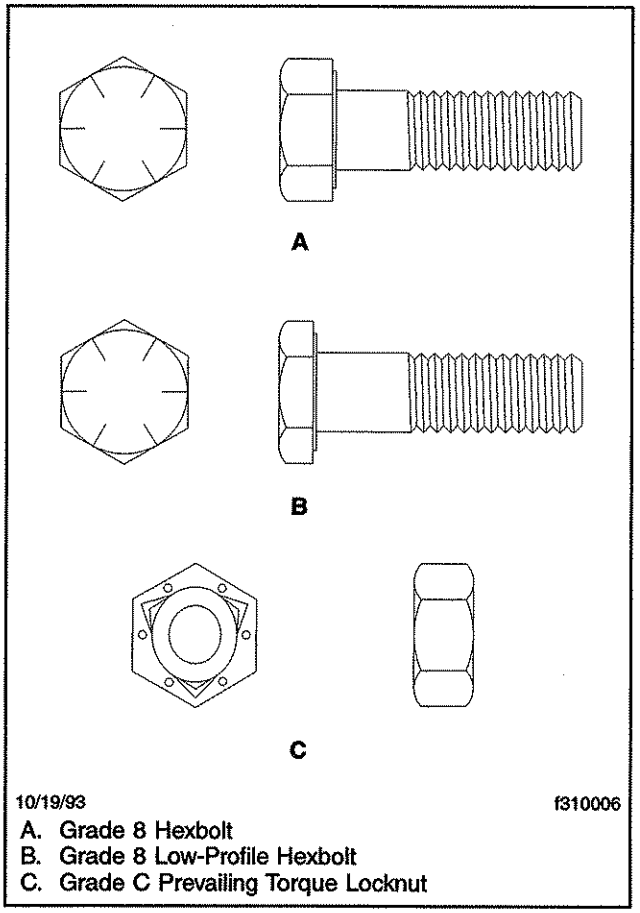


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1. Collar
2. Huckbolt
3. Locking Grooves
4. Breakneck
5. Pulling Grooves

Fig. 1, Huckbolt Fastener

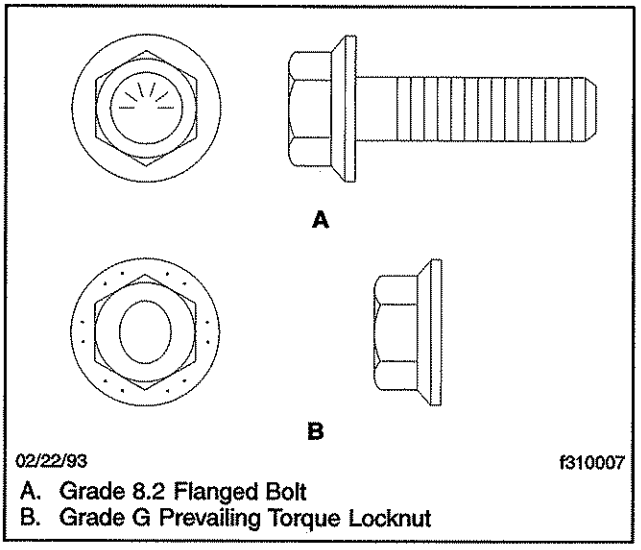
Frame Fasteners



A. Grade 8 Hexbolt
B. Grade 8 Low-Profile Hexbolt
C. Grade C Prevailing Torque Locknut

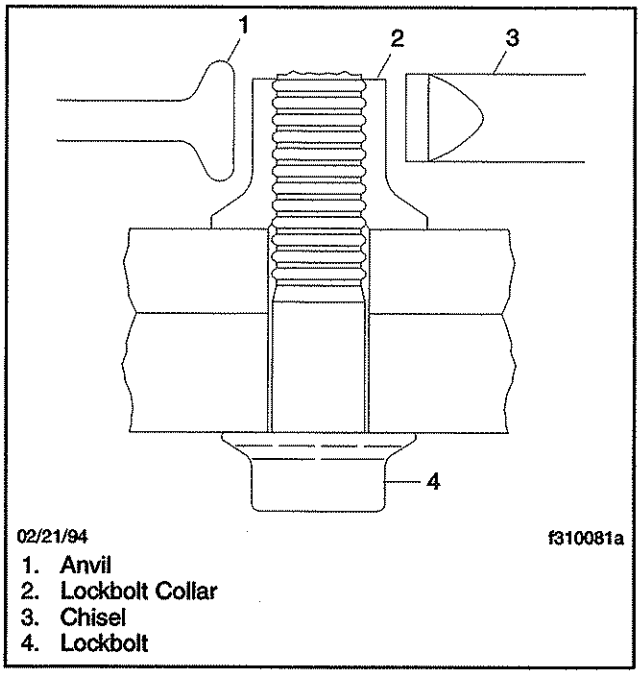
Fig. 2, Hexhead Fasteners

1. Insert the pintail through the prepared hole in the frame or other component. **Refer to Fig. 5.**
2. Place the collar over the pintail.
3. Place the Huck installation tool nose assembly over the pintail. **Refer to Fig. 6.** The pintail pulling grooves ratchet into the chuck jaws, which securely grip the pintail.
4. As the installation tool trigger is pulled, the tool piston and chuck jaws move rearward, pulling on the pintail, seating the bolt head, and closing the gap between the work surfaces. As pulling on the pintail continues, the collar is swaged into the locking grooves on the pintail; and the collar is lengthened, developing clamping force. **Refer to Fig. 7.**



A. Grade 8.2 Flanged Bolt
B. Grade G Prevailing Torque Locknut

Fig. 3, Flanged Hexhead Fasteners



1. Anvil
2. Lockbolt Collar
3. Chisel
4. Lockbolt

Fig. 4, Huckbolt Removal

5. The pintail breaks (**see Fig. 8**), freeing the nose assembly anvil from the swaged collar.

NOTE: Most Huck fasteners have a constriction, the breakneck (Fig. 1), which determines the point where the pintail breaks free. MAGNA-GRIP® fasteners do

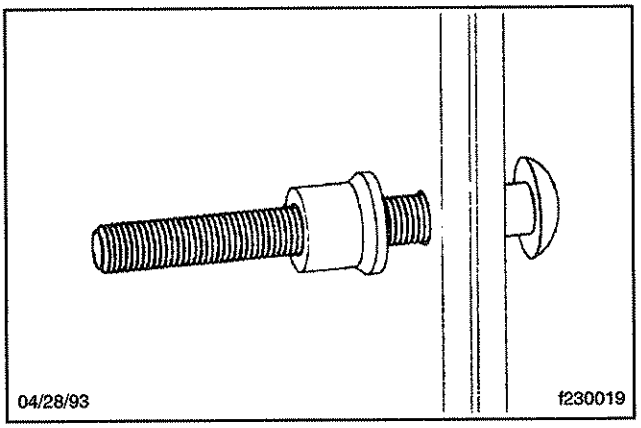


Fig. 5

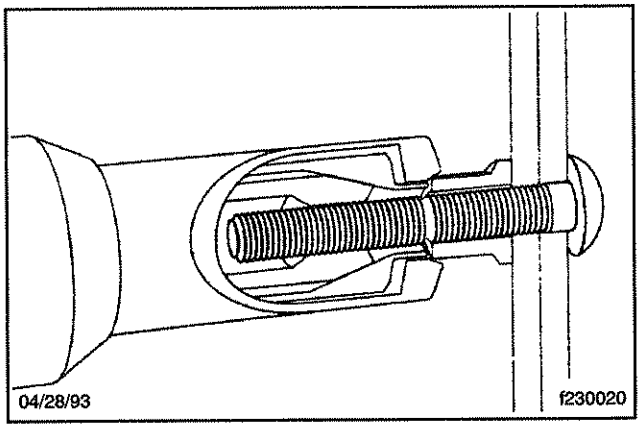


Fig. 6

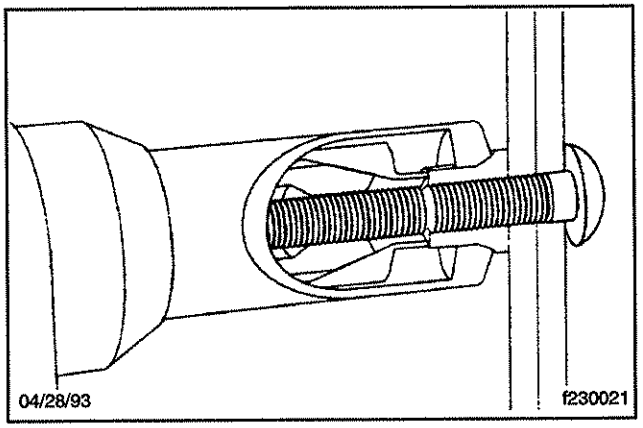


Fig. 7

not have this breakneck; the pintail should break flush with the top of the collar. No more than two grooves

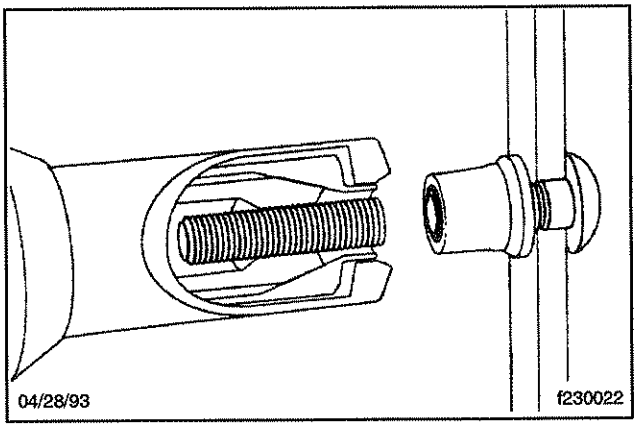


Fig. 8

should be visible on the collar after installation. **Refer to Fig. 9** for examples of acceptable and unacceptable MAGNA-GRIP pintail breaks.

FRAME FASTENER TIGHTENING

⚠ CAUTION

CAUTION: Continued vehicle operation with loose fasteners could result in component, bracket, and frame damage.

Tighten hexhead bolts and locknuts periodically to offset the effects of "bedding in" (seating). Refer to the

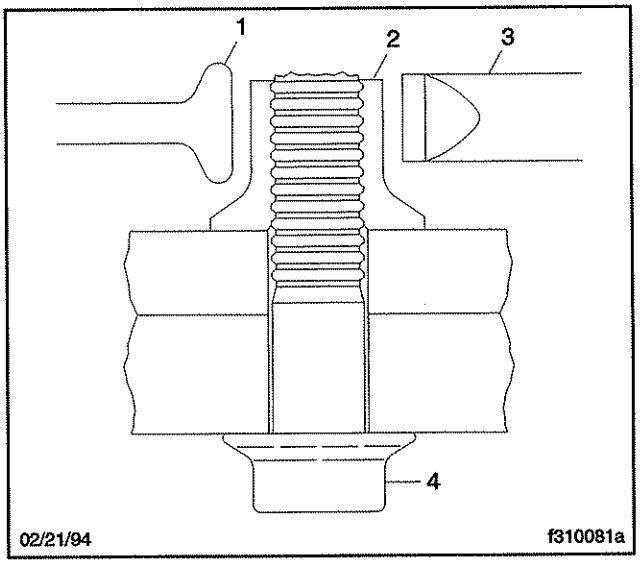


Fig. 9

Frame Fasteners

Maintenance Schedule and the frame section in the vehicle maintenance manual for intervals.

When tightening the fasteners, tighten the nut, not the bolt head. This will give a true torque reading by eliminating bolt body friction. For torque specifications, refer to the general information section in the vehicle maintenance manual.

NOTE: Huck fasteners do not require periodic tightening.

Crossmember Removal and Installation

Removal

The placement of crossmembers affects the overall stability of the frame. If a crossmember is being eliminated, added, or relocated, Freightliner dealers must contact their Regional Service Office for instructions and approval. All others must contact a Freightliner dealership, which will contact the Regional Service Office for approval.

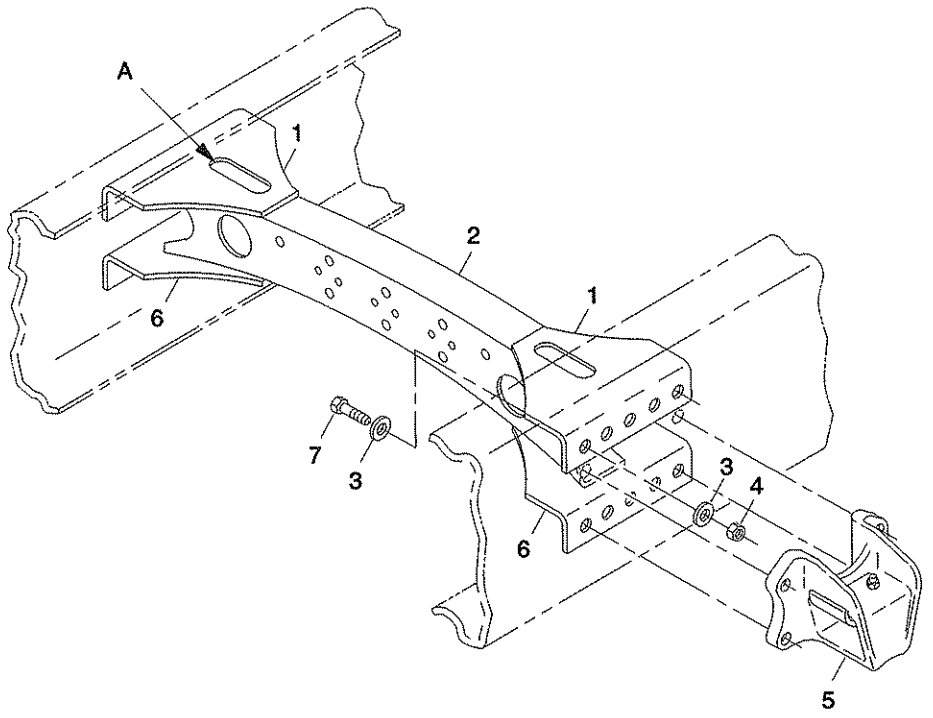
IMPORTANT: Before removing any crossmember, note the direction, size, and type, of all fasteners that attach the crossmember to the frame rail, and that attach other parts to the crossmember. Also note which direction the open channel of the crossmember is facing, for installation reference.

NOTE: If a 5-piece (welded) crossmember (**Fig. 1**) must be removed, it must be cut in two, removed, then replaced with a 5-piece crossmember having upper and lower gussets that bolt in place (**Fig. 2**).

5-PIECE (WELDED) CROSSMEMBER (Removal for replacement with a 5-piece bolted crossmember) (See Fig. 1)

1. Apply the parking brakes, then chock the tires on both the front and rear axles.
2. If any air brake valve is attached to the crossmember, drain the air reservoirs, then remove the valve(s) from the crossmember.

   Remove any clamps that attach air lines or wiring to the crossmember. Secure the lines or wires away from the crossmember.
3. If the back-of-cab crossmember is being removed, support the cab (at its normal ride height), the fuel

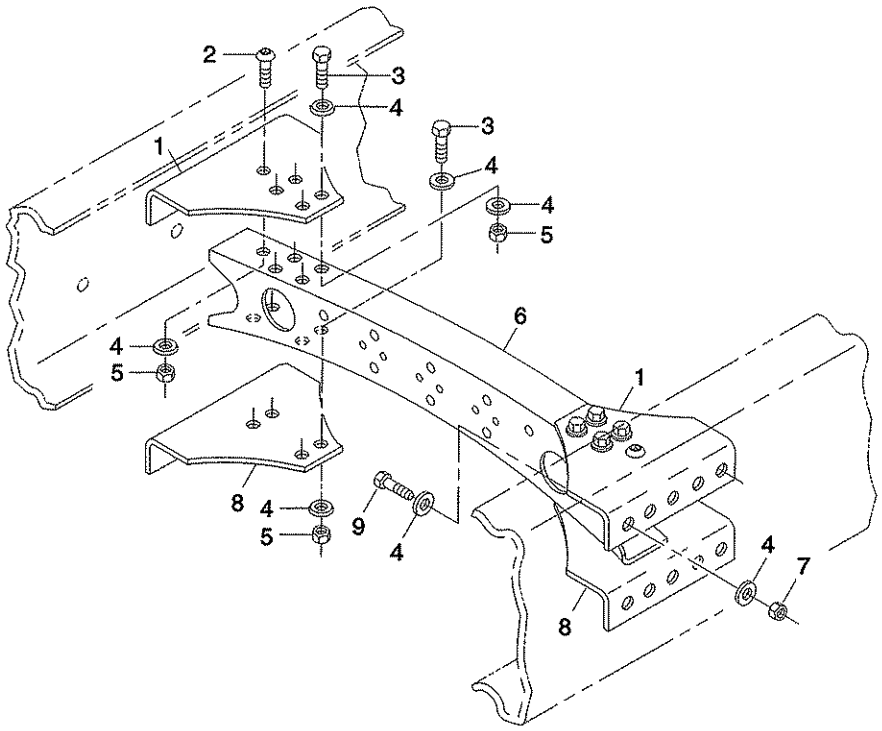


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A. Welded (typical at all 4 gussets)
1. Upper Gusset
2. Channel
3. Hardened Steel Flatwasher
4. 5/8–11 Locknut
5. Rear Suspension Bracket
6. Lower Gusset
7. 5/8–11 Grade 8 Bolt

Fig. 1, Welded 5-Piece Crossmember Assembly

Crossmember Removal and Installation



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1. Upper Gusset
2. 1/2–13 Button-Head Capscrew
3. 1/2–13 Grade 8 Hexbolt
4. Hardened Steel Flatwasher
5. 1/2–13 Locknut
6. Crossmember Channel
7. 5/8–11 Locknut
8. Lower Gusset
9. 5/8–11 Grade 8 Hexbolt

Fig. 2, Bolted 5-Piece Crossmember Assembly

tank(s), and the cab-access steps, as applicable. Remove the fasteners that attach the rear cab support brackets to the crossmember. See **Fig. 3**.

4. If rear suspension brackets are attached to the frame rails with the same fasteners that attach the crossmember, support the rear of the frame at its normal ride height, using safety stands.
5. Using a cutting torch, cut the crossmember channel in two. A 76 mm (3-inch) cut will make removal easier.
6. Remove the fasteners that attach the crossmember halves to the frame rails, and remove the crossmember.

REAR-CLOSING CROSSMEMBER (See Fig. 4)

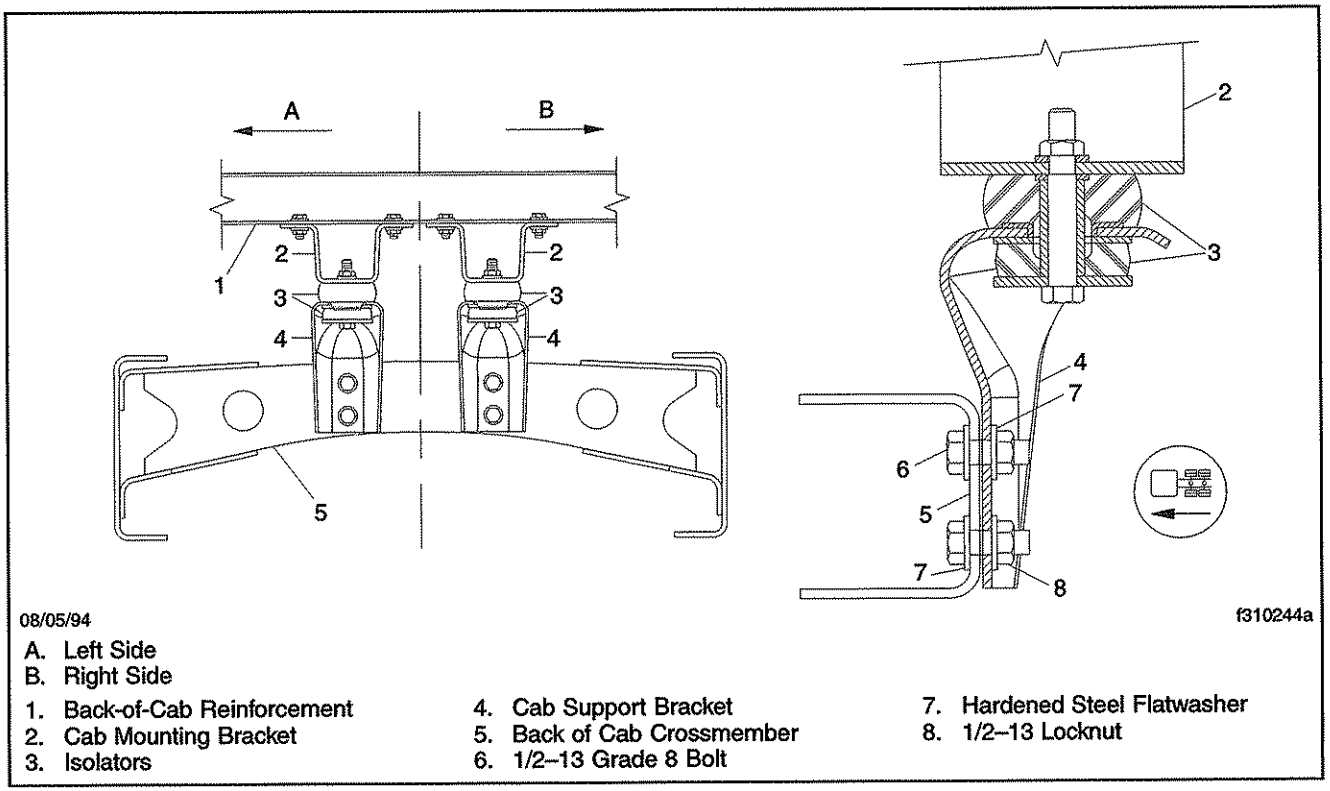
1. Apply the parking brakes, then chock the tires on both the front and rear axles.
2. If so equipped, remove the backup alarm from the crossmember.

   If any air brake valve is attached to the crossmember, drain the air reservoirs, then remove the valve(s) from the crossmember.

   Remove any clamps that attach air lines or wiring to the crossmember.

   If the leveling valve for an AirLiner suspension is attached to the crossmember, remove the valve. For instructions, refer to **Group 32** in this manual.
3. Remove the fasteners that attach the crossmember to the front angle brackets.
4. If rear suspension brackets are attached to the frame rails with the same fasteners that attach the angle brackets, support the rear of the frame at its normal ride height, using safety stands.

Crossmember Removal and Installation



A. Left Side
B. Right Side

1. Back-of-Cab Reinforcement
2. Cab Mounting Bracket
3. Isolators
4. Cab Support Bracket
5. Back of Cab Crossmember
6. 1/2–13 Grade 8 Bolt
7. Hardened Steel Flatwasher
8. 1/2–13 Locknut

Fig. 3, Remove the Rear Cab Support Bracket Fasteners

5. Remove the fasteners that attach the rear angle brackets to each frame rail; then remove, as an assembly, the rear brackets and the crossmember.
6. If needed, remove the front angle brackets and their fasteners. If applicable, after removing the fasteners, remove the rear suspension brackets from the springs.

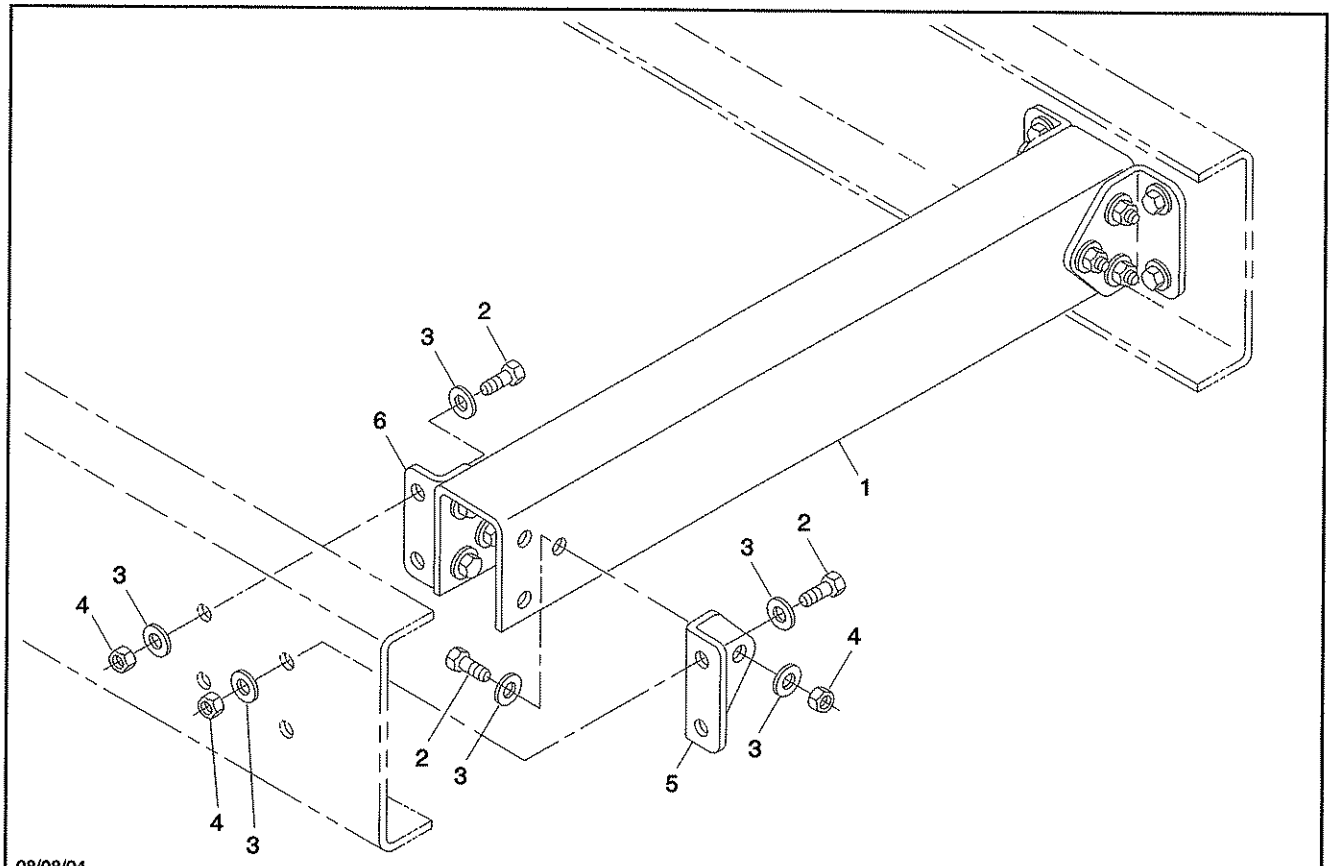
SPLAYED CROSSMEMBER (See Fig. 5)

1. Apply the parking brakes, then chock the tires.
2. If removing a midship bearing crossmember, support the driveline on a safety stand, then remove the fasteners that attach the midship bearing bracket to the crossmember.
3. Unbolt the crossmember from both frame rails.
4. At one end of the crossmember, use a deadblow hammer to tap against its curved side (the closed side of the channel), until the crossmember is no longer wedged in the frame. Remove the crossmember.

Overslung Crossmember (See Fig. 6)

1. Apply the parking brakes, then chock the tires on both the front and rear axles.
2. Remove the half-fender from the left side of the vehicle.
3. Provide support underneath both fuel tanks.
4. From underneath the chassis, remove the two 5/8–11 fasteners that attach each side of the crossmember to its mounting brackets.
5. Remove the overslung crossmember by rotating it down and outward on the left side of the vehicle.

Crossmember Removal and Installation



1. Rear Closing Crossmember
2. 5/8–11 Grade 8 Bolt
3. Hardened Steel Flatwasher
4. 5/8–11 Locknut
5. Rear Angle Bracket
6. Front Angle Bracket

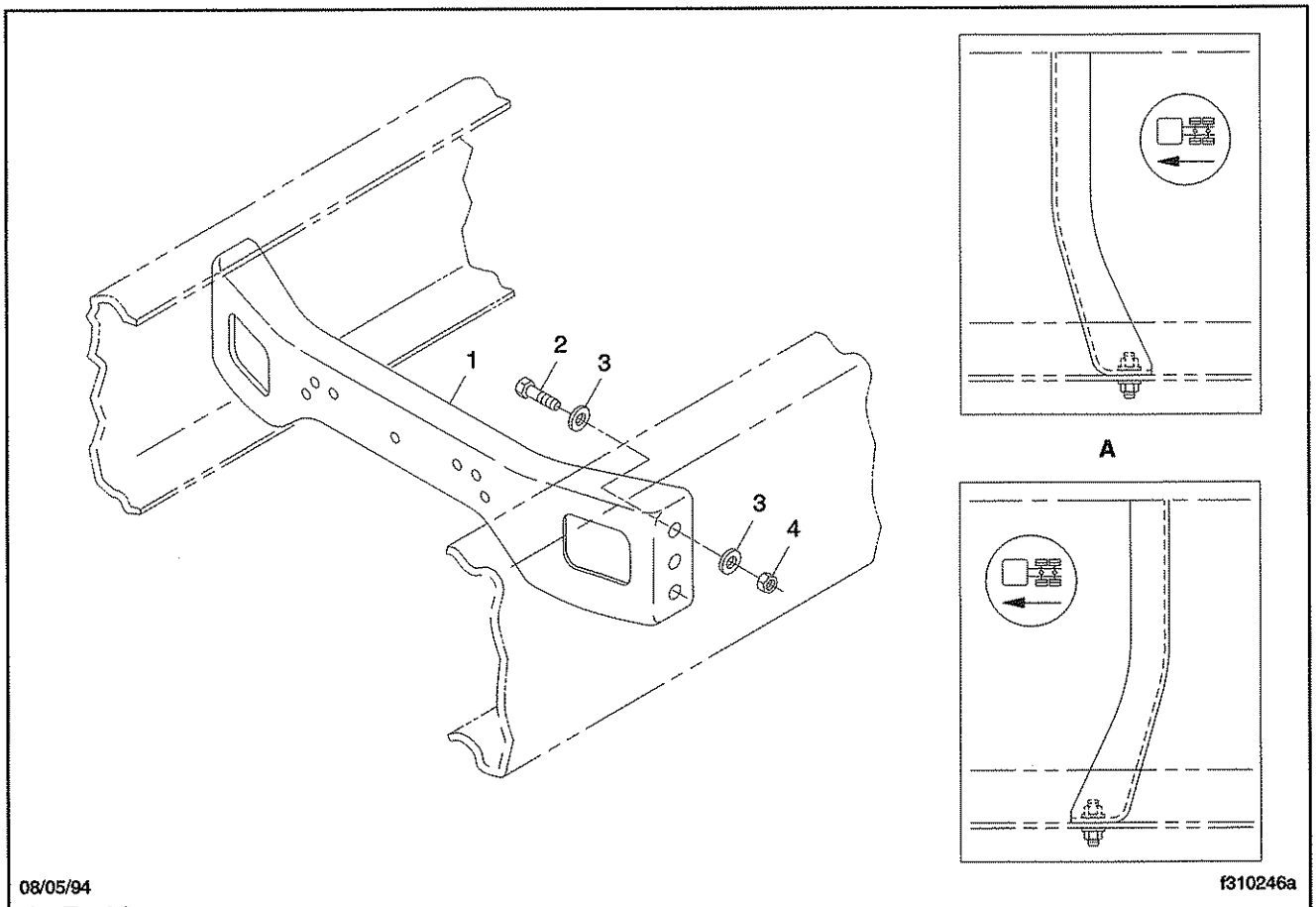
Fig. 4, Rear Closing Crossmember Installation

Installation

5-PIECE (BOLTED) CROSSMEMBER (Installation for replacement of a 5-piece welded crossmember) **(See Fig. 2)**

1. Attach one upper gusset to the crossmember channel; tighten the fasteners snug, but not to their final torque value.
2. Install the crossmember channel and gusset in the frame rails with its open channel facing the same direction that was noted during removal. Position the crossmember so its channel is supported on the lower flanges of both frame rails.
3. Attach the other upper gusset to the crossmember channel; tighten the fasteners snug, but not to their final torque value.
4. Tighten the locknuts on the button-head capscrews at the outboard end of both upper gussets 92 N·m (68 lbf·ft).
5. Using a deadblow hammer, tap the crossmember up into place. Align the mounting holes of the upper gussets with the holes in the frame rails. Install the fasteners, but don't tighten them.
6. Install the lower gussets on the crossmember channel, but don't tighten the fasteners at this time. Install the fasteners that attach the lower gussets to the frame rails.

Crossmember Removal and Installation



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A. Top Views
1. Splayed Midship Crossmember
2. 1/2–13 Grade 8 Bolt
3. Hardened Steel Flatwasher
4. 1/2–13 Locknut

Fig. 5, Splayed Crossmember

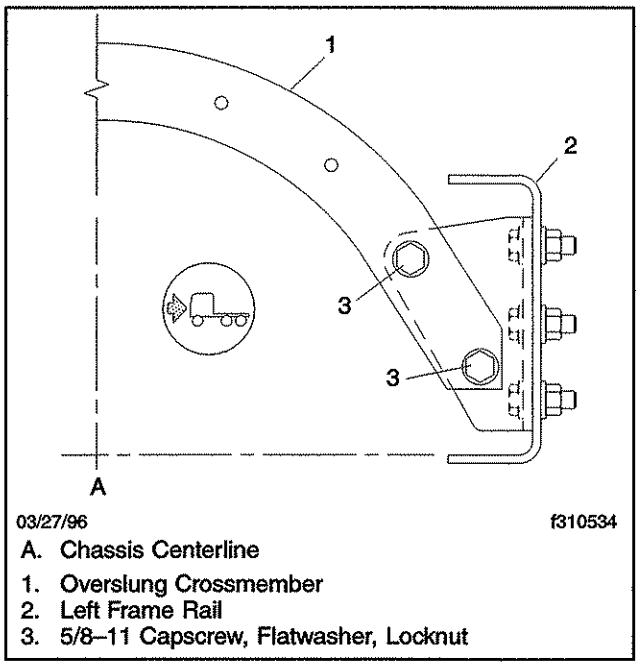
7. Tighten the fasteners that attach the gussets to the frame rails 184 N·m (136 lbf·ft). Then, tighten the fasteners that attach the gussets to the crossmember channel 92 N·m (68 lbf·ft).
8. If any air brake valve was attached to the crossmember, install the valve(s) on the crossmember.

   Install any clamps that attach air lines or wiring to the crossmember.
9. If the back-of-cab crossmember was replaced, install the fasteners that attach the rear cab support brackets to the crossmember. See **Fig. 3**. Tighten the cab support bracket fasteners 92 N·m (68 lbf·ft). Remove the supports from under the cab, fuel tanks, and cab-access steps.
10. Remove the chocks.

REAR-CLOSING CROSSMEMBER (See Fig. 4)

1. If they were removed, install the front angle brackets and their fasteners, but don't tighten the fasteners at this time. If applicable, install the rear suspension brackets on the springs.
2. Slide the crossmember into the opening at the rear of the frame rails, then turn it upright, to position it against the front angle brackets.
3. Attach the rear angle brackets to the frame rails, but don't tighten the fasteners at this time.

Crossmember Removal and Installation



A. Chassis Centerline
1. Overslung Crossmember
2. Left Frame Rail
3. 5/8–11 Capscrew, Flatwasher, Locknut

Fig. 6, Overslung Crossmember, FL112 Installation

4. Install but do not tighten the fasteners that attach the crossmember to the front angle brackets.
5. If they were removed from the rear-closing crossmember, install any air brake valves, and securely tighten the fasteners.

   If so equipped, install the backup alarm.

   Install any clamps that attach air lines or wiring to the crossmember.

   If the leveling valve for an AirLiner suspension was removed from the crossmember, install the leveling valve. For instructions, refer to **Group 32** in this manual.
6. Tighten the fasteners that attach the angle brackets to the frame rails, then tighten the fasteners that attach the crossmember to the angle brackets. Tighten all fasteners 184 N·m (136 lbf·ft).
7. Remove the chocks.

SPLAYED CROSSMEMBER (See Fig. 5)

1. Install the crossmember in the frame rails with its open channel facing the same direction that was noted during removal. Align the mounting holes at one end of the crossmember with the holes in the frame rail.

NOTE: With the crossmember not straight across in the frame rails, and the holes not aligned on the opposite end, the holes at that end will be in approximate alignment.

2. Install the fasteners in that end of the crossmember and frame rail, but tighten the locknuts finger-tight only.
3. At the other end of the crossmember, use a deadblow hammer to tap against its straight side, until the crossmember is straight across in the frame rails, and the mounting holes at both ends are in alignment with the holes in the frame rails.
4. If a midship bearing crossmember is being installed, install the fasteners that attach the midship bearing bracket to the crossmember. Remove the safety stands that supported the driveline.
5. Tighten all of the fasteners to their applicable torque values; refer to **Section 00.04.**
6. Remove the chocks.

Overslung Crossmember (See Fig. 6)

1. Rotate the new crossmember into place from the left side.
2. Place the crossmember on the rear surface of the mounting brackets.
3. Install the 5/8–11 mounting fasteners (bolt heads facing forward). Tighten the fasteners 184 N·m (136 lbf·ft).
4. Install the half-fender on the left side of the vehicle. Tighten the fasteners 16 N·m (12 lbf·ft).
5. Remove the chocks.

Alignment

Frame rail alignment is checked by measuring the distances from two sets of points on the upper (or lower) flanges of the frame rails. **See Fig. 1.** The rear set of points must be as far back as possible from the forward set of points. There must be no interference, along or between the frame rails, that would prevent measuring from any one of the four points to the other three points. If the upper flanges are being used for the measurements, the fifth wheel and deck plate (as equipped) must be removed.

There are no marks or bolt holes in the upper or lower flanges of the frame rails. Therefore, the points must be projected from the frame station marks, manufacturing holes, or component attachment holes in the frame rail webs. **Refer to Fig. 2.**

IMPORTANT: Use a pencil or soapstone to make all lines, points, or other marks. Do not use any marker or tool that will scratch the surface of the frame rail. Use a machinist's square to project all points from the webs to the upper (or lower) flanges, and to measure inboard from the outside face of the frame rails.

1. Apply the parking brakes, then chock the tires.
2. For each frame rail, project the exact vertical centerline of the 16-mm (5/8-inch) manufacturing hole at frame station 2628.4, from the frame web to the upper (or lower) flange, and mark it with a line across the flange.

   If, because of interference, the manufacturing hole at frame station 2628.4 cannot be used, choose and mark another matched set of points.

   2.1 Determine how far forward that the upper (or lower) flanges of both frame rails are clear.

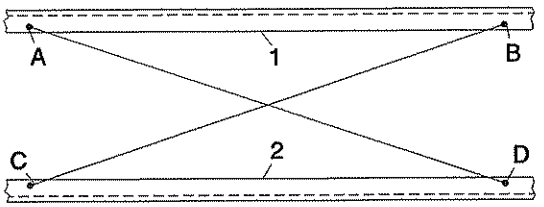


Fig. 1

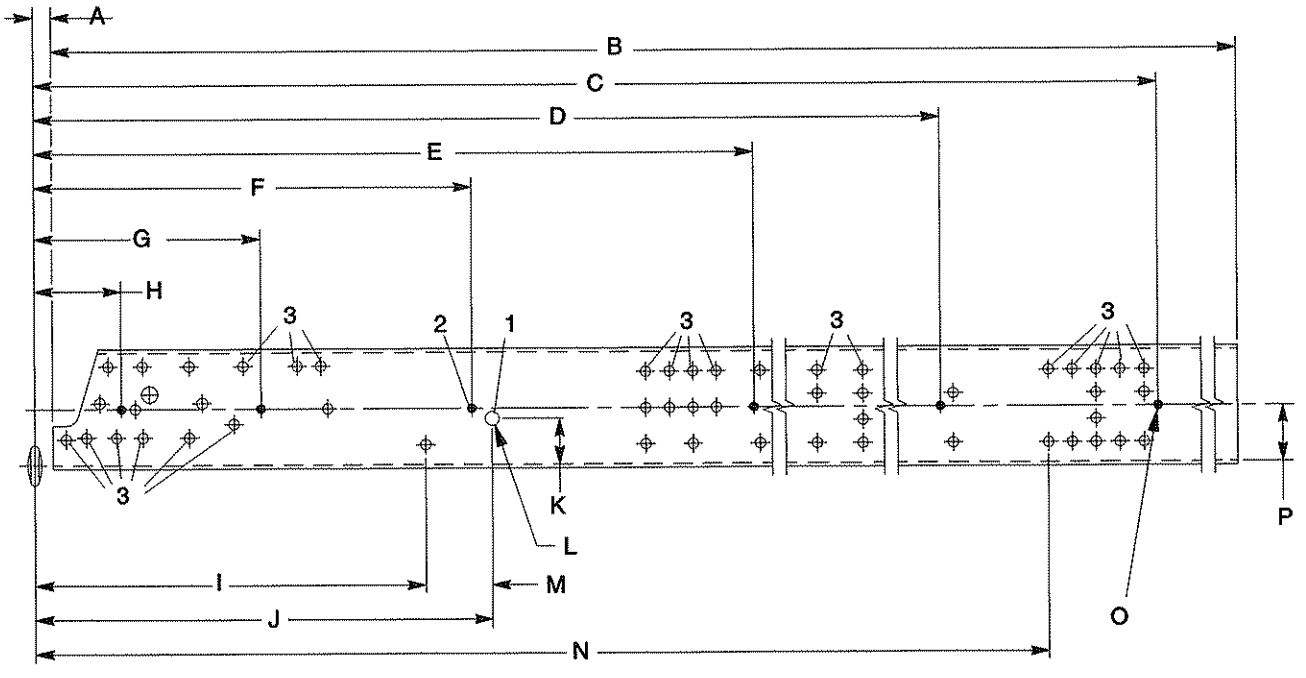


Fig. 2

Frame Rail Alignment

2.2 Find a matched set of bolt holes on the frame rail webs, that are aligned with, or just rearward of, the front of the clear area on the flanges. The bolt holes must be in exactly the same location in each frame rail.

2.3 Project the exact vertical centerline of each bolt hole, and mark a line across the upper (or lower) flange of its respective frame rail.

3. Find the exact center of the width of each flange, and mark the point on each projected line. This will be the forward set of points. The forward points must be in identical locations on both frame rails.

4. If needed and as equipped, remove the fifth wheel and deck plate; refer to the applicable section in this Group for instructions.

5. Measure along each frame rail, to find a set of holes *at least* 180 cm (72 inches) rearward from the forward set of points. The holes must be in exactly the same location in each frame rail.

IMPORTANT: If, because of interference, the distance must be less than 180 cm (72 inches), the distance must be the maximum that is possible.

6. Project the exact vertical centerline of each bolt hole, and mark a line across the upper (or lower) flange of its respective frame rail.

7. Along each line, measure and mark a point 5 cm (2 inches) inboard from the outside face of its respective frame rail. The rear points must be in identical locations on both frame rails.

8. Measure the distance from the forward point on one frame rail to the rear point on the opposite frame rail. **See Fig. 1.** Then measure the distance from the other forward point to the rear point on its opposite frame rail. Compare the two measurements.

   If the values differ by more than 3 mm (1/8 inch), proceed with the next step.

   If the measurements are within 3 mm (1/8 inch) of each other, the frame rails do not need to be aligned; go to the step for fifth wheel and deck installation.

9. Loosen *all* of the frame fasteners enough to allow movement of the parts when force is applied.

IMPORTANT: To align the frame rails, the frame must have all of the crossmembers in place, but the attachment fasteners should *not* be tightened.

10. Using a large hammer and a large wooden block, place the block against the rear end of the frame rail that had its rear point the greater distance from its opposite rail's front point. Tap the block until the measurements are within 3 mm (1/8 inch) of each other.

11. Tighten all of the frame fasteners, starting at the middle of the frame and working alternately toward both ends. Tighten all fasteners to their applicable torque values; refer to Specifications in **Section 00.04.**

12. Again, check the frame rail alignment.

13. When the measurements are within specifications, install the fifth wheel and deck plate (as equipped); refer to the applicable section in this Group for instructions.

14. If the frame rails needed aligning, check the axle alignment; refer to the appropriate suspension section in **Group 32** for instructions.

15. Remove the chocks.

Contents

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General Information

NOTE: The Holland 3500 series XA–3501 model fifth wheel top plate has been replaced by the XA–351 model. All 3500 series fifth wheel top plates which are marked with a manufactured date after June 1, 1996 are XA–351 models.

NOTE: Service operations for the Holland 3500 series slide mounts (FW2535/FW35) are covered in **Section 31.05** in this group.

MODEL XA–3501 TOP PLATE

NOTE: The part number prefix for the stationary fifth wheel is FW3500 and the part number prefix for the sliding fifth wheel is FW2535.

Holland 3500 series XA–3501 fifth wheels are used for pulling trailers having the standard SAE kingpin. When installed as stationary fifth wheels, they are bracket-mounted to the trailer frame in a position that best distributes the trailer load over the tractor axles. When installed as sliding fifth wheels, they are mounted on the Holland 3500 series sliding mount. These fifth wheels have a capacity of 150,000 lbf (667 000 N) maximum drawbar pull and 40,000 to 50,000 lbf (178 000 to 222 000 N) maximum vertical load. The fifth wheel (**Fig. 1**) has a cast steel top plate, and is equipped with a split type "B" mechanical spring lock. This steel kingpin lock system requires a 300 lbf (1330 N) push (force) to couple, and also includes a slack adjustment and the Holland lockguard (which prevents high kingpin coupling).

The two spring-loaded lock halves separate as the kingpin enters the lock mechanism. See **Fig. 2**. The final forward motion of the kingpin forces the lock to close in a 360 degree grip around the shoulder and neck of the kingpin, and moves the yoke between the lock halves and the tapered rib members of the fifth wheel understructure. The kingpin can be released only by manually operating the kingpin lock control handle. See **Fig. 1**. An adjustment nut compensates for wear on the lock or kingpin, if necessary.

See **Chapter 10** of the *Business Class Trucks Driver's Manual* for complete operating instructions.

MODEL XA–351 TOP PLATE

NOTE: The part number prefix for the stationary fifth wheel and the sliding fifth wheel is FW35.

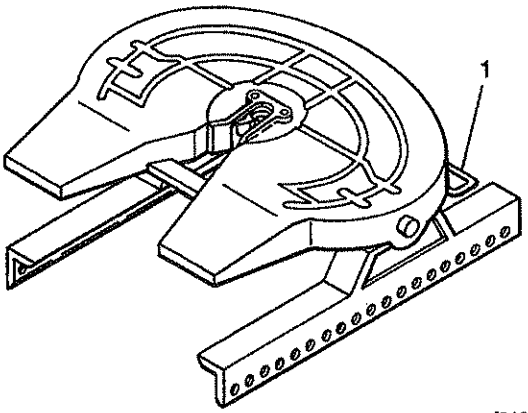
The Holland 3500 series XA–351 fifth wheels are applicable for general over-the-road use. They are designed to pull trailers having a 2 inch (5 cm) SAE J700b kingpin. They have a capacity of 150,000 lbf (667 000 N) maximum drawbar pull and 55,000 lbf (244 652 N) maximum vertical load. These fifth wheels are available in three different mounting assemblies: the Kompensator®; the slide mount; and the stationary mount.

The stationary mount fifth wheels are available with four different mounting bracket styles, which include:

- a bracket with a mounting base for over-the-frame mounting;
- a bracket with a mounting angle for over-the-frame mounting;
- a bracket for angle mounting (designed to be welded to the angle) for over-the-frame mounting;
- and, a bracket for outboard angle mounting.

The mounting brackets use nylon-lined "up-shock" bushings. These fifth wheels come in a variety of heights to accommodate many applications.

The sliding fifth wheels are available with either an over-the-frame mounting bracket or an outboard angle mounting bracket. These mounting brackets are either equipped with a manual slide release or an air slide release mechanism. These sliding mounts have a position adjustment that gives the fifth wheel top plate

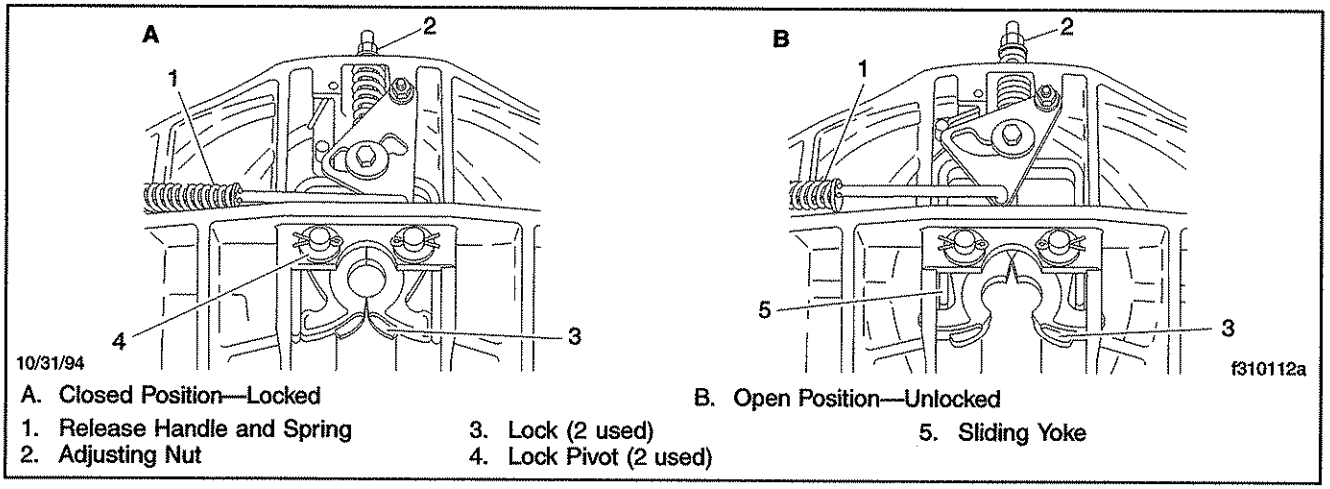


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1. Kingpin Lock Control Handle

Fig. 1, XA-3501 Fifth Wheel

General Information



A. Closed Position—Locked
B. Open Position—Unlocked
1. Release Handle and Spring
2. Adjusting Nut
3. Lock (2 used)
4. Lock Pivot (2 used)
5. Sliding Yoke

Fig. 2, Type B Kingpin Lock Mechanism (bottom view)

the ability to be released, incrementally moved (by 1.5 inch [3.8 cm] displacements) and locked in alternate positions. The position adjustment feature allows the fifth wheel position to vary combination length and tractor axle load distribution for maximum equipment utilization. The mounting brackets use nylon-lined "up-shock" bushings. The sliding fifth wheels are available in a variety of heights and slide travel lengths.

The Kompensator® fifth wheel is equipped with either a stationary or sliding mounting bracket. This fifth wheel is designed for rigid trailers that don't flex during torsional loading. It provides torsional stress relief and promotes vehicle stability with trailers that have an unusually high center of gravity (where the center of gravity is up to 44 inches [111 cm] above the top plate surface). This fifth wheels unique cradle design provides side-to-side movement to help relieve the torque and twist of the trailer. Spring cushions act as a restoring force to provide stability after absorbing the strain and pressure of the load. Additionally, it keeps the center of compensation above the fifth wheel bearing surface and centered between the frame rails. All models are available with an optional "lock-out" feature to restrict compensation for applications that do not require compensation. See **Fig. 3**.

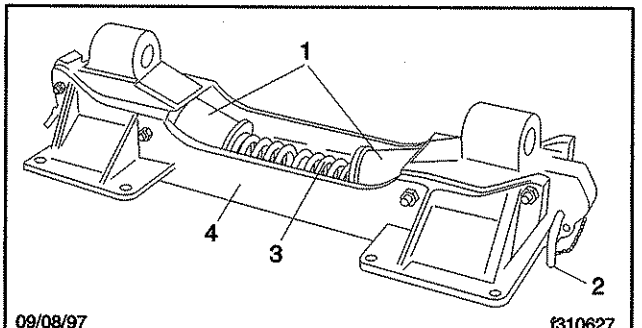
The 3500 series top plate consists of:

- the cast steel top plate;
- the bracket pin mount;
- the release handle;
- the infinite lock adjustment nut;
- and the kingpin lock mechanism.

See **Fig. 4**.

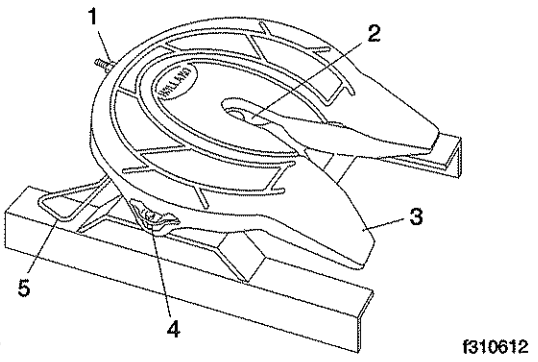
The kingpin lock mechanism consists of:

- the infinite lock adjustment nut;
- the secondary lock;
- the release handle;
- the type "B" forged steel split lock;
- and, the yoke.



1. Urethane Cushions
2. Optional Lockout
3. Compression Springs
4. Kompensator® Cradle Design Mounting Bracket

Fig. 3, The Kompensator®Cradle



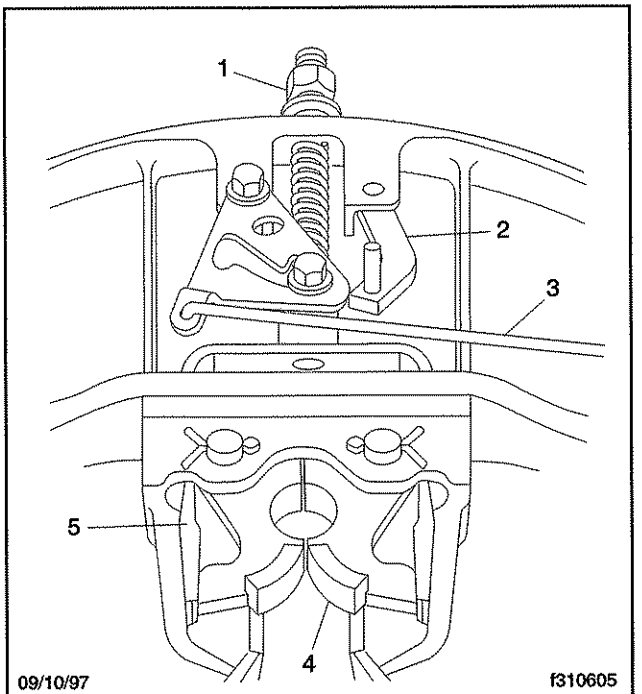
1. Infinite Lock Adjustment Nut
2. Kingpin Lock
3. Cast Steel Top Plate
4. Bracket Pin Mount
5. Release Handle

Fig. 4, XA-351 Fifth Wheel

See **Fig. 5.**

When the yoke is retracted, the two spring-loaded lock halves separate as the kingpin enters the lock mechanism. When the yoke engages, the final forward motion of the kingpin forces the lock to close in a 360 degree grip around the shoulder and neck of the kingpin. After the yoke is engaged (positioned between the lock halves and the tapered rib members of the top plate casting), the secondary lock moves behind the yoke. For fifth wheels with an automatic secondary lock, the kingpin is released by manually operating the release handle. For fifth wheels with a manual secondary lock, the fifth wheel is released by pulling the secondary release handle, then hooking the secondary release handle to the top plate casting, and finally manually operating the primary release handle. For high coupling protection, a one step rear lock is incorporated into the split lock. For increased durability of the kingpin lock mechanism, the infinite lock adjustment positions are available to compensate for wear of both the kingpin and the lock jaws.

See **Chapter 10** of the *Business Class Trucks Driver's Manual* for complete operating instructions.



1. Infinite Lock Adjustment Nut
2. Secondary Lock (Automatic Shown)
3. Release Handle
4. Kingpin Guide
5. Yoke

Fig. 5, Kingpin Lock Mechanism (bottom view)

Model XA–3501 Top Plate Removal and Disassembly

Removal and Disassembly (See Fig. 1)

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

A fifth wheel rebuild kit is available for servicing the 3500 series XA–3501 fifth wheel (part number RK–63501 [left release] and RK–63500 [right release]). The kit contains all replacement parts for the fifth wheel, except the fifth wheel plate, slide mount assembly, rubber bushings, bushing pins, and roll pins.

Review the troubleshooting section before rebuilding the fifth wheel. Rebuilding may be unnecessary.

1. Steam clean the top plate. Remove it from the slide mounts (**Fig. 1**) by removing the roll pins from the bushing pins; then, remove the bushing pins from the mounting brackets. Use an overhead hoist to lift the fifth wheel from the mounting brackets and tractor frame.
2. Turn the fifth wheel upside down with the locks open.
3. While disassembling the fifth wheel, check it for cracks and for missing or damaged parts.

   3.1 Remove the lockguard, the lockguard torsion spring, the lockguard pin, and the lockguard cotter pins.

   3.2 On fifth wheels with a right-hand release, remove the secondary lock roll pin from hole F. Then, remove the right-hand secondary lock from under hole F.

   On fifth wheels with a left-hand release, remove the secondary lock roll pin from hole G. Then, remove the left-hand secondary lock with the secondary lock spring from under hole G.

   3.3 Remove the attaching release arm capscrew, capscrew washer, and roller from hole A of the release arm and yoke subassembly.

   3.4 Remove the release arm capscrew, release arm capscrew washer, and release arm roller from hole G for models with right-hand release or from hole F for models with left-hand release.

   3.5 Remove the release handle from the fifth wheel top plate. Remove the washer, release handle spring, and release handle washer from the release handle.

   3.6 Remove the yoke shaft locknut, yoke shaft washer, and rubber block from the yoke shank. Then, remove the yoke shank and the yoke shank spring from the yoke subassembly.

   3.7 Remove the yoke from the fifth wheel top plate.

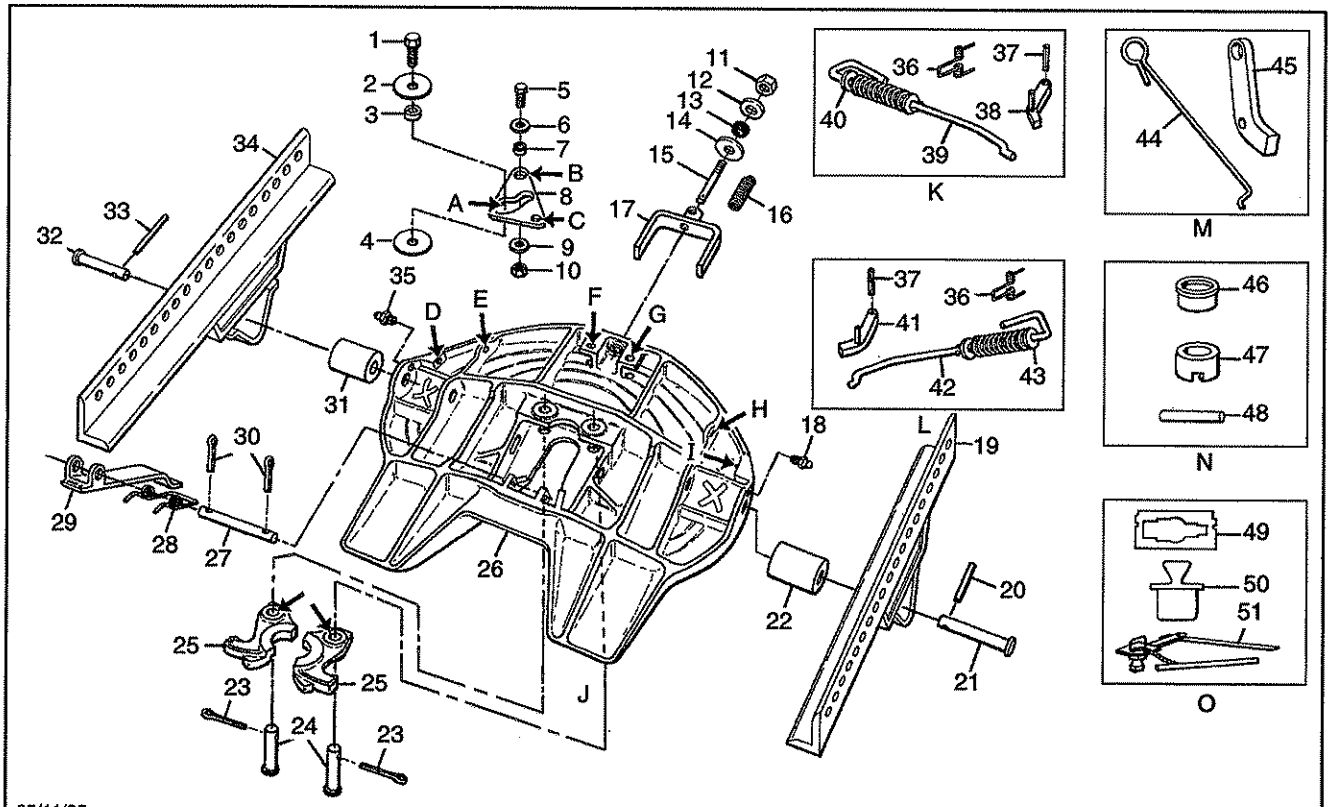
   3.8 Remove the lock cotter pins, lockpins, and the lock jaws from the fifth wheel top plate.

   3.9 If the top plate is cracked, discard it. If the lockpin hole is worn, the top plate can be returned for a factory rebuild.

⚠ WARNING

Do not attempt to repair or rebuild the top plate if it is cracked or if the lockpin does not fit tightly. The top plate could fail or the locks could malfunction. This could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

Model XA–3501 Top Plate Removal and Disassembly



A. Release Arm Cam Profile
B. Release Arm Pivot Hole
C. Hole for Attachment of Release Handle
D. Guide Hole for Right-Hand Release
E. Hole for Left-Hand Manual Secondary Lock Handle
F. Right-Hand Secondary Lock Anchor Hole
G. Left-Hand Secondary Lock Anchor Hole
H. Hole for Right-Hand Manual Secondary Lock Handle
I. Guide Hole for Left-Hand Release
J. Lockpin Holes
K. For Right-Hand Release
L. For Left-Hand Release
M. For Models With Secondary Lock
N. For Models With Lockpin Bushings
O. Accessories

1. Capscrew, 5/8–18 x 1-3/4
2. Flatwasher, 5/8" i.d.
3. Roller
4. Washer, 5/8" i.d.
5. Capscrew, 1/2–20
6. Washer, 1-3/4" o.d. x 9/16" i.d.
7. Roller
8. Release Arm (Cam Plate)
9. Washer, 1-3/4" o.d. x 13/16" i.d.
10. Locknut, 1/2–20
11. Locknut, 3/4–16
12. Washer, 1-1/2" o.d. x 13/16" i.d.
13. Rubber Block
14. Lock Adjustment Tag
15. Yoke Shank
16. Yoke Shank Spring
17. Yoke Subassembly
18. Grease Fitting
19. Mounting Bracket
20. Roll Pin
21. Bracket Pin
22. Rubber Bushing
23. Cotter Pins, 1/4" x 2"
24. Lockpins
25. Lock Jaws
26. Fifth Wheel Top Plate
27. Lockguard Pin
28. Lockguard Torsion Spring
29. Lockguard
30. Cotter Pins, 1/8" x 1"
31. Rubber Bushing
32. Bracket Pin
33. Roll Pin
34. Mounting Bracket
35. Grease Fitting
36. Secondary Lock Torsion Spring
37. Roll Pin
38. Right-Hand Secondary Lock
39. Right-Hand Release Handle
40. Washer, 1-3/4" o.d. x 9/16" i.d.
41. Left-Hand Secondary Lock
42. Left-Hand Release Handle
43. Washer, 1-3/4" o.d. x 9/16" i.d.
44. Manual Secondary Lock Handle
45. Manual Secondary Lock
46. Lockpin Bushings, 2
47. Lockpin Bushing, 2
48. Roll Pin, 2
49. Kingpin Gauge
50. Plug, 2"
51. Kingpin Lock Tester

Fig. 1, Holland 3500 Series XA-3501 Fifth Wheel and Accessories (bottom view)

Model XA–3501 Top Plate Assembly and Installation

Assembly and Installation

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

A fifth wheel rebuild kit is available for servicing the 3500 series XA–3501 fifth wheel (part numbers RK–63501 [left release] and RK–63500 [right release]). The kit contains all replacement parts for the fifth wheel, except the fifth wheel plate, slide mount assembly, rubber bushings, bushing pins, and roll pins.

Review the troubleshooting section before rebuilding the fifth wheel. Rebuilding may be unnecessary.

IMPORTANT: Use only Holland rebuilding kits. Replace all roll pins, cotter pins, springs, capscrews, nuts, and washers.

1. Clean all moving parts with no. 2 diesel fuel before assembly.
2. Before installing the lock jaws (**Fig. 1**), lubricate the lockpin holes (Ref. J) with Never-Seez®.

⚠ CAUTION

Use only Never-Seez®. Other lubricants can damage the lockpin holes.

3. Place the lock jaws in the top plate with the 2-7/8 inch bore toward the face of the top plate. See **Fig. 2**.
4. Drive the lockpins (**Fig. 1**) through the top plate and lockpin holes (Ref. J) in the lock jaws until the head of the pins are flush with the top plate.
5. If the top plate is equipped with lockpin bushings, use roll pins instead of cotter pins. See **Fig. 3**.
6. Check that the lock jaws move freely.

⚠ WARNING

Use only Holland part number TF–0237 or a precision plug machined to 2.000 ± 0.005 inch (5.08 ± 0.0127 cm) to adjust the locking mechanism. Failure to do so may cause locking mechanism malfunction. This could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

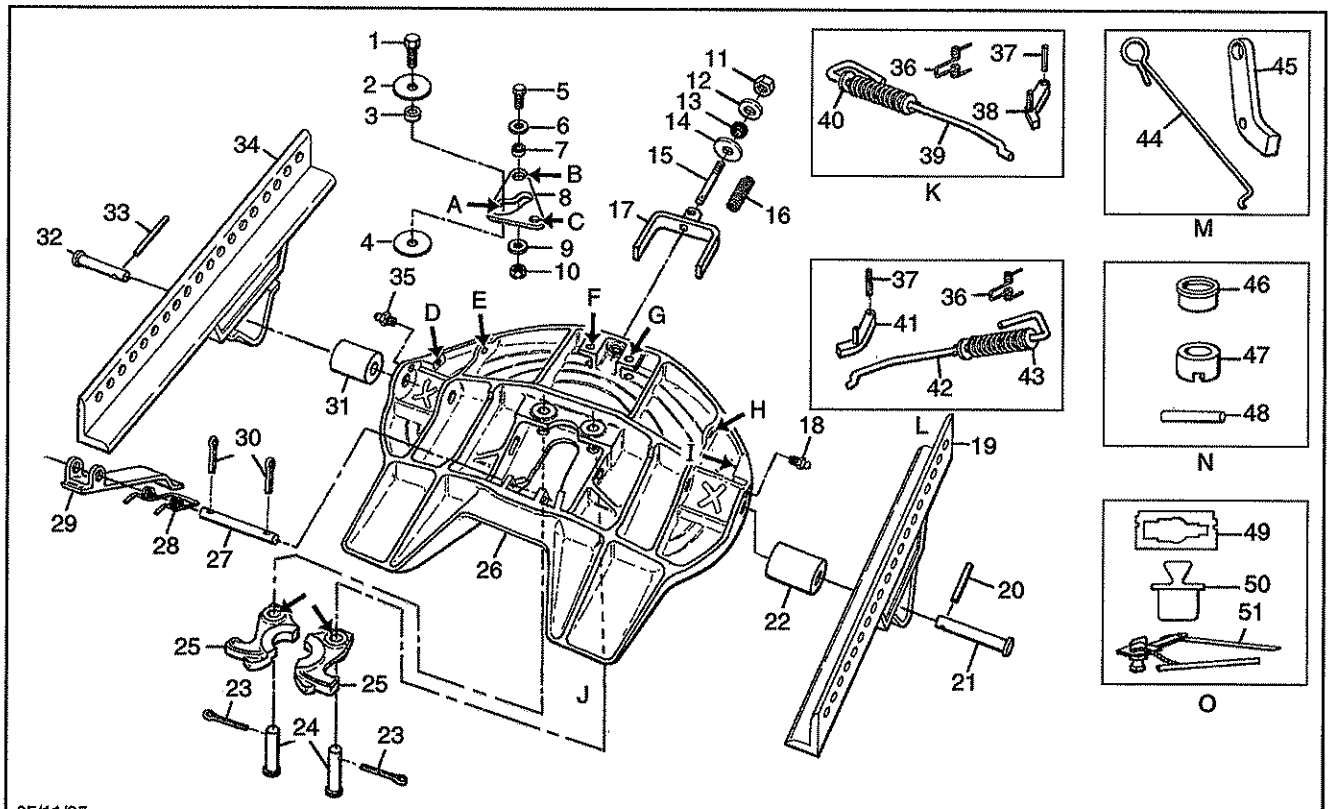
7. Install a 2-inch (5.08 cm) diameter plug (Holland part number TF–0237) in the lock jaws. See **Fig. 4**.
8. Strike the yoke with a mallet to bend the yoke tips outward slightly. See **Fig. 5**.
9. Slide the yoke into the top plate with the threaded hole facing up, and tap the yoke into position.

⚠ WARNING

Never grind on the inside of the yoke or on the locks. This can weaken the yoke structure, possibly causing the kingpin to fit loosely. This could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

10. Inspect the yoke tips. The tips must be flush with the ends of the locks, or extend no more than 1/32 inch (0.8 mm) beyond. See **Fig. 6**.
    - 10.1 If the yoke tips fall short (**Fig. 7**), use a belt sander or disk grinder to grind the outside surfaces of the yoke until it fits precisely into place. See **Fig. 8**.
    - 10.2 If the yoke tips extend beyond the ends of the locks, build up the outer surfaces of the yoke using a low hydrogen E70XX welding rod. See **Fig. 9**. After welding, grind the beads smooth.
11. The outside of each yoke tip has two contact areas. Check that all four surfaces have full area contact with the top plate ribs (**Fig. 10**) after welding and grinding.
12. Continue welding, grinding, and fitting until the yoke has full contact and the yoke tips are flush with the ends of the locks.
13. Apply a coat of light grease to both the inside and outside friction surfaces of the yoke, then slide the yoke into the top plate with the threaded hole facing up.
14. Install the spring (**Fig. 1**) between the yoke and the top plate. Insert the yoke shank through the top plate and spring, then into the yoke. Make sure

Model XA–3501 Top Plate Assembly and Installation



A. Release Arm Cam Profile
B. Release Arm Pivot Hole
C. Hole for Attachment of Release Handle
D. Guide Hole for Right-Hand Release
E. Hole for Left-Hand Manual Secondary Lock Handle
F. Right-Hand Secondary Lock Anchor Hole
G. Left-Hand Secondary Lock Anchor Hole
H. Hole for Right-Hand Manual Secondary Lock Handle
I. Guide Hole for Left-Hand Release
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3. Roller
4. Washer, 5/8" i.d.
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6. Washer, 1-3/4" o.d. x 9/16" i.d.
7. Roller
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9. Washer, 1-3/4" o.d. x 13/16" i.d.
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11. Locknut, 3/4–16
12. Washer, 1-1/2" o.d. x 13/16" i.d.
13. Rubber Block
14. Lock Adjustment Tag
15. Yoke Shank
16. Yoke Shank Spring
17. Yoke Subassembly
18. Grease Fitting
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33. Roll Pin
34. Mounting Bracket
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36. Secondary Lock Torsion Spring
37. Roll Pin
38. Right-Hand Secondary Lock
39. Right-Hand Release Handle
40. Washer, 1-3/4" o.d. x 9/16" i.d.
41. Left-Hand Secondary Lock
42. Left-Hand Release Handle
43. Washer, 1-3/4" o.d. x 9/16" i.d.
44. Manual Secondary Lock Handle
45. Manual Secondary Lock
46. Lockpin Bushings, 2
47. Lockpin Bushing, 2
48. Roll Pin, 2
49. Kingpin Gauge
50. Plug, 2"
51. Kingpin Lock Tester

Fig. 1, Holland 3500 Series XA-3501 Fifth Wheel and Accessories (bottom view)

Model XA–3501 Top Plate Assembly and Installation

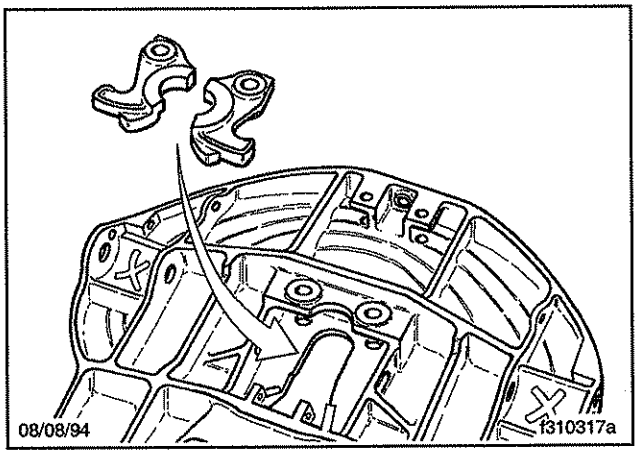


Fig. 2, Place the Lock Jaws

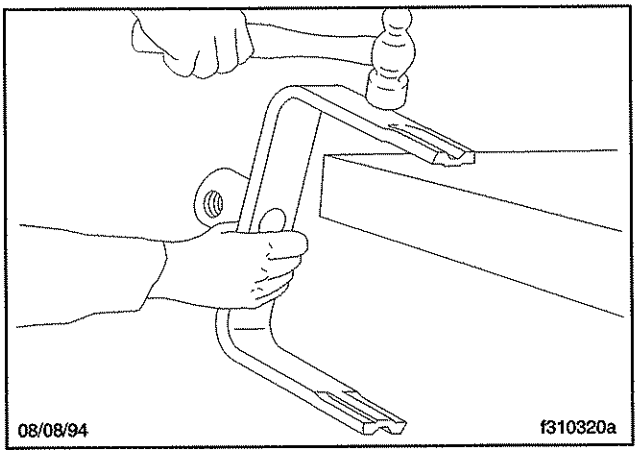


Fig. 5, Strike the Yoke

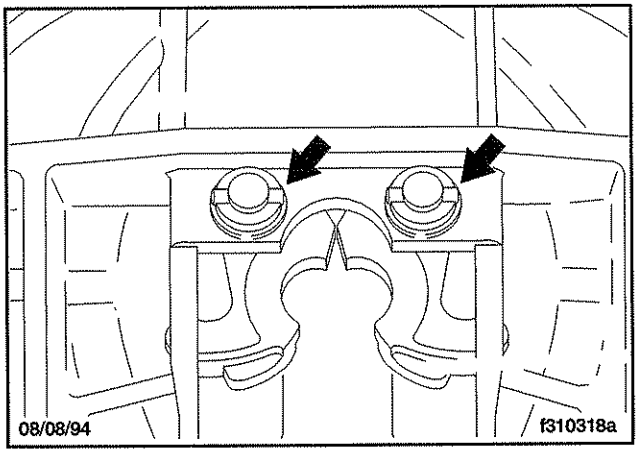


Fig. 3, Roll Pins Used

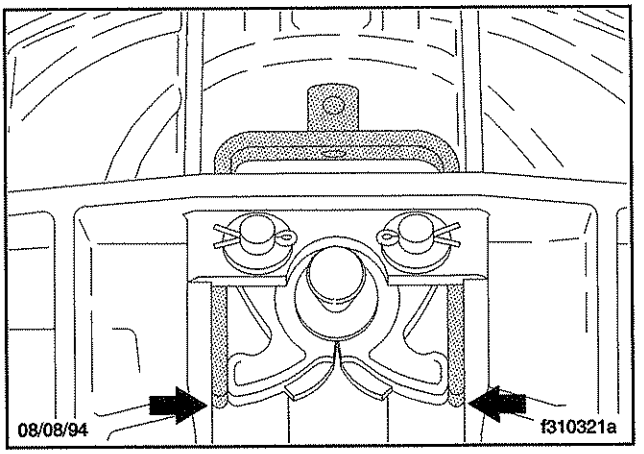


Fig. 6, Inspect the Tips

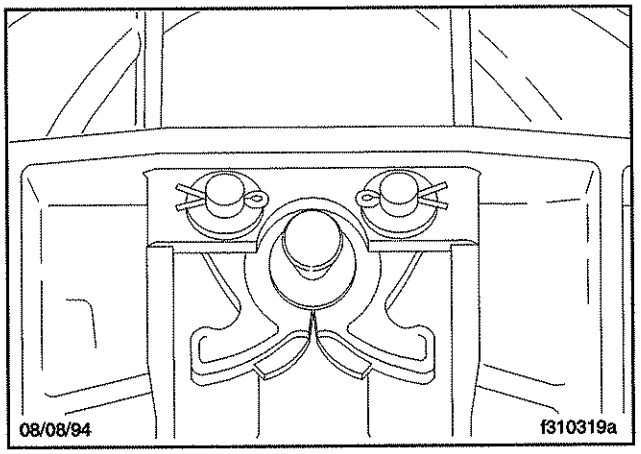


Fig. 4, Plug in the Lock Jaws

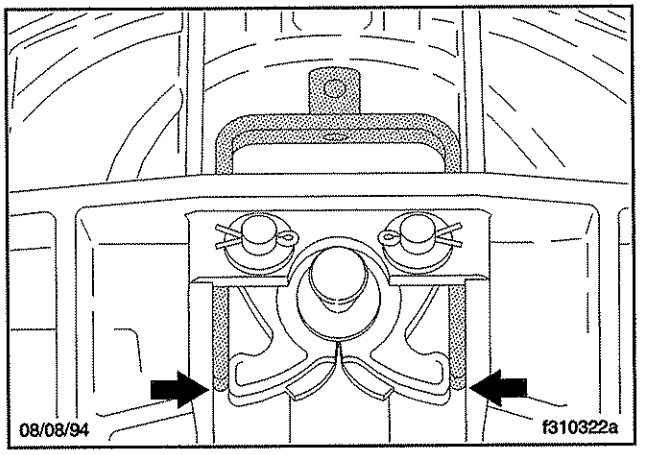
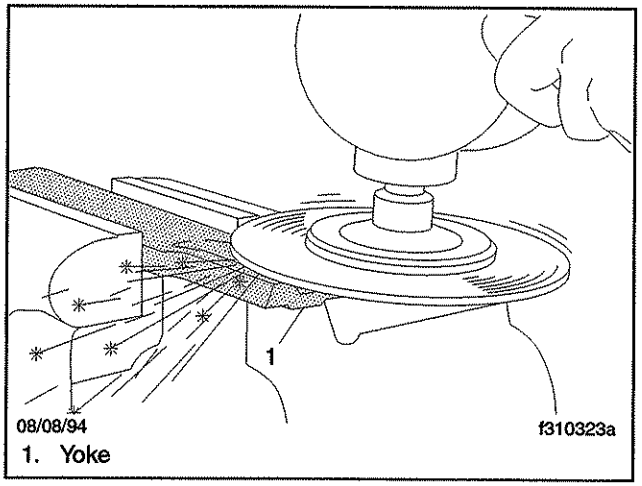


Fig. 7, Yoke Tips Fall Short

Model XA–3501 Top Plate Assembly and Installation



1. Yoke

Fig. 8, Grind the Yoke

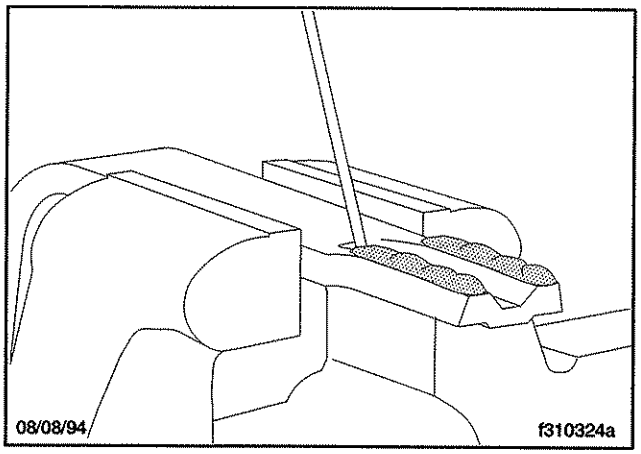


Fig. 9, Build Up the Yoke

that the predrilled recess in the yoke shank aligns with the threaded hole in the yoke.

15. Install the lock adjustment tag, the rubber block, a 13/16-inch i.d. steel washer, and the 3/4-inch locknut in the order stated.
16. Install the 9/16-inch i.d. washer on the release handle as shown in **Fig. 1**.
17. Pass the open end of the release handle through the guide hole (Ref. D for models with right-hand release, Ref. I for models with left-hand release) toward the outside of the top plate.

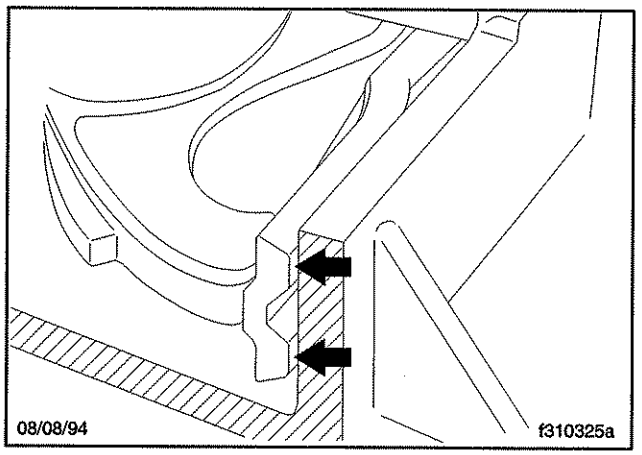


Fig. 10, Contact with Top Plate

18. Inspect the release arm (cam plate) for burrs or rough edges in the cam profile (Ref. A). Remove any burrs or rough edges.
19. Apply a light coat of grease to the cam profile and pivot holes.
20. Insert the "S" end of the release handle through the small hole in the release arm (cam plate).
21. Place the release arm (cam plate) on the top plate so that the cam profile (**Fig. 11**, Ref. A) is over the hole in the yoke and the large hole (Ref. B) is over the lug in the top plate opposite the release handle.
22. Slide a 9/16-inch i.d. flatwasher between the plate lug and the release arm with the rounded edge towards the cam. See **Fig. 12**.

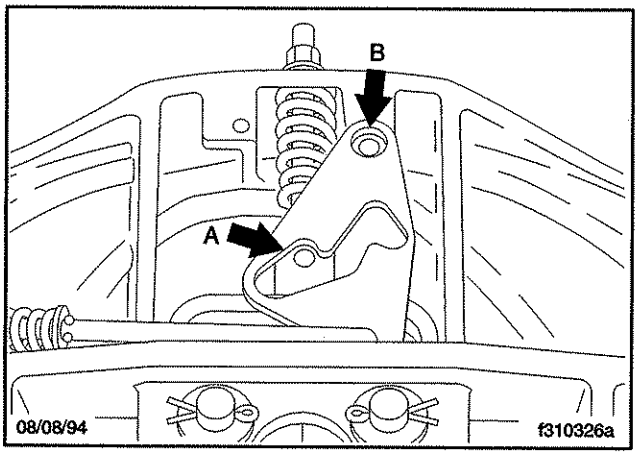


Fig. 11, Place the Release Arm

Model XA–3501 Top Plate Assembly and Installation

23. Install the 1/2-inch i.d. roller (**Fig. 1**) in the large hole of the release arm.
24. Place a second 9/16-inch i.d. flatwasher over the release arm. Make sure the rounded edge of the washer faces the cam.
25. Install the 1/2-inch diameter capscrew through the washers, roller, and hole in the top plate lug (Ref. G for right-hand release models, Ref. F for left-hand release models).
26. Secure the capscrew with a 1/2-inch locknut. Tighten the locknut; then, check that the release arm moves freely.
27. Place a 5/8-inch i.d. washer between the yoke and the release arm. Make sure that the rounded edge of the washer faces the release arm.
28. Insert the 5/8-inch i.d. roller in the release arm opening.
29. Install the second 5/8-inch i.d. washer on top of the release arm.
30. Pass the 5/8-inch diameter capscrew through the assembly. Be certain that the bolt passes through the yoke and into the recess in the yoke shank.
31. Tighten the capscrew securely, but make sure the top washer turns freely.
32. Turn the nut on the yoke shank clockwise until the yoke just begins to move.
33. Check the plug (Holland part number TF–0237). It should fit snugly in the locks, but you should be able to turn it with some force.
34. On models with an automatic secondary lock assembly, Install the secondary lock.

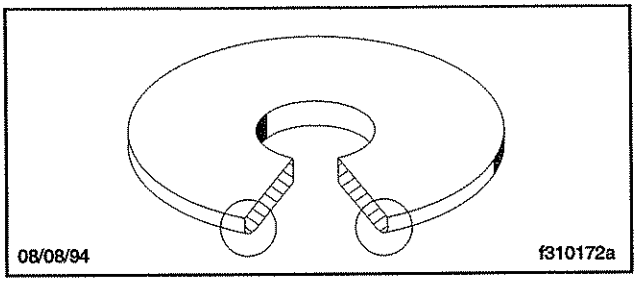


Fig. 12, Rounded Edge

34.1 Start the roll pin into the hole in the top plate lug opposite the release arm anchor capscrew.

34.2 Install the torsion spring on the secondary lock, and position them on the lug. Be sure the open end of the spring faces toward the rib of the lug. See **Fig. 13.**

34.3 While holding the parts in place, drive the roll pin until it is flush with the lug.

34.4 Check the spring tension on the secondary lock. Check that the lock moves freely.

35. On models with a manual secondary lock assembly, install the manual secondary lock.

35.1 Pass the end of the manual secondary lock handle (**Fig. 1**) through the hole (Ref. E for right-hand release, Ref. H for left-hand release).

35.2 Attach the handle to the secondary lock.

35.3 Start the roll pin into the hole in the top plate lug opposite the release arm anchor capscrew.

35.4 Install the torsion spring on the secondary lock, and place them in position on the lug. Be sure the open end of the spring faces toward the rib of the lug. See **Fig. 13.**

35.5 While holding the parts in place, drive the roll pin until it is flush with the lug.

35.6 Check the spring tension on the secondary lock. Check that the lock moves freely.

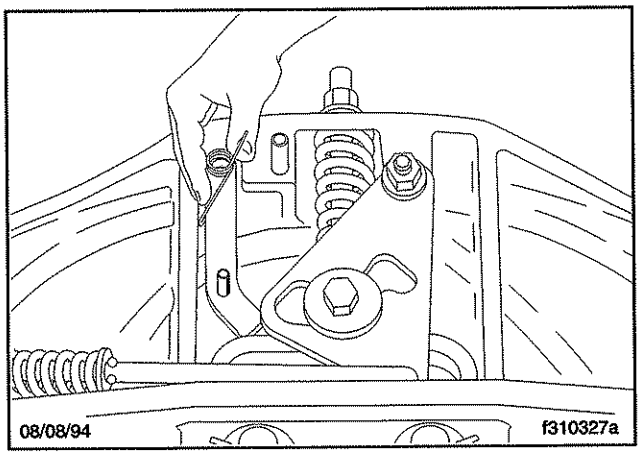


Fig. 13, Torsion Spring Installation

Model XA–3501 Top Plate Assembly and Installation

36. Pull the release handle, remove the plug, and pry open the lock jaws.
37. Assemble the lockguard and the torsion spring.
38. Mount the lockguard using the lockguard pin and cotter pins. See **Fig. 14**.
39. Check the spring tension on the lockguard. Check that the lockguard moves freely.
40. Check the adjustment. The tip of the guard should be even with the edge of the 2-inch bore in the lock jaw. See **Fig. 15**.
41. Adjust the lockguard position by supporting the end of the guard with a short piece of steel placed between the locks and the lock-guard. Tap the center of the guard to adjust it. See **Fig. 16**.

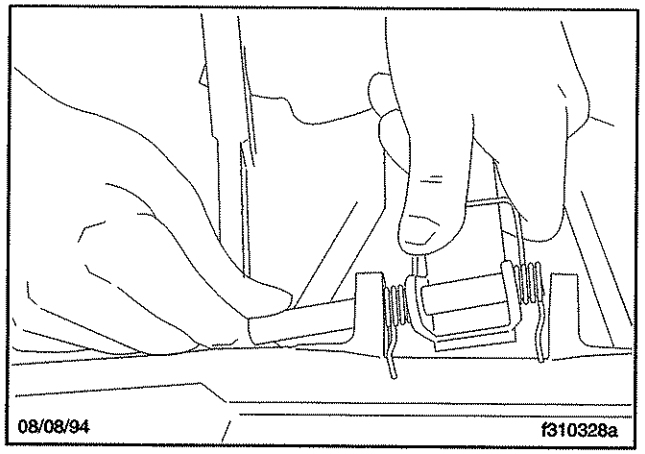


Fig. 14, Mount the Lockguard

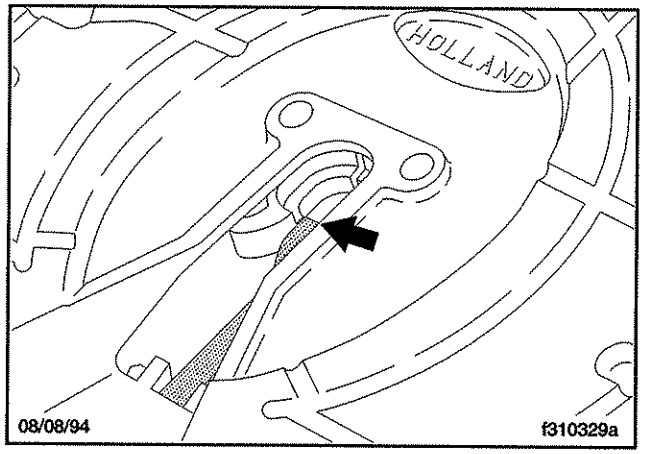


Fig. 15, Check the Guard

42. Using a Holland Lock Tester, close the locks. For instructions, refer to Holland Publication FW 130. Make sure that the locking mechanism functions properly. See **Fig. 17**. If the fifth wheel does not operate properly, repeat the above procedures or contact your local Holland representative for assistance.

IMPORTANT: The fifth wheel must be well lubricated to operate correctly. See **Group 31** of the *Business Class Trucks Maintenance Manual*, for complete maintenance and lubrication instructions of the fifth wheel assembly.

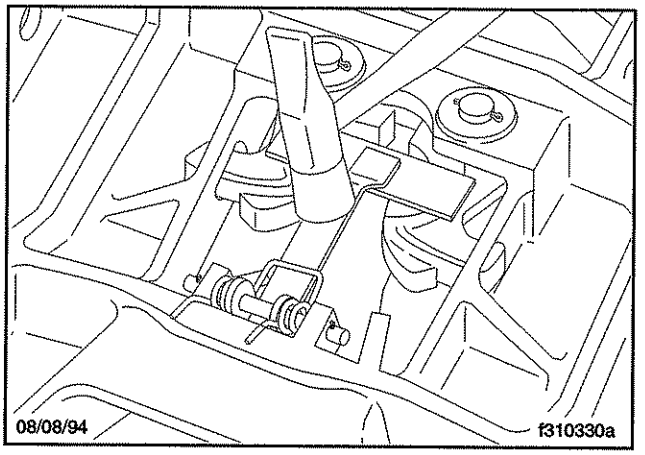


Fig. 16, Adjust the Guard

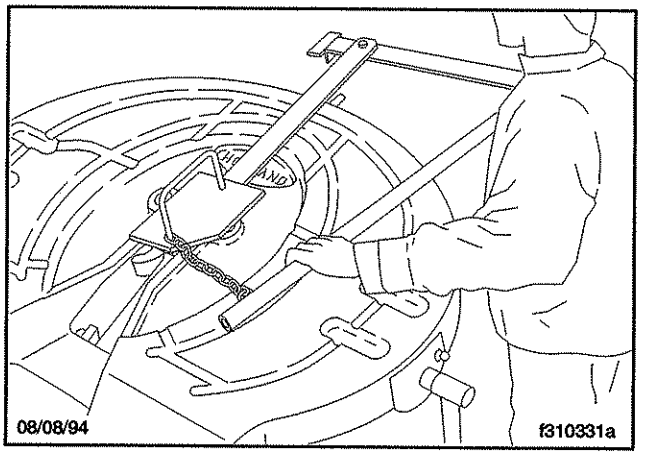


Fig. 17, Using the Lock Tester

Model XA–3501 Top Plate Assembly and Installation

⚠ WARNING

If the fifth wheel does not operate properly, do not use it. The fifth wheel could malfunction, resulting in bodily injury or property damage due to possible separation of the trailer from the tractor.

43. Using an overhead hoist, position the fifth wheel on the sliding mount assembly. Insert the bushing pins. Then install the roll pins.

Model XA–351 Top Plate Removal and Disassembly

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

Fifth wheel rebuild kits are available for servicing the 3500 series XA–351 fifth wheels. For the rebuild kits, the part numbers include:

- RK–351AL (left release with automatic secondary lock);
- RK–351A02L (left release with manual secondary lock);
- RK–351A (right release with automatic secondary lock);
- RK–351A02 (right release with manual secondary lock).

These fifth wheel rebuild kits contain all the replacement parts, except: the fifth wheel top plate; the bracket assembly rubber bushings; the bracket assembly bushing pins; and the bracket assembly bushing pin capscrews and locknuts.

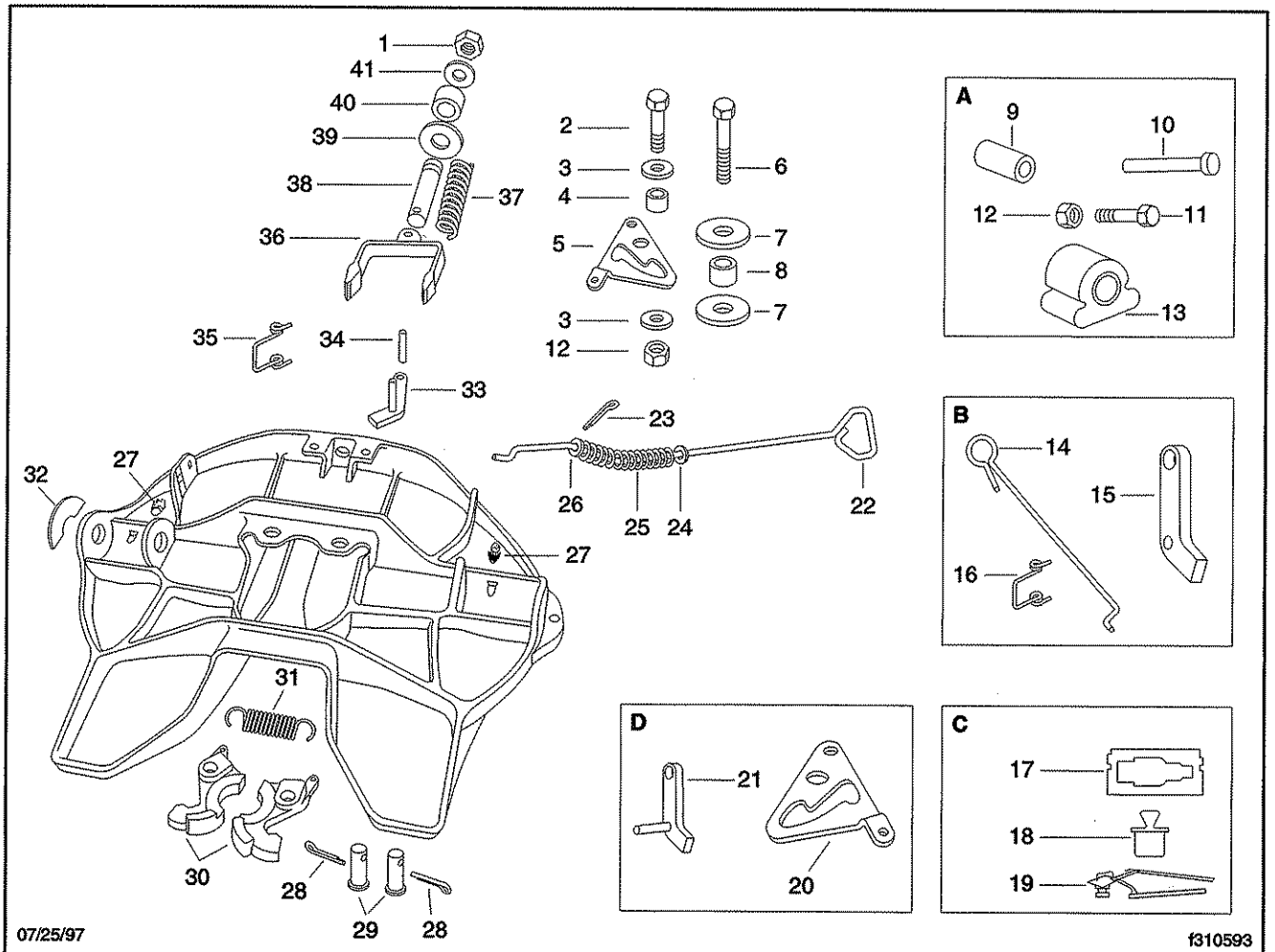
Rebuilding the fifth wheel may be unnecessary. Review the troubleshooting section before rebuilding the fifth wheel. If the troubleshooting section does not correct the problem, then the fifth wheel may need rebuilding.

While disassembling the fifth wheel, Check it for cracks and for missing or damaged parts. Discard all used components.

Removal and Disassembly (See Fig. 1)

1. Steam clean the top plate.
2. Remove the top plate from the bracket assembly.
   - 2.1 Loosen and remove the 1/2–20 bushing pin capscrews and locknuts from the top plate.
   - 2.2 Remove the bushing pins from the bracket assembly. See **Fig. 2.**
   - 2.3 Using an overhead hoist, lift the fifth wheel from the bracket assembly and tractor frame.
3. Disassemble the secondary lock.
   - 3.1 Turn the fifth wheel upside down with the locks open.
   - 3.2 Using a suitable driver and hammer, drive the 1/2-inch by 2-3/4 inch roll pin from the top plate and the secondary lock. See **Fig. 3.**
   - 3.3 If the fifth wheel has an automatic secondary lock, proceed to the next substep, otherwise, remove the manual secondary release handle by passing the "S" bend of the release handle through the large hole in the secondary lock and then through the guide hole. See **Fig. 4.**
   - 3.4 Remove the secondary lock.
4. Disassemble the cam plate.
   - 4.1 Loosen and remove the 5/8-inch capscrew from the threaded hole in the yoke. Remove the washers, and the roller from the cam plate. See **Fig. 5.**
   - 4.2 Loosen and remove the 1/2-inch capscrew and nut from the top plate lug. Remove the washers, and the roller from the cam plate. See **Fig. 6.**
   - 4.3 Remove the release handle by passing the "S" bend of the release handle through the large hole in the raised tab of the cam plate and through the top plate casting hole. See **Fig. 6.**
5. Disassemble the yoke.
   - 5.1 Slide the yoke shaft assembly away from the yoke, through the compression spring, and out of the top plate casting. See **Fig. 7.**
   - 5.2 Remove the compression spring and remove the yoke.
6. Disassemble the lock.
   - 6.1 Remove the cotter pins from the lockpins.
   - 6.2 Using a suitable driver and hammer, drive the lockpins out of the casting. See **Fig. 8.**

Model XA–351 Top Plate Removal and Disassembly

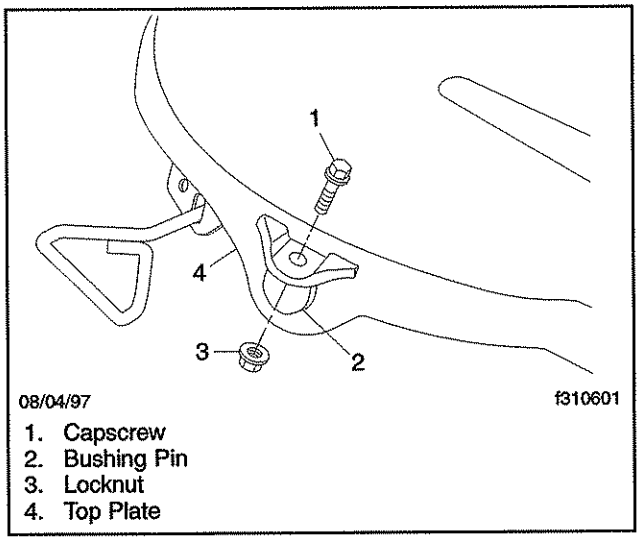


A. Bushing Pin Assembly
B. Manual Secondary Lock Assembly
C. Fifth Wheel Accessories
D. Right Hand Secondary Lock Assembly

1. Locknut, 3/4–16
2. Capscrew, 1/2–20 x 1–3/4)
3. Washer, 1–3/4" o.d. x 9/16" i.d.
4. Roller, 1/2" i.d.
5. Cam Plate (left-hand)
6. Capscrew, 5/8–18 x 3/4
7. Washer, 2–5/8 x 21/32
8. Roller, 5/8" i.d.
9. Rubber Bushing (brackets manufactured prior to 5/82)
10. Bracket Bushing Pin
11. Capscrew, 1/2–20 x 1–1/4
12. Locknut, 1/2–20
13. Rubber Bushing (brackets manufactured after 5/82)
14. Manual Secondary Lock Release Handle
15. Manual Secondary Lock
16. Torsion Spring
17. Kingpin Gauge
18. 2" Lock Gauge (Plug)
19. Kingpin Lock Tester
20. Cam Plate (right-hand)
21. Secondary Lock (right-hand)
22. Release Handle
23. Cotter Pin, 1/8 x 1–1/4
24. Washer, 1–3/8" o.d. x 9/16" i.d.
25. Compression Spring
26. Washer, 1–1/16" o.d. x 5/8" i.d.
27. Grease Zerk
28. Cotter Pin, 1/4 x 2
29. Lockpin
30. Lock Jaw Set
31. Extension Spring
32. Operation Tag
33. Secondary Lock (left-hand)
34. Roll Pin, 1/2 x 2–3/4
35. Torsion Spring
36. Yoke
37. Compression Spring
38. Yoke Shaft
39. Lock Adjustment Tag
40. Rubber Washer
41. Washer 1–1/2" o.d. x 13/16" i.d.

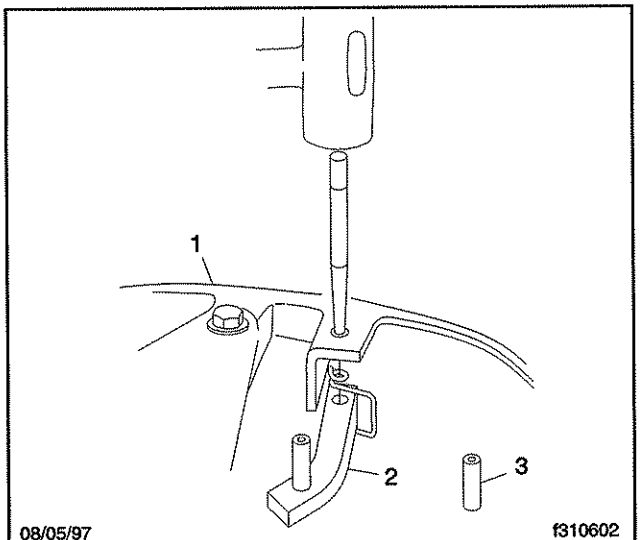
Fig. 1, Holland 3500 Series XA-351 Fifth Wheel and Accessories (bottom view)

Model XA–351 Top Plate Removal and Disassembly



1. Capscrew
2. Bushing Pin
3. Locknut
4. Top Plate

Fig. 2, Remove the Bushing Pin



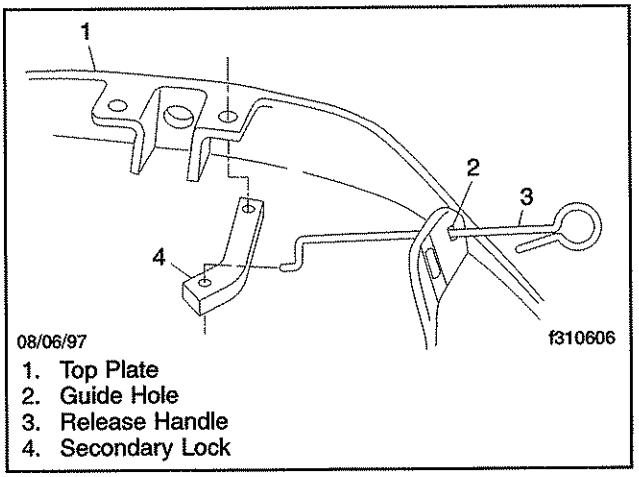
1. Top Plate
2. Secondary Lock
3. Roll Pin

Fig. 3, Disassemble the Secondary Lock

This will free the lock jaws assembly. Remove the lock jaws and lock spring.

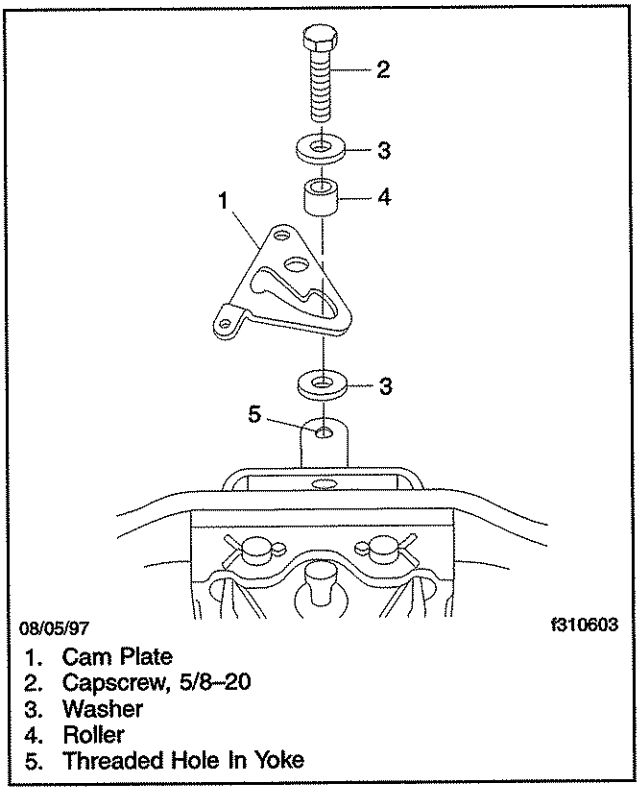
⚠ WARNING

Do not attempt to repair or rebuild the top plate if it is cracked or if the lockpin does not fit tightly. The top plate could fail or the locks could malfunction. This could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.



1. Top Plate
2. Guide Hole
3. Release Handle
4. Secondary Lock

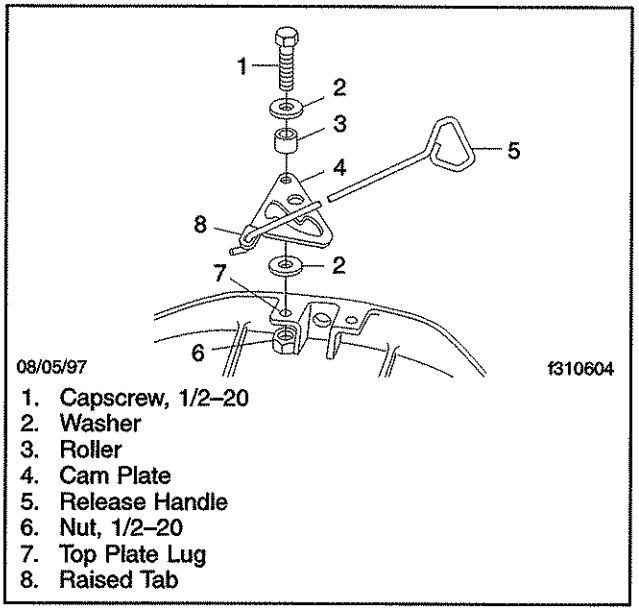
Fig. 4, Remove the Release Handle



1. Cam Plate
2. Capscrew, 5/8–20
3. Washer
4. Roller
5. Threaded Hole In Yoke

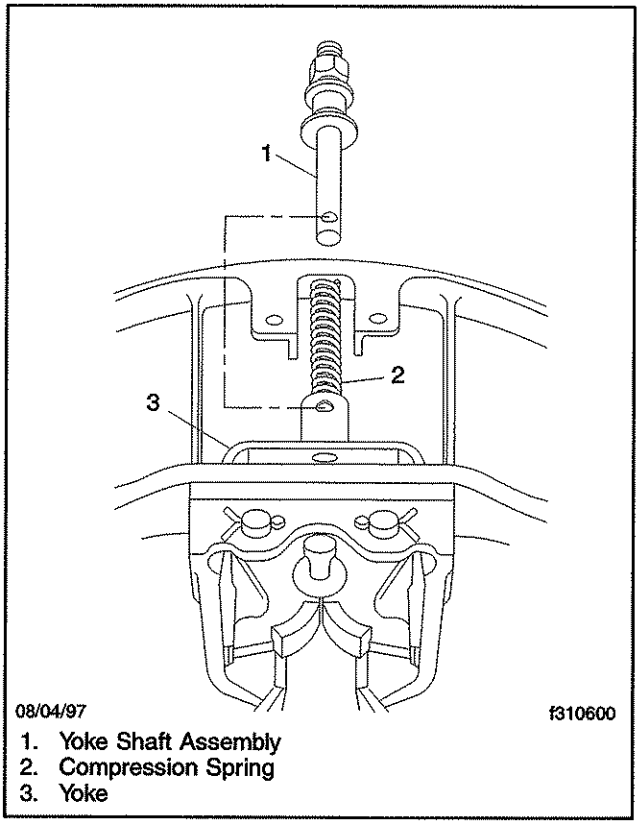
Fig. 5, Remove the Capscrew From the Yoke

Model XA–351 Top Plate Removal and Disassembly



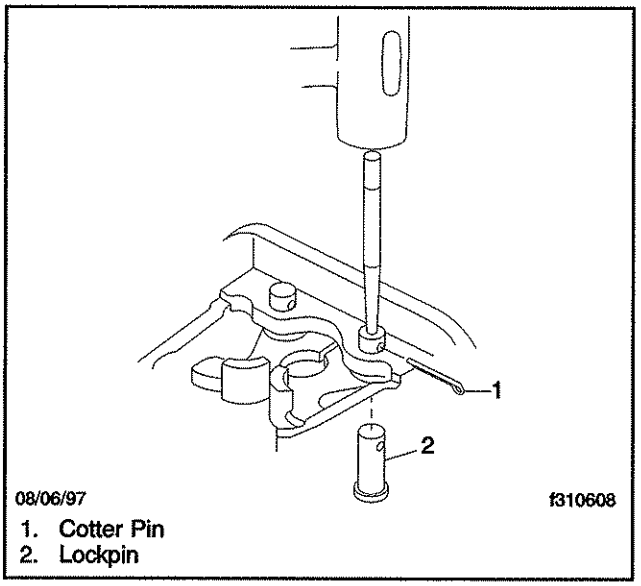
1. Capscrew, 1/2–20
2. Washer
3. Roller
4. Cam Plate
5. Release Handle
6. Nut, 1/2–20
7. Top Plate Lug
8. Raised Tab

Fig. 6, Disassemble the Cam Plate



1. Yoke Shaft Assembly
2. Compression Spring
3. Yoke

Fig. 7, Remove the Yoke Shaft Assembly



1. Cotter Pin
2. Lockpin

Fig. 8, Remove the Lockpins

Model XA–351 Top Plate Assembly and Installation

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

Fifth wheel rebuild kits are available for servicing the 3500 series XA–351 fifth wheels. For the rebuild kits, the part numbers include:

- RK–351AL (left release with automatic secondary lock);
- RK–351A (right release with automatic secondary lock);
- RK–351A02L (left release with manual secondary lock);
- RK–351A02 (right release with manual secondary lock).

These fifth wheel rebuild kits contain all the replacement parts, except: the fifth wheel top plate; the bracket assembly rubber bushings; the bracket assembly bushing pins; and the bracket assembly bushing pin capscrews and locknuts.

Review the troubleshooting section before rebuilding the fifth wheel. Rebuilding may be unnecessary.

IMPORTANT: Use only Holland rebuilding kits. Replace all roll pins, springs, capscrews, nuts, and washers that are included in the kit. Do not reuse all parts.

⚠ WARNING

Use only genuine Holland parts and do not modify, change or add to the product. Any alterations to the fifth wheel assembly could compromise its performance. This could result in the loss of the trailer connection during vehicle travel, possibly causing bodily injury and property damage.

Assembly and Installation (See Fig. 1)

⚠ WARNING

Do not attempt to repair or rebuild the top plate if it is cracked or distorted or if the lockpin does not fit tightly. The top plate could fail or the locks could malfunction. This could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

1. Inspect the top plate.
   - 1.1 If necessary, turn the fifth wheel upside down.
   - 1.2 Inspect the front lock surface for burrs or cracks. See **Fig. 2**. The front lock surface must be free of any burrs or cracks.
2. Install the lock.
   - 2.1 Lubricate the lockpin holes of the lock jaws with Never-Seez (provided in the kit). See **Fig. 3**.

⚠ CAUTION

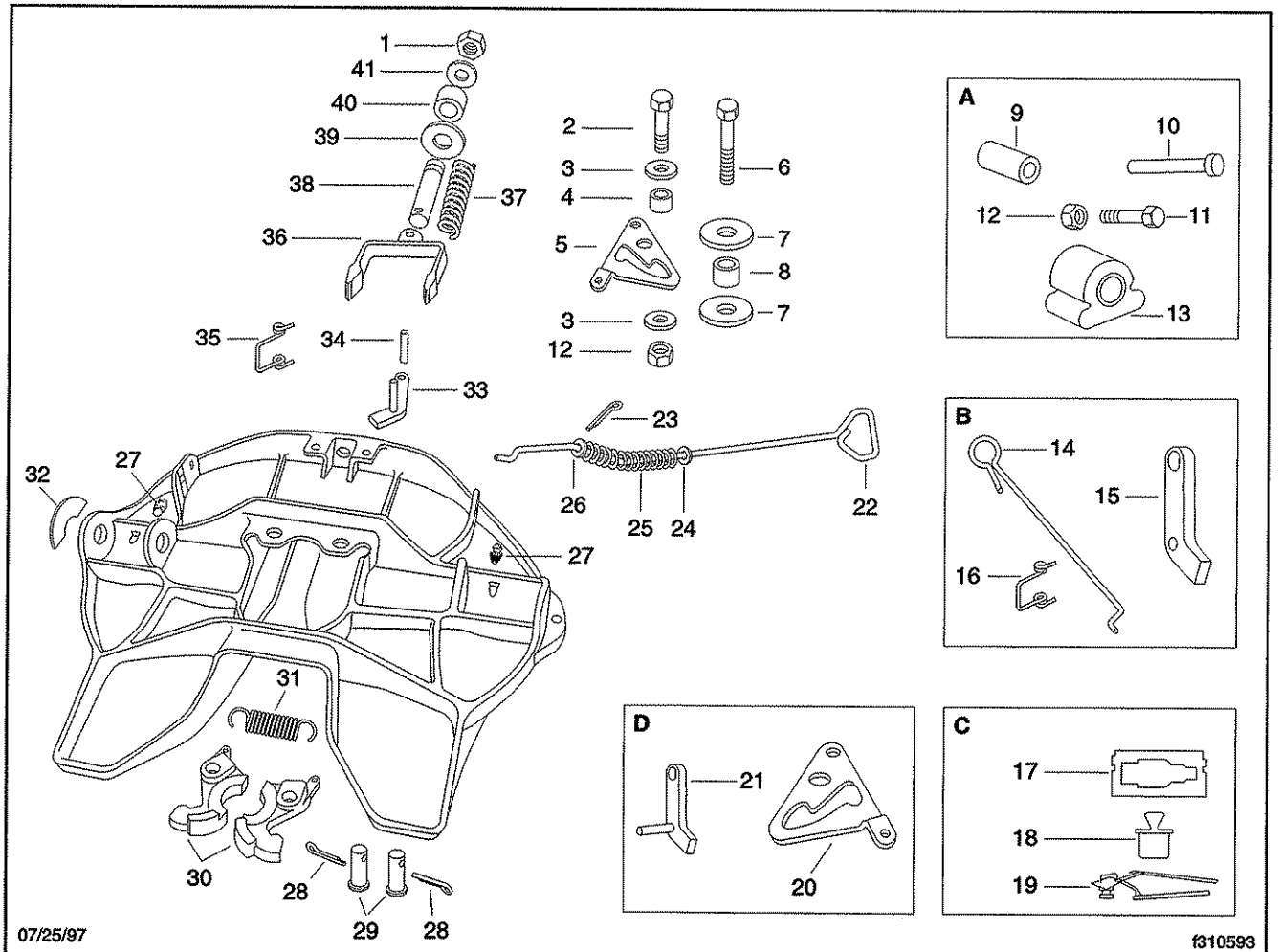
Use only Never-Seez. Other lubricants can damage the lockpin holes.

   - 2.2 Align the lock jaws in the casting and position the lock jaws so that the raised edge of the kingpin guides are facing up. See **Fig. 4**.
   - 2.3 Align the holes in the lockpins so that the cotter pins can be inserted. Insert the lockpins into the casting and through the lock jaws. Using a suitable hammer, drive the lockpins into the casting until the heads are flush with the casting. See **Fig. 5**.
   - 2.4 Insert the cotter pins and spread.
   - 2.5 Check that the lock jaws move freely.

⚠ WARNING

You must use a Holland lock gauge (TF–0237) or a precision plug that is 2.000 ± 0.005 inch (5.08 ± 0.0127 cm) for proper installation of the locking mechanism. If the proper plug is not used,

Model XA–351 Top Plate Assembly and Installation



A. Bushing Pin Assembly
B. Manual Secondary Lock Assembly
C. Fifth Wheel Accessories
D. Right Hand Secondary Lock Assembly

1. Locknut, 3/4–16
2. Capscrew, 1/2–20 x 1–3/4
3. Washer, 1–3/4" o.d. x 9/16" i.d.
4. Roller, 1/2" i.d.
5. Cam Plate (left-hand)
6. Capscrew, 5/8–18 x 3/4
7. Washer, 2–5/8 x 21/32
8. Roller, 5/8" i.d.
9. Rubber Bushing (brackets manufactured prior to 5/82)
10. Bracket Bushing Pin
11. Capscrew, 1/2–20 x 1–1/4
12. Locknut, 1/2–20
13. Rubber Bushing (brackets manufactured after 5/82)
14. Manual Secondary Lock Release Handle
15. Manual Secondary Lock
16. Torsion Spring
17. Kingpin Gauge
18. 2" Lock Gauge (Plug)
19. Kingpin Lock Tester
20. Cam Plate (right-hand)
21. Secondary Lock (right-hand)
22. Release Handle
23. Cotter Pin, 1/8 x 1–1/4
24. Washer, 1–3/8" o.d. x 9/16" i.d.
25. Compression Spring
26. Washer, 1–1/16" o.d. x 5/8" i.d.
27. Grease Zerk
28. Cotter Pin, 1/4 x 2
29. Lockpin
30. Lock Jaw Set
31. Extension Spring
32. Operation Tag
33. Secondary Lock (left-hand)
34. Roll Pin, 1/2 x 2–3/4
35. Torsion Spring
36. Yoke
37. Compression Spring
38. Yoke Shaft
39. Lock Adjustment Tag
40. Rubber Washer
41. Washer, 1–1/2" o.d. x 13/16" i.d.

Fig. 1, Holland 3500 Series XA-351 Fifth Wheel and Accessories (bottom view)

Model XA–351 Top Plate Assembly and Installation

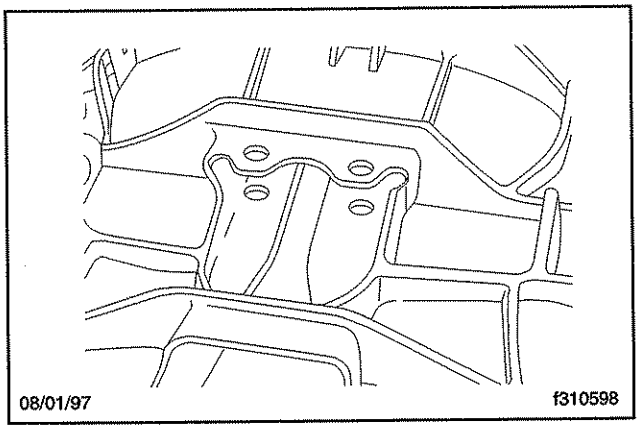


Fig. 2, Front Lock Surface Inspection

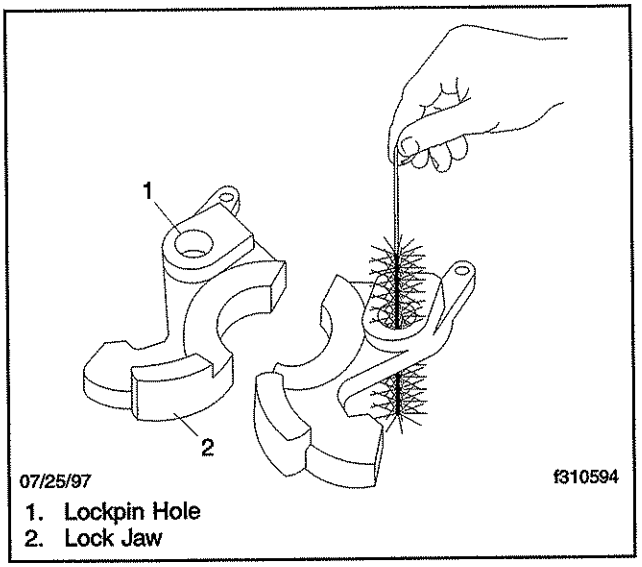


Fig. 3, Lubricate the Lockpin Holes

the lock could malfunction or fail. This could result in the loss of the trailer connection during vehicle travel, possibly causing personal injury and property damage.

2.6 Position a 2-inch (5.08 cm) diameter "plug" into the lock jaws. See **Fig. 6**. A lock gauge, Holland part number TF–0237 is available at a Holland distributor.

3. Install the yoke.

3.1 Lubricate the surface area of the yoke tips with light grease. With the threaded hole facing up, slide the yoke into the casting and seat it around the locks. See **Fig. 7**.

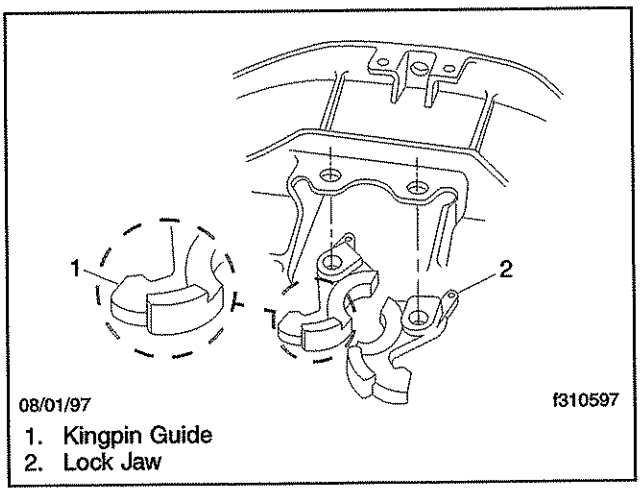


Fig. 4, Align the Lock Jaws

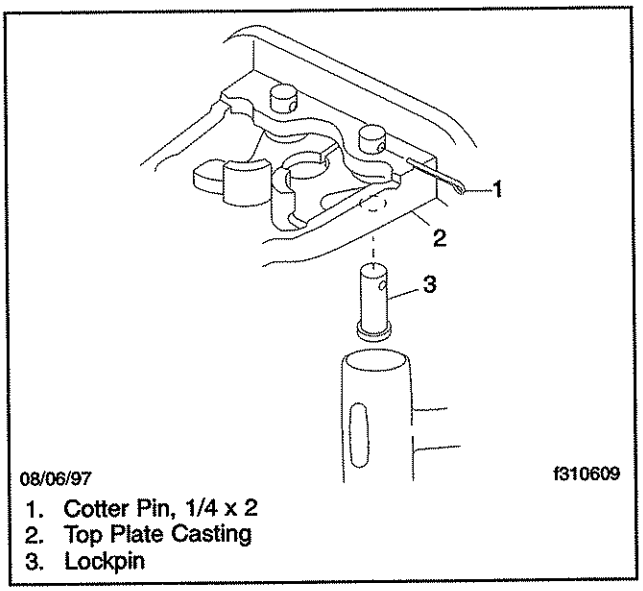
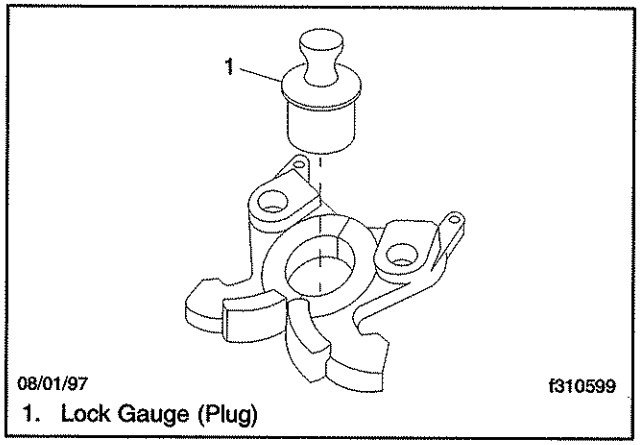


Fig. 5, Install the Lockpins

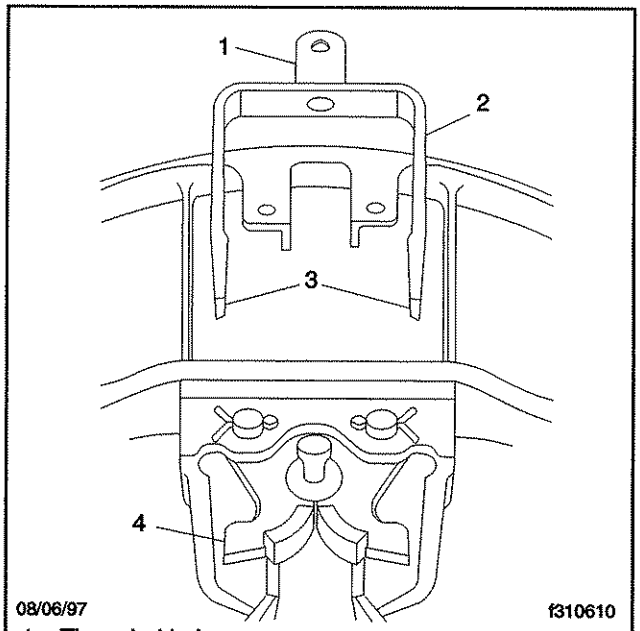
3.2 Inspect the amount of yoke tip engagement. Yoke tips must extend flush with the end of the locks and no more then 1/2 inch (12.7 mm) past the locks. See **Fig. 8**. If the new yoke extends more than 1/2 inch (12.7 mm) past the locks, *do not use it.* Discard it and order part number XA–07295–THK from your nearest Holland distributor.

Model XA–351 Top Plate Assembly and Installation



1. Lock Gauge (Plug)

Fig. 6, Install the Lock Gauge



1. Threaded hole
2. Yoke
3. Yoke Tips
4. Lock

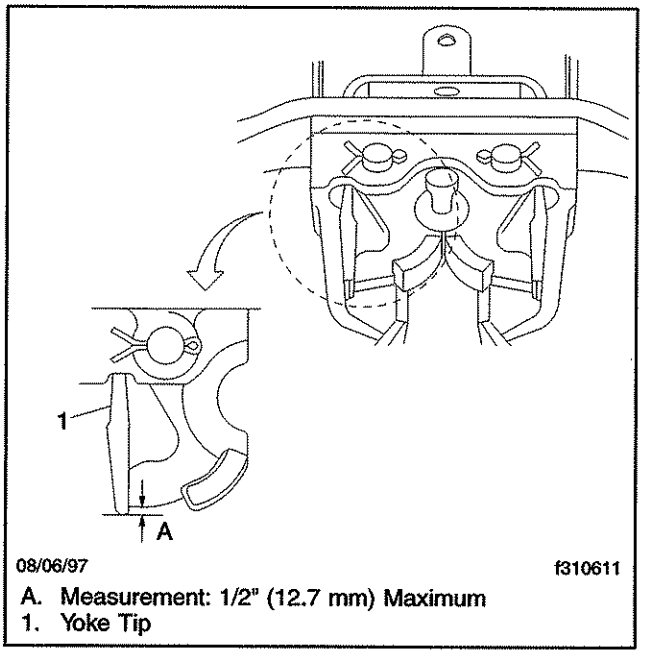
Fig. 7, Install the Yoke

3.3 Install the lock spring. See **Fig. 9.**

3.4 Install the yoke spring. Slide the yoke shaft into the casting, through the yoke spring and into the yoke. Align the recessed hole in the yoke shaft with the threaded hole in the yoke. See **Fig. 10.**

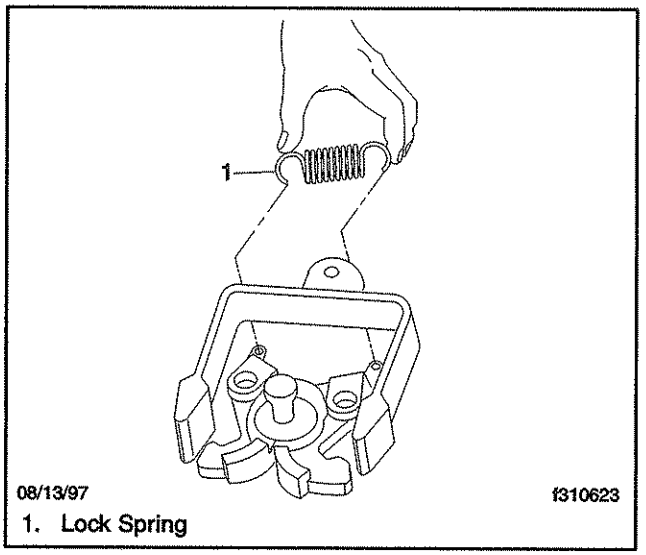
3.5 In this order, slide the lock adjustment tag, rubber washer, and 1-1/2 inch washer onto the yoke shaft. Then, start the locknut and turn it finger tight. See **Fig. 10.**

4. Install the release handle.



A. Measurement: 1/2" (12.7 mm) Maximum
1. Yoke Tip

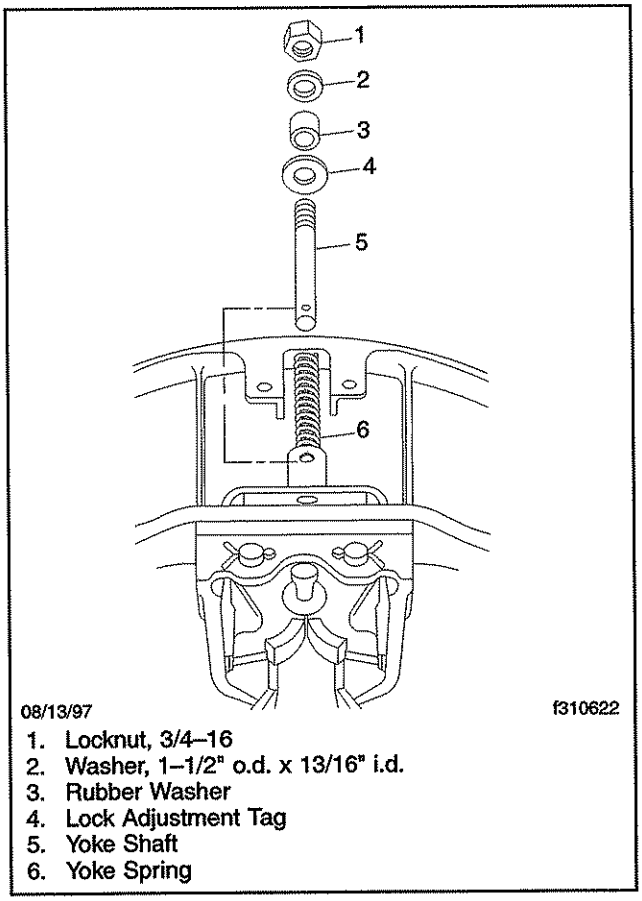
Fig. 8, Measure the Yoke Tip Engagement



1. Lock Spring

Fig. 9, Install the Lock Spring

Model XA–351 Top Plate Assembly and Installation



1. Locknut, 3/4–16
2. Washer, 1–1/2" o.d. x 13/16" i.d.
3. Rubber Washer
4. Lock Adjustment Tag
5. Yoke Shaft
6. Yoke Spring

Fig. 10, Install and Assemble the Yoke Shaft

4.1 Slide the release handle through the hole in the casting (on the left side for left release or on the right side for right release). See **Fig. 11.**

4.2 In this order, slide the 1-3/4 inch washer, compression spring, and 1-1/16 inch washer over the "S" bend of the release handle.

4.3 Compress the spring using the 1-1/16 inch washer until the cotter pin hole is exposed.

4.4 Insert the cotter pin; spread it and wrap it completely around the release handle. See **Fig. 11.**

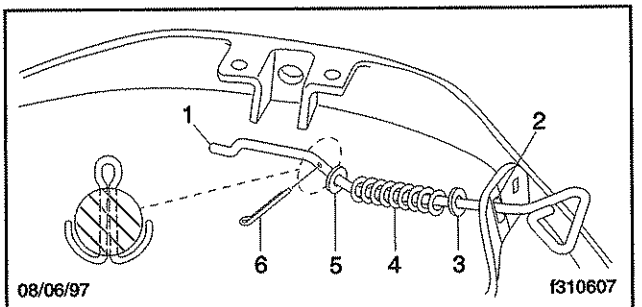
5. Install the cam plate.

5.1 Inspect the cam plate for burrs and remove as required.

5.2 Lubricate the cam plate track and pivot hole with light grease. Then connect the raised tab in the cam plate to the "S" bend in the release handle. See **Fig. 12.**

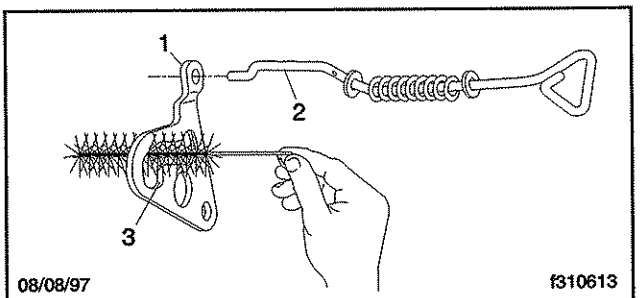
5.3 Position the cam plate attachment hole over the proper casting lug hole. Then, slide the 1-3/4 inch washer between the cam plate and casting lug hole with the rounded side of the washer facing the cam plate. Then install the 1/2-inch roller into the cam plate and place the second 1-3/4 inch washer on top of the roller with the rounded side facing the cam plate. See **Fig. 13.**

5.4 Install the 1/2-inch capscrew through the washers, roller, and top plate lug. Then, secure the capscrew with the 1/2-inch locknut and tighten securely. See **Fig. 13.**



1. Release Handle
2. Casting Hole
3. Washer, 1–3/8" o.d. x 9/16" i.d.
4. Compression Spring
5. Washer, 1–1/16" o.d. x 5/8" i.d.
6. Cotter Pin, 1/8 x 1–1/4

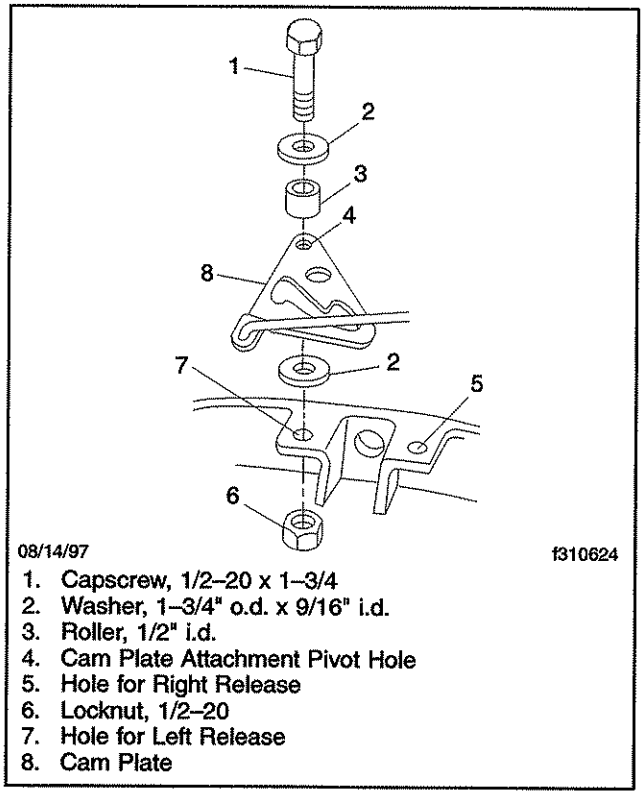
Fig. 11, Install the Release Handle



1. Cam Plate Raised Tab
2. Release Handle
3. Cam Plate Track

Fig. 12, Lubricate the Cam Plate

Model XA–351 Top Plate Assembly and Installation



1. Capscrew, 1/2–20 x 1–3/4
2. Washer, 1–3/4" o.d. x 9/16" i.d.
3. Roller, 1/2" i.d.
4. Cam Plate Attachment Pivot Hole
5. Hole for Right Release
6. Locknut, 1/2–20
7. Hole for Left Release
8. Cam Plate

Fig. 13, Install the Cam Plate

5.5 Check for free movement of the cam plate.

NOTE: When installing the washers, the rounded edge of the washers *must* always face the cam plate.

5.6 Align the cam plate track over the threaded hole in the yoke. Then slide a 2-5/8 inch o.d. washer between the yoke and the cam plate with the rounded side of the washer facing the cam plate. Then place the 5/8-inch roller into the cam plate track and place the second 2-5/8 inch o.d. washer over the roller with the rounded side of the washer facing the cam plate. See **Fig. 14**.

5.7 Check the alignment of the recessed hole in the yoke shaft. Then, install the 5/8-inch capscrew through the washers, roller, and cam plate and into the threaded hole in the yoke. Make sure the capscrew enters the recessed hole in the yoke shaft. Then, tighten the capscrew securely. See **Fig. 14**.

5.8 Check for free movement of the cam plate.

6. Install the secondary lock.

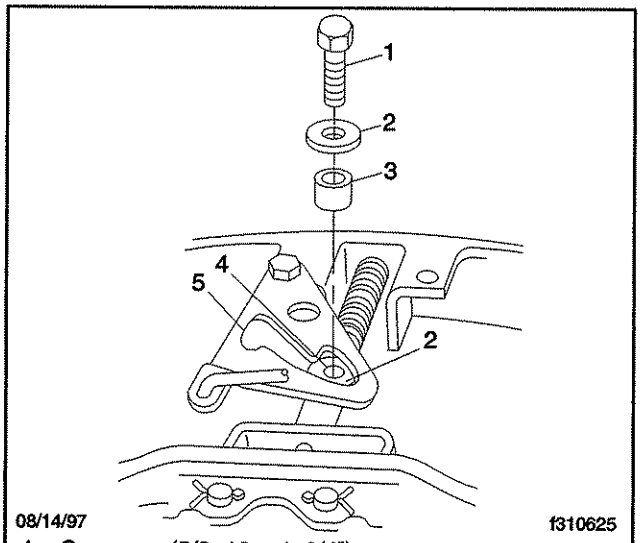
6.1 If equipped with the automatic version, start the roll pin into the hole in the top plate opposite the cam attachment capscrew. Then, assemble and install the secondary lock and torsion spring. Make sure the flats of the torsion spring are resting against the casting. See **Fig. 15**.

With a suitable hammer, drive the roll pin through the torsion spring and secondary lock until the roll pin is flush with the casting. See **Fig. 15**.

Check the lock spring for tension and lock for free movement.

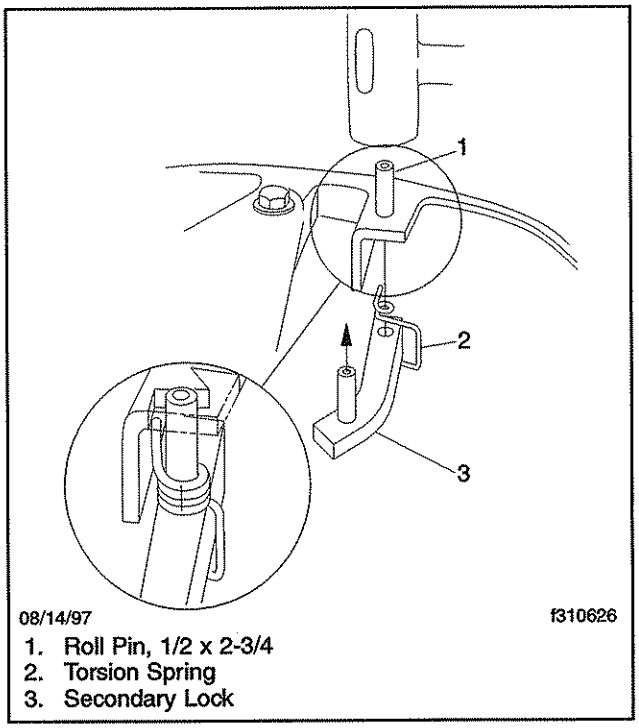
6.2 Pass the "S" bend of the manual secondary release handle through the casting guide hole (if equipped with the manual version). Then, pass the "S" bend of the release handle through the large hole in the secondary lock. See **Fig. 16**.

6.3 Start the roll pin into the hole in the top plate opposite the cam attachment capscrew (if equipped with the manual version). Then, assemble and install the sec-



1. Capscrew (5/8–18 x 1–3/4")
2. Washer (2-5/8 x 21/32")
3. Roller (5/8" i.d.)
4. Threaded Hole in Yoke
5. Cam Plate Track

Fig. 14, Install the Capscrew Into the Yoke



1. Roll Pin, 1/2 x 2-3/4
2. Torsion Spring
3. Secondary Lock

Fig. 15, Install the Secondary Lock

ondary lock and torsion spring. Make sure the flats of the torsion spring are resting against the casting. See **Fig. 16**.

6.4 With a suitable hammer, drive the roll pin through the torsion spring and secondary lock until the roll pin is flush with the casting (if equipped with the manual version). See **Fig. 16**.

6.5 Check the lock spring for tension and lock for free movement.

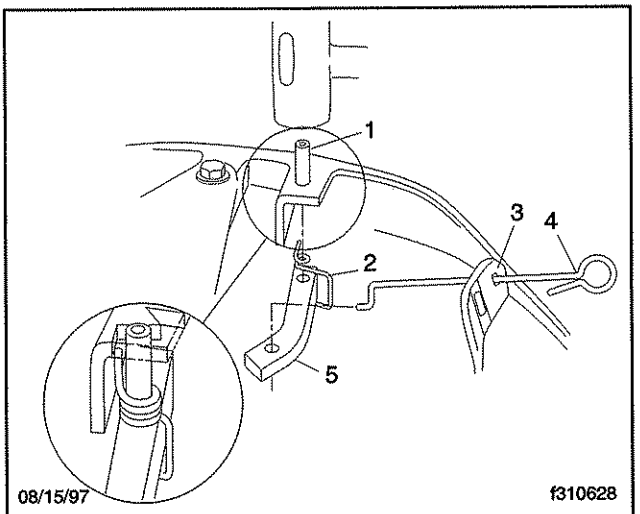
7. Adjust the lock. See **Fig. 17**.

7.1 If equipped, pull the secondary release handle and hook it on the casting. Next, pull the primary release handle to open the locks. Now, remove the 2-inch plug.

7.2 Turn the fifth wheel right side up and close the locks using a Holland Lock tester (see Holland publication FW130 for operating instructions for the lock tester).

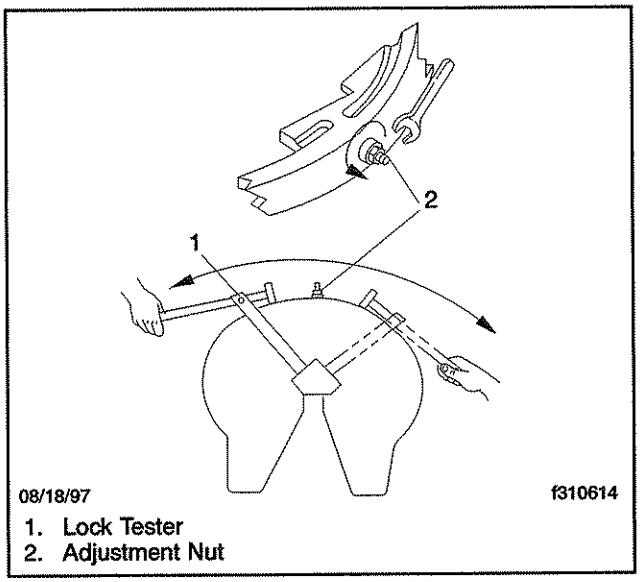
7.3 Verify that the locks are completely closed around the kingpin. The lock halves should be seated against each other.

7.4 Alternate tightening the adjustment nut and attempting to turn the lock tester back and forth. Continue tightening the adjustment nut until there is some resistance felt in the lock tester (as it is turned back and forth).



1. Roll Pin, 1/2 x 2-3/4
2. Torsion Spring
3. Guide Hole
4. Secondary Lock Release Handle
5. Secondary Lock

Fig. 16, Install the Secondary Lock



1. Lock Tester
2. Adjustment Nut

Fig. 17, Adjusting the Lock

Model XA–351 Top Plate Assembly and Installation

The fifth wheel is properly adjusted when there is resistance between locks and the lock tester, but the lock tester can still be turned by hand.

7.5 Pull the release handle and remove the lock tester.

8. Check the fifth wheel for proper operation.

8.1 Using the Holland lock tester, open and close the fifth wheel at least three times.

Each time you close the locks, verify that the locks have closed completely around the kingpin and that the adjustment nut and rubber bushing are seated snug against the casting.

8.2 Check for resistance between the locks and the lock tester one final time, and adjust as needed.

⚠ WARNING

If the fifth wheel does not operate properly, do not use it. Either disassemble it and repeat the rebuilding procedure or contact your nearest Holland representative for assistance. Never use a fifth wheel that does not operate properly. The fifth wheel could malfunction, resulting in bodily injury or property damage due to a possible separation of the trailer from the tractor.

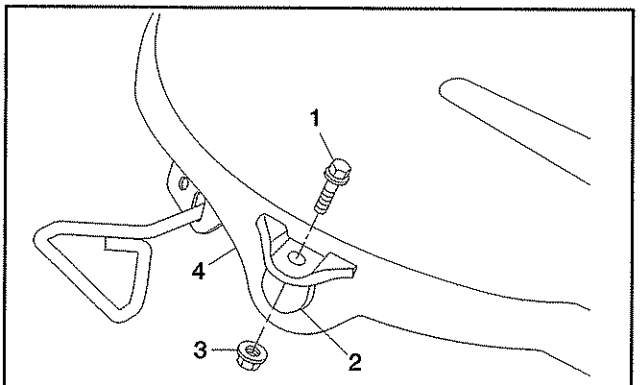
8.3 The fifth wheel is now ready for operation.

9. Install the top plate.

9.1 Using an overhead hoist, lift and position the fifth wheel over the bracket assembly.

9.2 Install the bushing pins through the fifth wheel and into the bracket assembly. Then, install and tighten securely the 1/2–20 bushing pin capscrews and locknuts. See **Fig. 18.** Remove the overhead hoist.

9.3 Lubricate the fifth wheel. For instructions, see **Group 31** of the *Business Class Trucks Maintenance Manual.*



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1. Capscrew
2. Bushing Pin
3. Locknut
4. Top Plate

Fig. 18, Install the Bushing Pin

Troubleshooting Tables

Problem—The Fifth Wheel Is Hard to Hook Up to the Trailer

Problem—The Fifth Wheel Is Hard to Hook Up to the Trailer	
Possible Cause	**Remedy**
The trailer may be too high; the kingpin is not entering the locks properly.	Lower the trailer landing gear until the bolster plate contacts the fifth wheel
The locks are closed.	Pull the release handle and pry open the locks.
Rust or grime is interfering with the lock operation.	Spray a light lubricant or diesel fuel on all moving parts including the release handle. Operate the release mechanism several times.
The fifth wheel locks are too tight.	Check the lock adjustment. Correct as needed.
A bent release handle, bent kingpin, or damaged bolster plate is interfering with the lock movement.	Check the release handle, kingpin, and bolster plate. Replace parts as required.
The locks are damaged.	Inspect the locks and replace parts as required.
The fifth wheel needs rebuilding.	Rebuild the fifth wheel, using the parts in the appropriate rebuilding kit.

Problem—The Fifth Wheel Is Hard to Unhook from the Trailer

Problem—The Fifth Wheel Is Hard to Unhook from the Trailer	
Possible Cause	**Remedy**
The secondary lock is not released.	If equipped with a manual secondary lock, pull the release handle and lock it open by resting it against the top plate. If equipped with an automatic secondary lock, inspect the lock for missing or broken parts, and repair or replace as required.
The tractor is putting pressure against the locks.	Set trailer brakes. Back the tractor into the trailer to relieve pressure and lock the tractor brakes before pulling the release handle.
There is rust or grime on the locking mechanism.	Spray a light lubricant or diesel fuel on all moving parts including the release handle. Operate the release mechanism several times.
The kingpin is bent or the bolster plate is damaged.	Check the kingpin, using a Holland TF–0110 Kingpin Gauge. Check the bolster plate, using a 48-inch (122 cm) straight edge. Repair or replace parts as required.
The fifth wheel locks are too tight.	Check the lock adjustment. Correct as needed.
The release handle will not stay out or must be held out when unlocking.	Replace the cam or release arm and the release handle spring.

Contents

Subject	Subject Number
General Information and Principles of Operation	050
Service Operations	
Removal and Disassembly	100
Assembly and Installation	110
Troubleshooting	300

General Description

Fontaine 5000 series fifth wheels are used for pulling trailers having a standard kingpin. When installed as a stationary fifth wheel, it is bracket-mounted to the tractor frame in a position that best distributes the trailer load over the tractor axles **(Fig. 1).**

The Fontaine fifth wheel lock mechanism for the trailer kingpin consists of a spring-loaded jaw and a sliding wedge. Kingpin release is accomplished by activating a manual lock control handle located on the left side (roadside) of the fifth wheel. Kingpin lockup occurs when the kingpin is forced into the jaws and the lock control handle moves to the locked position.

Principles of Operation

As the kingpin enters the lock mechanism, the jaw is moved first with the spring-loaded wedge sliding in place against the jaw. **See Fig. 2.** The jaw will move behind the kingpin, followed by the wedge. The wedge reinforces the jaw and takes up slack around the kingpin.

Placing the lock control handle in the unlocked position moves the wedge and jaw out from behind the kingpin. This action unlocks the fifth wheel, allowing freedom of movement underneath the trailer when the tractor is moved.

Refer to the vehicle driver's manual for complete operating instructions.

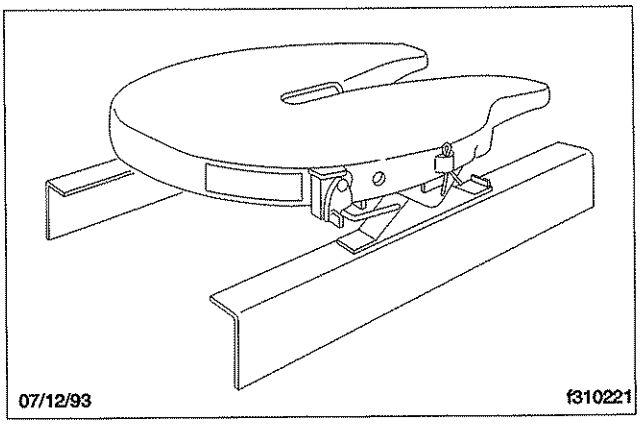


Fig. 1, Fontaine 5000 Series Fifth Wheel and Angle Mount

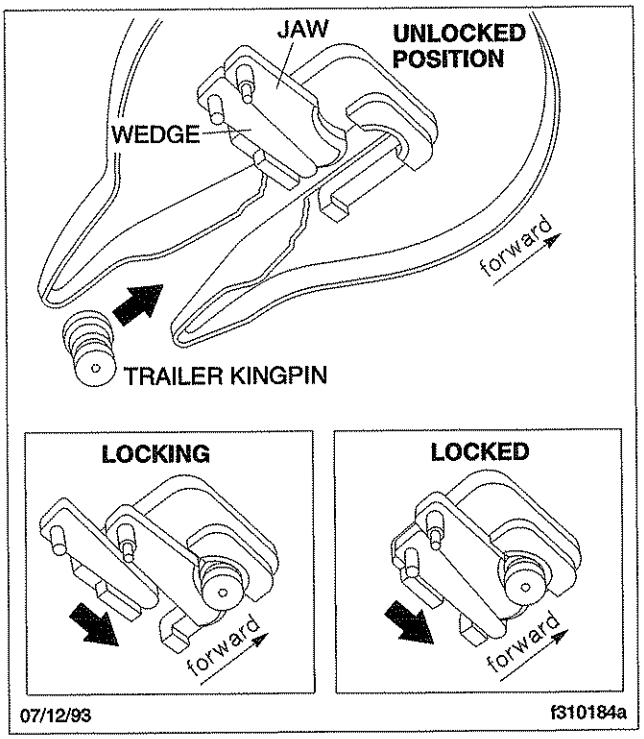


Fig. 2, Fontaine Kingpin Lock Mechanism

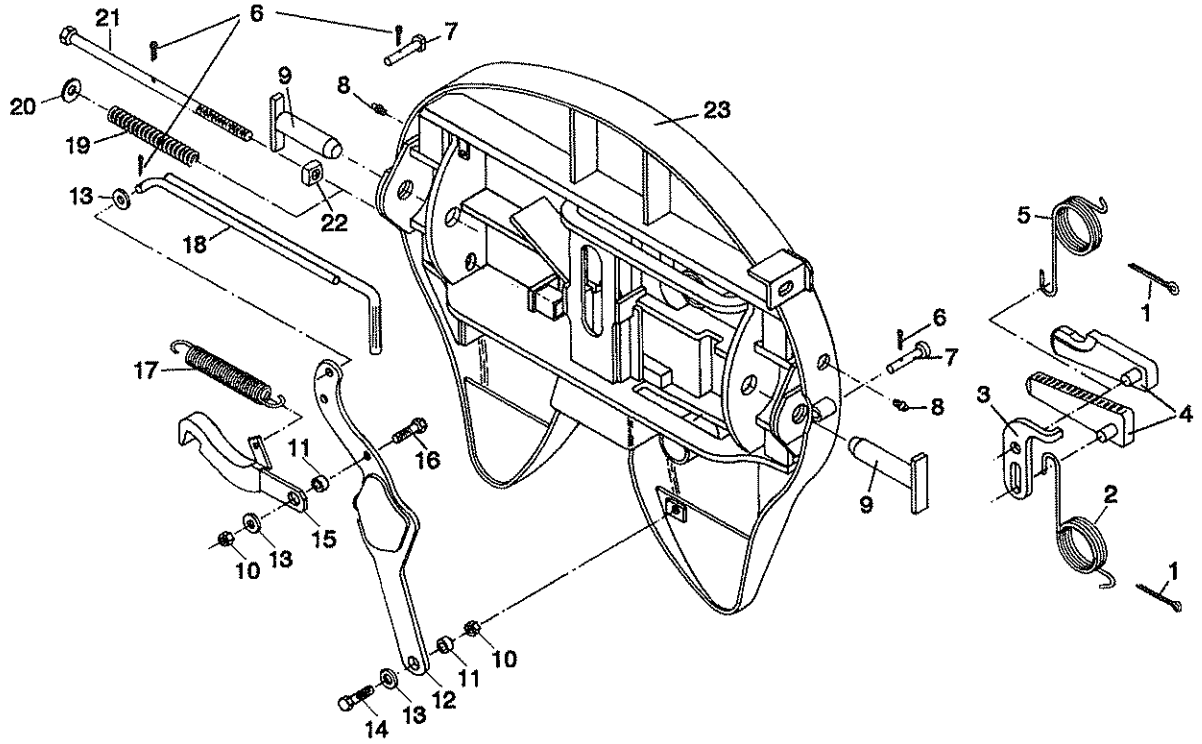
Removal and Disassembly (See Fig. 1)

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in a hazardous operating condition due to a possible disengagement of the trailer from the tractor.

Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.

1. Steam clean the top plate. Remove it from the sliding mount by removing the cotter pins (Ref. 6) from the retaining pins (Ref. 7). Remove the retaining pins and bushing pins (Ref. 9) from both sides of the top plate.
2. Using an overhead hoist, lift the fifth wheel off the angle mount and tractor frame.
3. Turn the fifth wheel upside down.



1. 3–Inch Cotter Pin
2. Wedge Spring
3. Timer
4. Jaw and Wedge
5. Jaw Spring
6. 1–Inch Cotter Pin
7. Retaining Pin
8. Grease Fitting
9. Bushing Pin
10. 1/2–13 Locknut
11. Pivot Bushing
12. Operating Handle
13. 1/2–Inch Flatwasher
14. 1/2–13 x 2–Inch Hexhead Capscrew
15. Bumper
16. 1/2–13 x 1–1/2 Inch Hexhead Capscrew
17. Bumper Spring
18. Release Handle
19. Wedge Stoprod Spring
20. 5/8–Inch Flatwasher
21. Wedge Stoprof
22. 5/8–11 Square Nut
23. Fifth Wheel Top Plate

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Fig. 1, Fontaine 5000 Series Fifth Wheel (Left-Side Release Shown)

Removal and Disassembly

⚠ WARNING

Do not attempt to repair or rebuild the top plate if it is cracked or if parts are damaged. The top plate or parts could malfunction. This could result in disengagement of the trailer during vehicle travel, possibly causing personal injury and property damage.

NOTE: While disassembling the fifth wheel, check it for cracks and for missing or damaged parts.

4. Unhook the bumper spring (Ref. 17) from its clasp. See **Fig. 2.**
5. Remove the two hexhead capscrews (Refs. 14 and 16) from the operating handle (Ref. 12). See **Fig. 3.**
6. Remove the bumper (Ref. 15). See **Fig. 4.**
7. Remove the cotter pin (Ref. 6) and flatwasher (Ref. 13) that attach the release handle (Ref. 18) to the operating handle.

   Slide the release handle out through the side of the fifth wheel. See **Fig. 5.**
8. Slide the operating handle over to the side of the fifth wheel. See **Fig. 6.**

NOTE: Slide the bottom part of the operating handle first. This will allow the handle to clear the studs under the handle.

9. Lift the timer (Ref. 3) off the studs. See **Fig. 7.**
10. Slide the operating handle out through the slot at the top or bottom of the fifth wheel. See **Fig. 8.**
11. Using pliers or a screwdriver, pry the wedge and jaw springs (Refs. 2 and 5) over the studs. See **Fig. 9.**
12. Remove the jaw and wedge (Ref. 4). See **Fig. 10.**
13. Remove the jaw and wedge springs as follows:
    - 13.1 Remove the cotter pin **(Fig. 11).**
    - 13.2 Using a screwdriver, pry up on the spring to relieve tension and remove it. See **Fig. 12.**

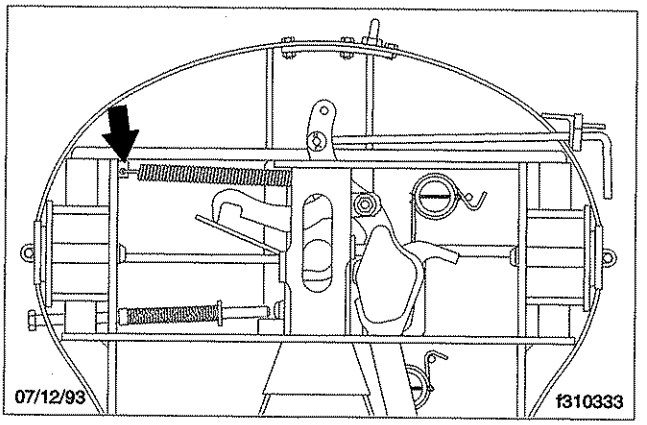


Fig. 2

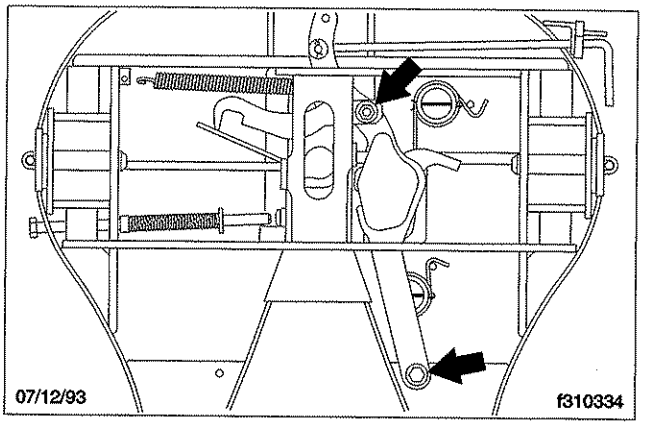


Fig. 3

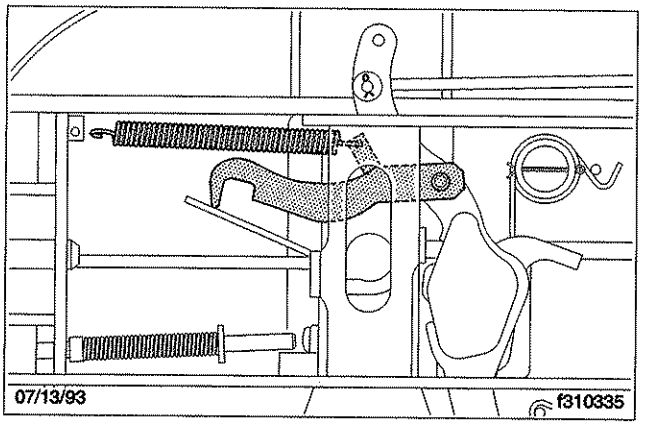


Fig. 4

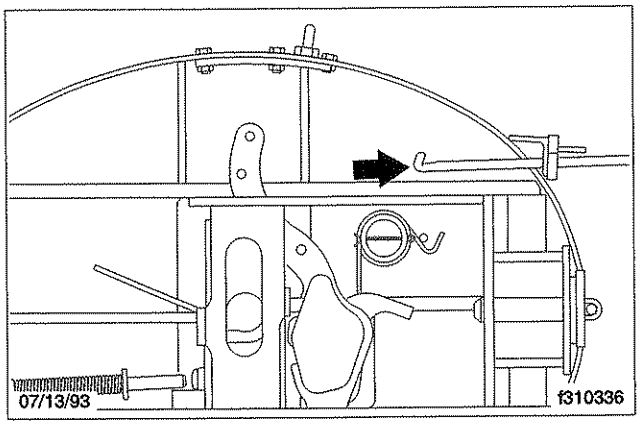


Fig. 5

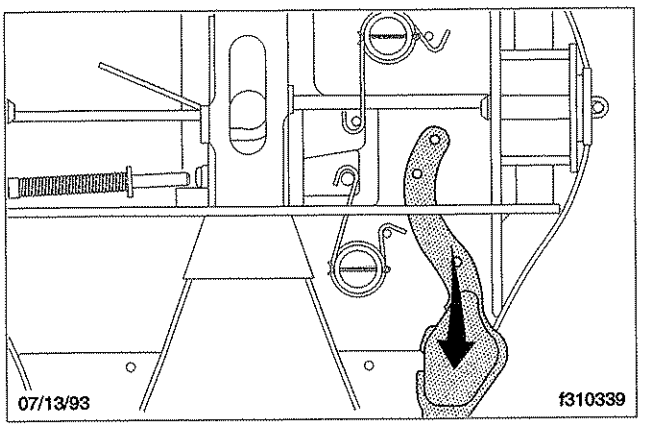


Fig. 8

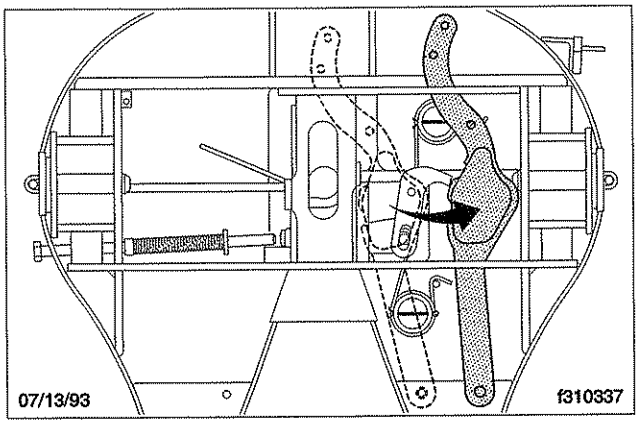


Fig. 6

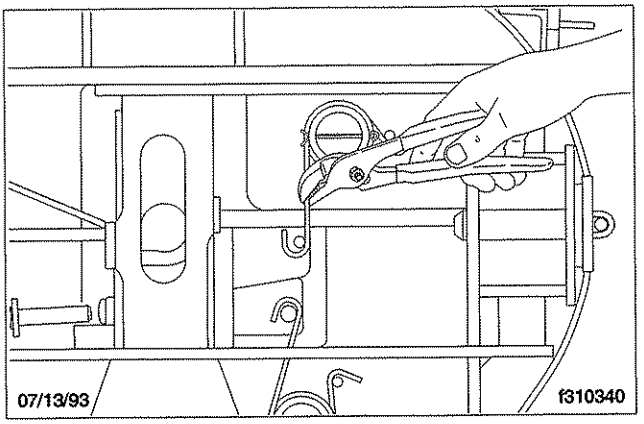


Fig. 9

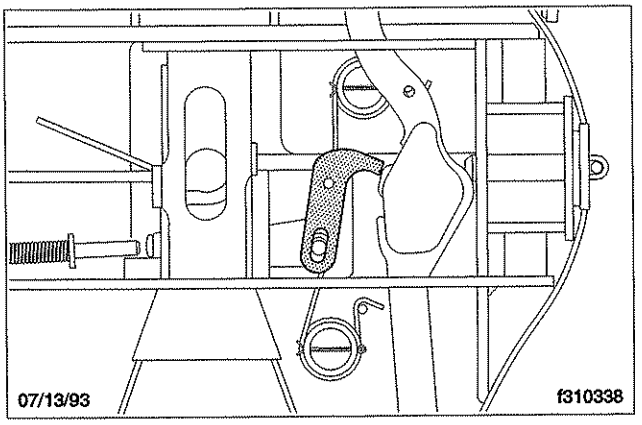


Fig. 7

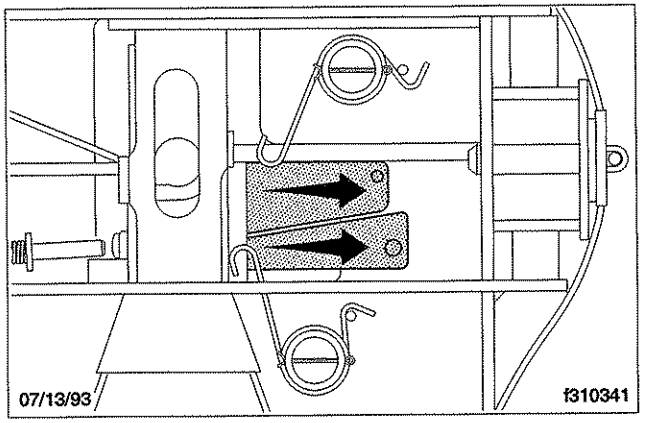


Fig. 10

Removal and Disassembly

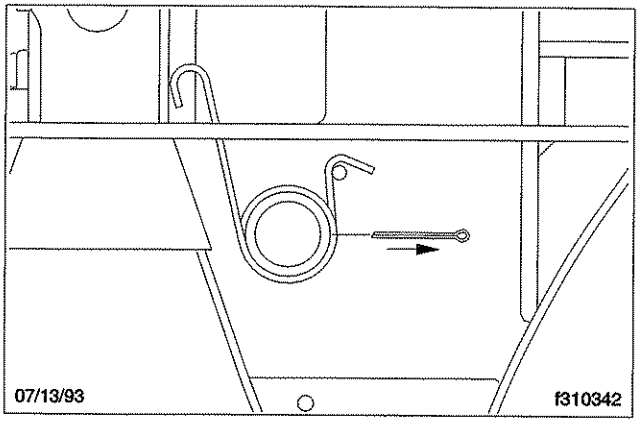


Fig. 11

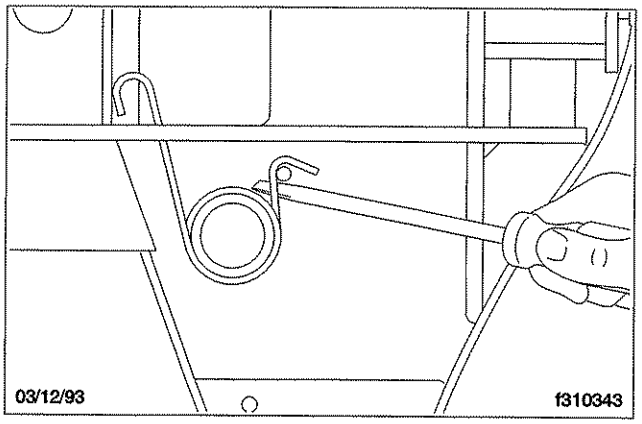


Fig. 12

Assembly and Installation (See Fig. 1)

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in a hazardous operating condition due to a possible disengagement of the trailer from the tractor.

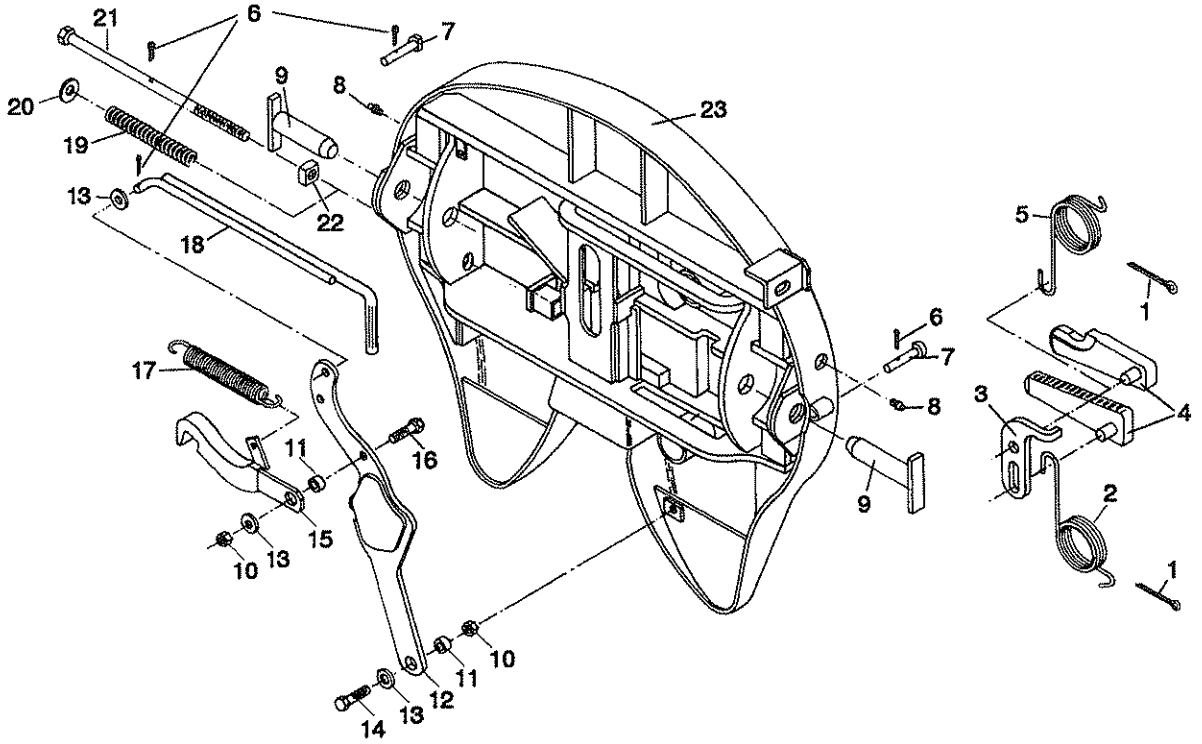
Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.

IMPORTANT: Replace any parts that show signs of wear, damage, or deterioration.

⚠ WARNING

When cleaning parts with no. 2 diesel fuel, do not smoke or use an open flame near the area. To do so could result in a possible fire.

1. Clean all moving parts with no. 2 diesel fuel before assembly.



1. 3–Inch Cotter Pin
2. Wedge Spring
3. Timer
4. Jaw and Wedge
5. Jaw Spring
6. 1–Inch Cotter Pin
7. Retaining Pin
8. Grease Fitting
9. Bushing Pin
10. 1/2–13 Locknut
11. Pivot Bushing
12. Operating Handle
13. 1/2–Inch Flatwasher
14. 1/2–13 x 2–Inch Hexhead Capscrew
15. Bumper
16. 1/2–13 x 1–1/2 Inch Hexhead Capscrew
17. Bumper Spring
18. Release Handle
19. Wedge Stoprod Spring
20. 5/8–Inch Flatwasher
21. Wedge Stoprof
22. 5/8–11 Square Nut
23. Fifth Wheel Top Plate

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Fig. 1, Fontaine 5000 Series Fifth Wheel (Left-Side Release Shown)

Assembly and Installation

2. Insert the wedge spring through the slot and lay the spring coil over the spring bracket. See **Fig. 2.**
3. Insert the spring tool part number 710 into the spring bracket (**Fig. 3**). Engage the small hooked tail and wind it around until it is directly over the small stud at the back of the bracket.

   Using a hammer, tap down on the spring until it catches on the stud. Install the cotter pin (**Fig. 4**).

NOTE: Order the spring tool part number 710 from: Fontaine Fifth Wheel Company 125 Cleage Drive Birmingham, Alabama 35217

4. The jaw spring has very little tension; install it by hand.
5. Install a 2-inch diameter shaft where the kingpin will engage in the fifth wheel.
6. Apply a moderate amount of a multipurpose chassis grease to the sides and serrated edges of the jaw and wedge (**Fig. 1**, Ref. 4), and also the stationary jaw in the throat of the fifth wheel.
7. Install the wedge and jaw.
8. Using pliers or a screwdriver, pry the jaw and wedge springs over the studs. See **Fig. 5.**
9. Insert the operating handle (Ref. 12) and move it over to the side of the wheel. Apply a moderate amount of multipurpose chassis grease to the grooved middle section of the operating handle.
10. Install the timer (Ref. 3) over the studs.

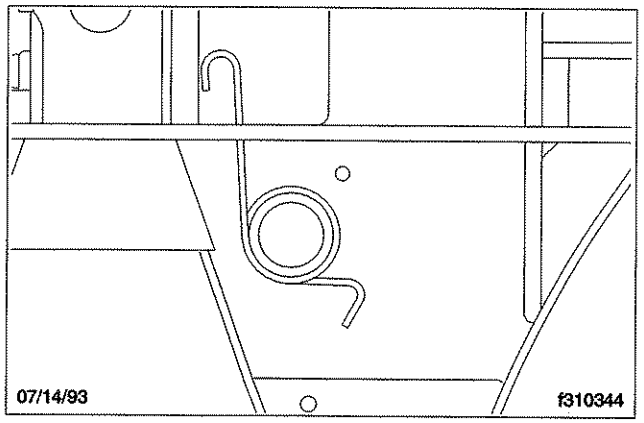


Fig. 2

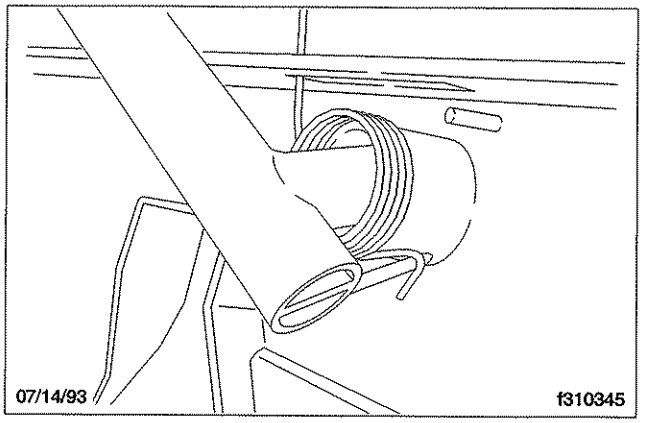


Fig. 3

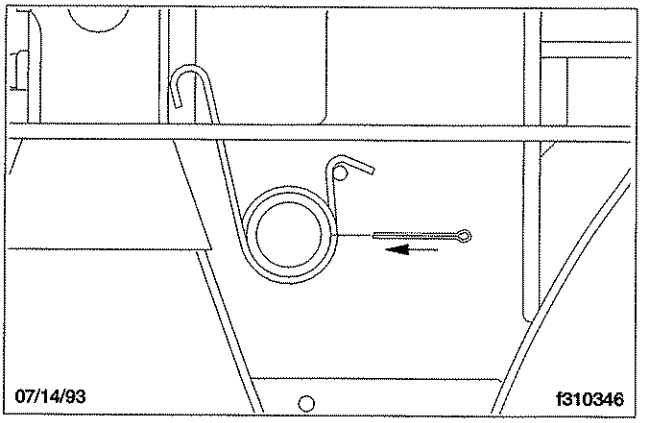


Fig. 4

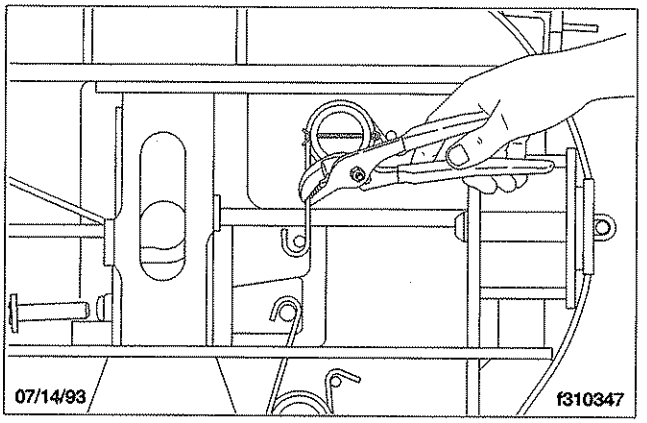


Fig. 5

NOTE: The small hole on the timer fits over the top stud. Make sure the small bent arm of the timer is facing down.

11. Slide the operating handle (top part first) over to the side. Make sure that the handle is in a vertical position once it goes over the studs. See **Fig. 6**.
12. Slide the release handle (Ref. 18) in through the safety lock. Using a flatwasher (Ref. 13) and cotter pin (Ref. 6), attach the release handle to the second hole from the top on the operating handle.
13. Position the bumper (Ref. 15), then attach it to the operating handle with a new 1/2–13 x 1-1/2 inch capscrew (Ref. 16), bushing, washer, and locknut.
14. On the other end of the operating handle, install a new 1/2–13 x 2-inch capscrew (Ref. 14), washer, bushing, and locknut.
15. Apply multipurpose chassis grease to the operating handle, and to other fifth wheel parts that may come into contact with the handle during operation.
16. Connect the bumper spring.
17. Using multipurpose chassis grease, grease the top plate and the zerk fittings on the side of the fifth wheel.

    On heavy-duty oscillating fifth wheels, grease the top of the rocker bearing bushing.
18. Measure the distance from the wedge to the end of the wedge stoprod (**Fig. 7**). The correct measurement should be 3 mm (3/8 inch). Turn the wedge stoprod clockwise if the measurement is more than 3 mm (3/8 inch), or turn it counterclockwise if the measurement is less than 3 mm (3/8 inch).

⚠ WARNING

If the fifth wheel does not operate properly, do not use it. The fifth wheel could malfunction, resulting in personal injury or property damage due to possible disengagement of the trailer from the tractor.

IMPORTANT: The fifth wheel must be well lubricated to operate correctly. Refer to the frame and fifth wheel section of the vehicle maintenance manual for complete maintenance and lubrication instructions of the fifth wheel assembly.

19. Using an overhead hoist, position the fifth wheel on the sliding mount assembly. Insert the bushing pins. Install the retaining pins and the 1-inch long cotter pins.

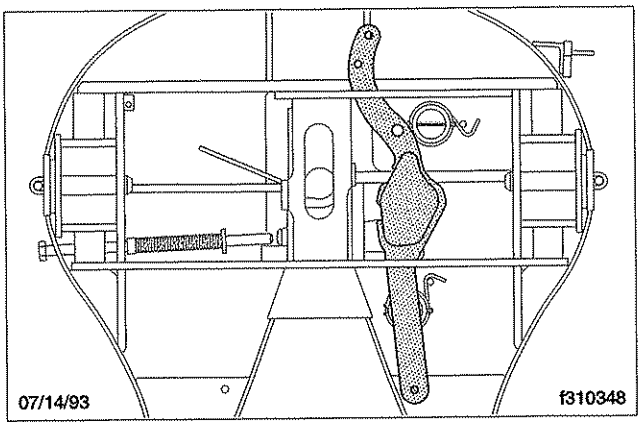


Fig. 6

Assembly and Installation

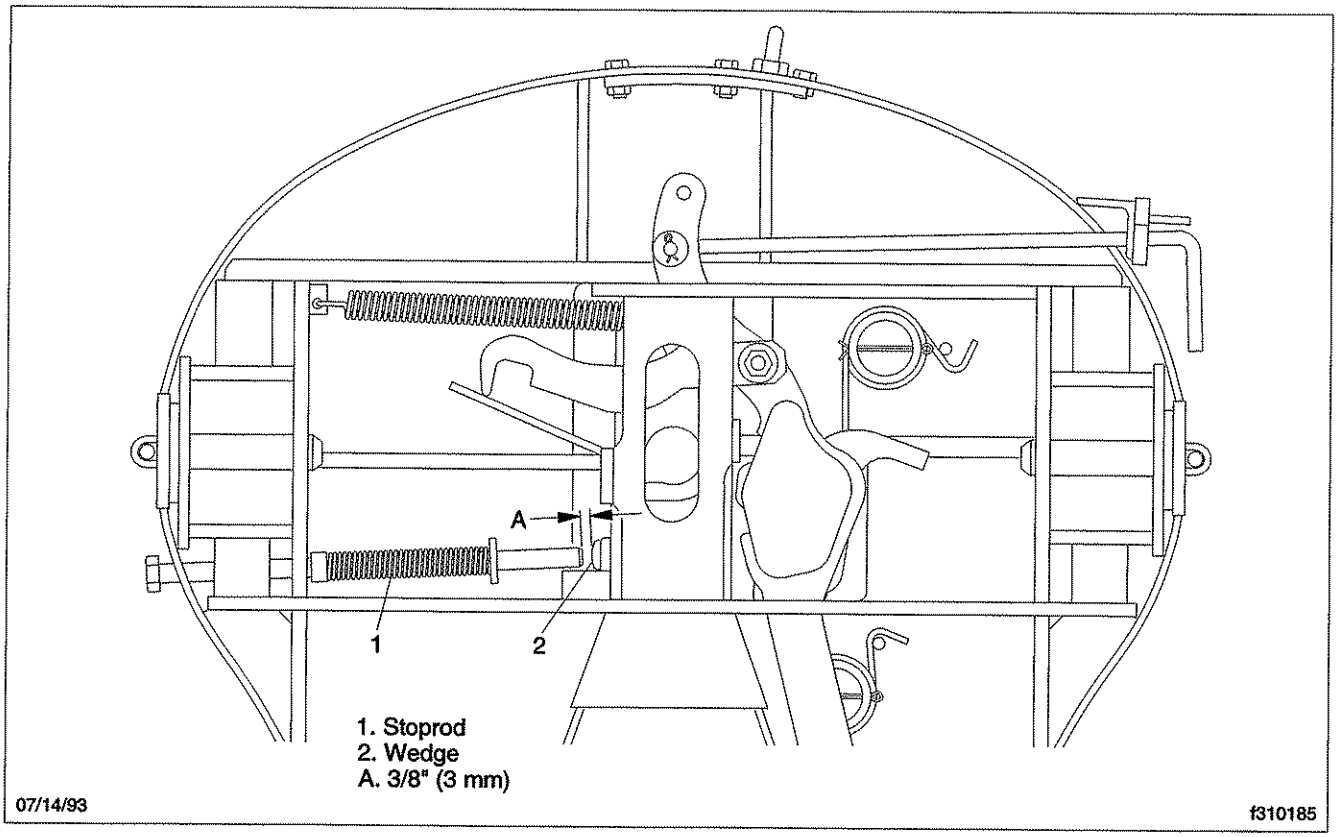


Fig. 7

Problem—The Fifth Wheel Is Hard to Hook Up to the Trailer

Possible Cause	Remedy
The trailer may be too high; the kingpin is not entering the locks correctly.	Lower the trailer landing gear until the trailer plate contacts the fifth wheel.
Bent kingpin, or damaged trailer plate is interfering with the lock movement.	Check the kingpin and trailer plate. Replace parts as needed.

Problem—The Fifth Wheel Is Hard to Unhook from the Trailer

Possible Cause	Remedy
The tractor is putting pressure against the locks.	Back the tractor into the trailer; set the tractor brakes. Strike the wedge stoprod to release pressure.
Too much slack in the fifth wheel locks.	Check that the wedge stoprod is 3 mm (3/8 inch) from the end of the wedge. Adjust as needed.
	Check the kingpin diameter; it should not be worn more than 3 mm (3/8 inch). Replace if needed.
	Check the jaw and wedge for excessive wear. Replace if needed.

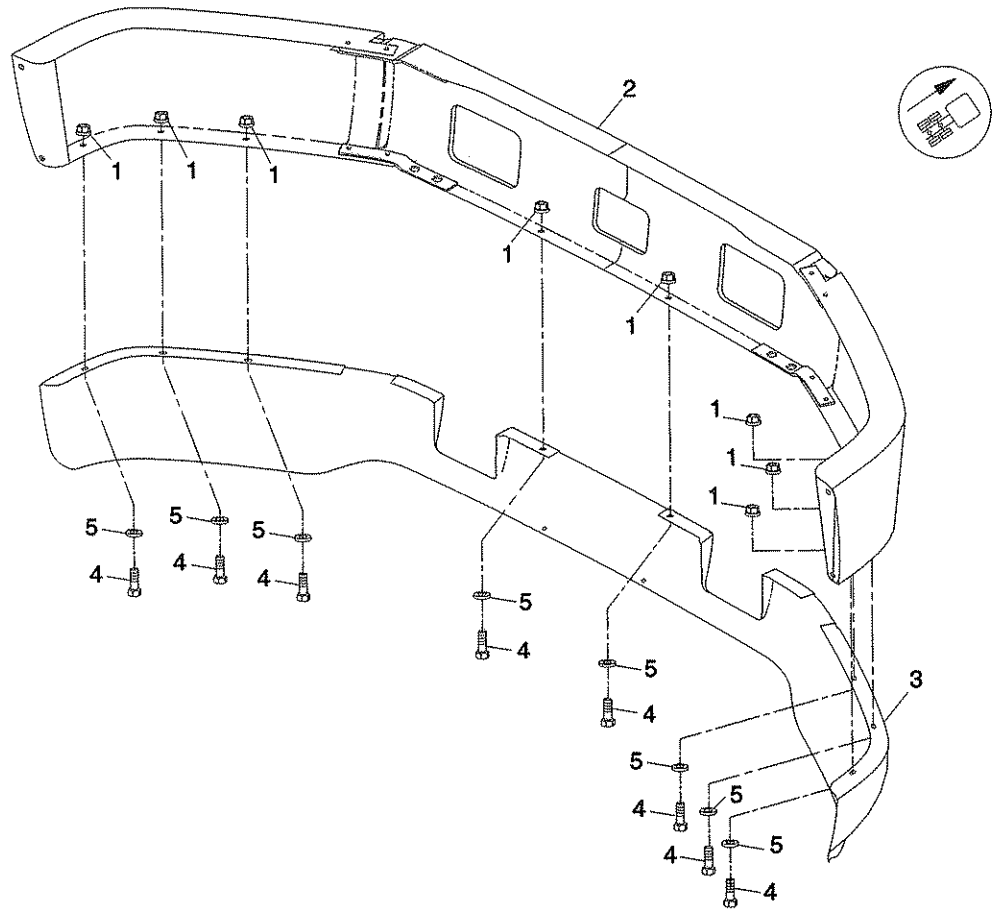
Contents

Subject	Subject Number
Bumper and Air Dam Removal and Installation	100

Bumper and Air Dam Removal and Installation

Removal

1. Park the vehicle on a level surface; then apply the parking brakes. Chock the tires.
2. If equipped with road lights, remove them from the bottom of the bumper.
   - 2.1 Disconnect the wiring from each road light.
   - 2.2 Remove the fasteners that attach the road light mounting bracket to the bottom of the bumper; then remove the road light and its mounting bracket.
3. Remove the air dam from the bumper.
   - 3.1 Remove the 1/4–20 fasteners that attach the air dam to the bottom of the bumper. **See Fig. 1.**
   - 3.2 Remove the air dam from the bumper. Set it aside.
4. Remove the bumper.
   - 4.1 On each side of the vehicle, remove the upper and lower outboard fasteners holding



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NOTE: Road lights not shown.

1. 1/4–20 Hexnut
2. Bumper
3. Air Dam
4. 1/4–20 Hexbolt
5. 1/4-inch Washer

Fig. 1, Bumper and Air Dam

Bumper and Air Dam Removal and Installation

the bumper extension to the bumper. **See Fig. 2.**

4.2 Loosen the upper and lower inboard bumper extension fasteners enough so you can swing the bumper extension out of the way. This will provide easier access to the upper bumper fasteners.

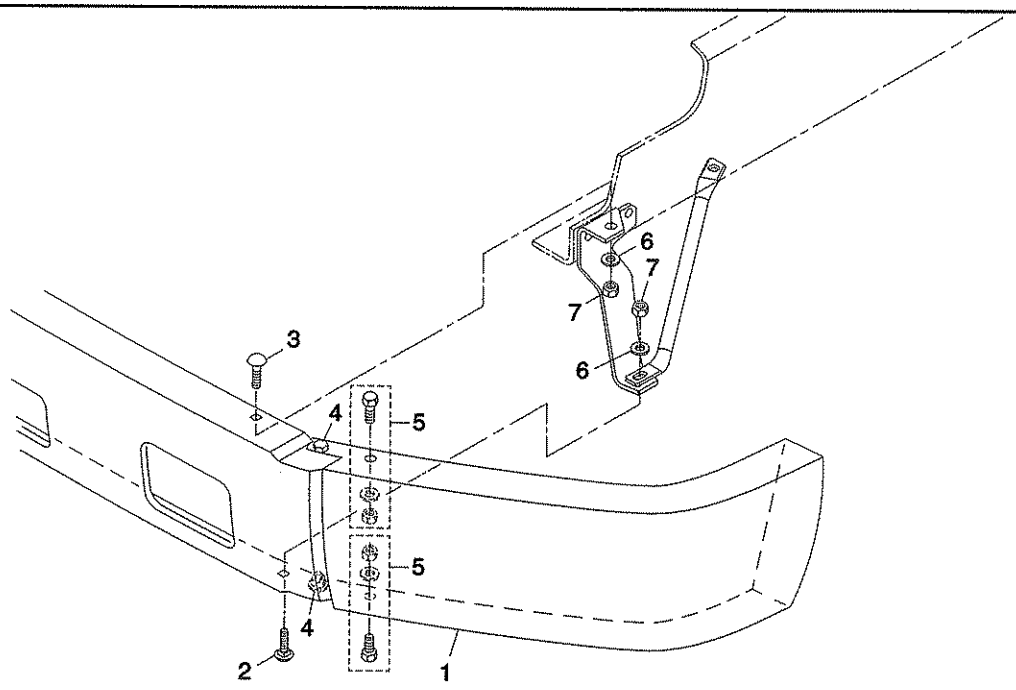
4.3 Support the bumper. On one side of the vehicle, remove first the lower, then the upper 1/2–13 fasteners that attach the bumper to the frame rail bracket. **See Fig. 2.**

4.4 Repeat the procedure on the other side of the vehicle.

4.5 Remove the bumper assembly from the vehicle.

Installation

1. Support the bumper on the frame rail brackets.
2. Install the 1/2–13 fasteners.
   - 2.1 Install the 1-1/4 inch-long bolts in the upper edge of the bumper and through the upper part of the bracket. Install the washers and nuts.
   - 2.2 Install the 1-1/2 inch-long bolts in the lower edge of the bumper and through the lower part of the bracket. Install the washers and nuts.
   - 2.3 Tighten the nuts 68 lbf·ft (92 N·m).
3. On one side of the vehicle, swing the bumper extension back into place; then install the outboard fasteners. Tighten both the inboard and outboard fasteners 68 lbf·ft (92 N·m).



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1. Bumper Extension
2. Bolt, Round-Head, 1/2–13 x 1-1/2"
3. Bolt, Round-Head, 1/2–13 x 1-1/4"
4. Inboard Fasteners, Bumper Extension
5. Outboard Fasteners, Bumper Extension
6. 1/2" Washer
7. 1/2–13 Hexnut

Fig. 2, Bumper Installation

4. Repeat the above procedure on the other side of the vehicle.
5. Install the road lights onto the bumper.
   - 5.1 Line up the hole in the road light mounting bracket with that in the bottom edge of the bumper.
   - 5.2 Install the fasteners; then tighten them finger tight.
   - 5.3 Turn the light to correctly align it; then tighten the mounting bracket fasteners firmly.
   - 5.4 Connect the wiring.
   - 5.5 Repeat the procedure on the other side of the vehicle.
6. Install the air dam.
   - 6.1 Put the air dam in position under the bumper, aligning the holes in the bumper with those in the air dam.
   - 6.2 Install the 1/4–20 fasteners. Tighten them 8 lbf·ft (11 N·m).
7. Remove the chocks from the tires.

Contents

Subject	Subject Number
General Description and Principles of Operation	050
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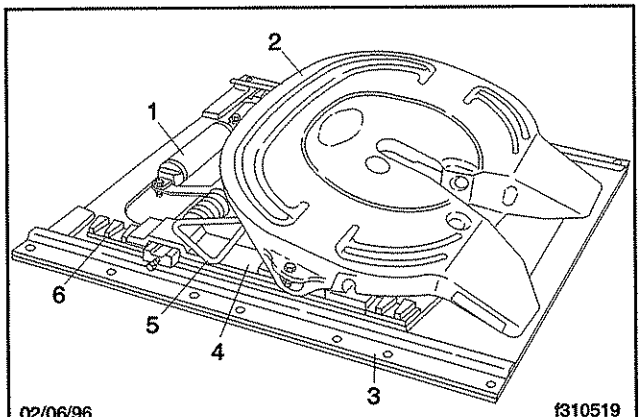
General Description (See Fig. 1)

The Holland Fleetmaster fifth wheel is used for pulling trailers having the standard 2-inch diameter kingpin. When installed as a stationary fifth wheel, it is bracket-mounted to the tractor frame in a position that best distributes the trailer load over the tractor axles. When used as a sliding fifth wheel, it is mounted to a slide bracket and plate assembly (air-operated or manual release).

Principles of Operation

The fifth wheel lock mechanism for the trailer kingpin consists of a hinged lock, locking plunger, plunger spring, cam arm, release arm, and operating rod. The lock rotates on a lock pin during coupling and uncoupling operations. During coupling the hinged lock and cam arm pivot against the kingpin and are secured by the locking plunger (See **Fig. 2**).

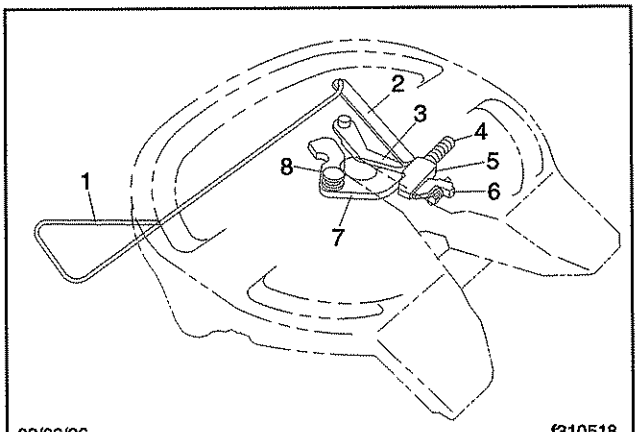
Uncoupling is accomplished by pulling the release handle using 60–70 lbs. (27–32 kg) of force. The release arm pivots and forces the locking plunger against the plunger spring. The hinged lock is released and the trailer kingpin can be removed (See **Fig. 3**).



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1. Air Cylinder
2. Top Plate
3. Outboard Mounting Plate
4. Slide Plate
5. Release Handle
6. Track

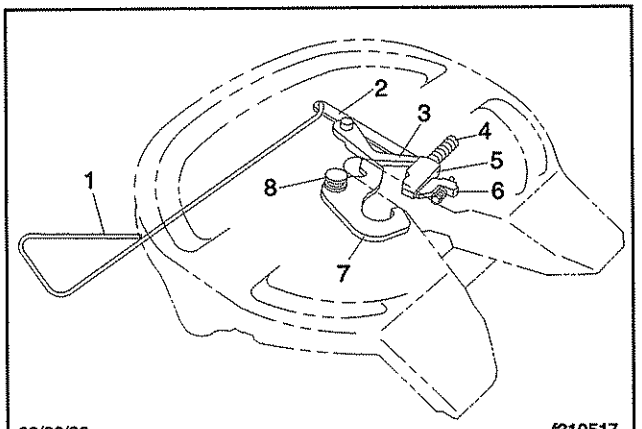
Fig. 1, Holland Fleetmaster Fifth Wheel Assembly



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1. Release Handle
2. Release Arm
3. Cam Arm
4. Plunger Spring
5. Locking Plunger
6. Adjusting Wedge
7. Hinged Lock
8. Lock Pin

Fig. 2, Fifth Wheel in Locked Position



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1. Release Handle
2. Release Arm
3. Cam Arm
4. Plunger Spring
5. Locking Plunger
6. Adjusting Wedge
7. Hinged Lock
8. Lock Pin

Fig. 3, Fifth Wheel in Unlocked Position

Removal (See Fig. 1)

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in a hazardous operating condition due to possible disengagement of the trailer from the tractor.

Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.

1. Steam clean the top plate. Remove the cotter pins from the bracket pins. Remove the bracket pins. Discard the cotter pins and remove the top plate.
2. Using an overhead hoist, lift the fifth wheel off the mount and tractor frame.

Disassembly (See Fig. 1)

1. Turn the fifth wheel upside down.

⚠ WARNING

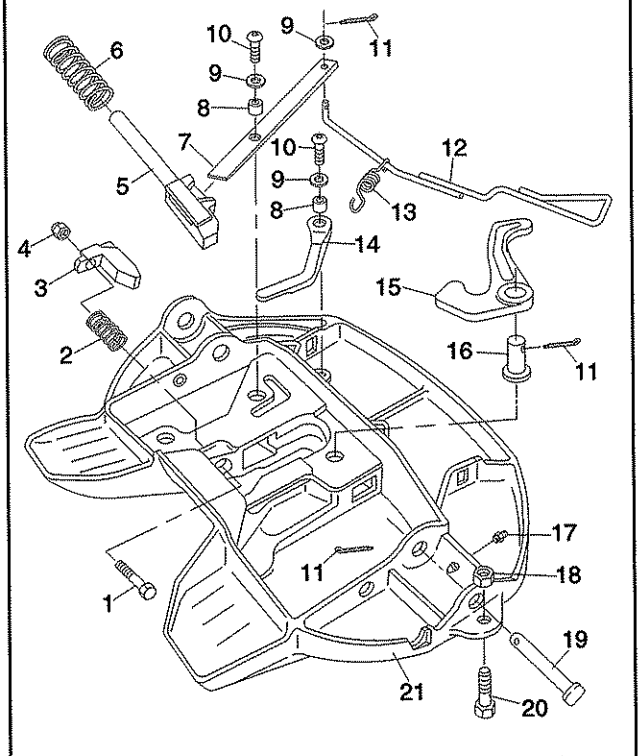
Do not attempt repair or rebuilding if the top plate is cracked or distorted or if the lock pin is sloppy in the top plate. These conditions could result in top plate failure or malfunction of the locks.

NOTE: While disassembling the fifth wheel, check it for cracks and for missing or damaged parts.

2. Pull the release handle out, slide it forward and hook the handle to the unlock notch of the casting.
3. With the plunger in the unlocked position, remove and discard the cotter pin. Remove the lock pin.
4. Slide the hinged lock away from the locking plunger and remove it from the top plate.

NOTE: It may be necessary to fabricate a wedge to hold the plunger in the unlocked position during the disassembly and assembly procedure.

5. Insert the fabricated wedge, see **Fig. 2**.
6. Pull the release handle and slide it rearward to unhook it from the notch in the casting.
7. Remove the cotter pin and washer. Discard the cotter pin. Disconnect and pull the release handle away from the release arm.
8. Remove the release arm Torx screw, washer, and roller. Remove the release arm.



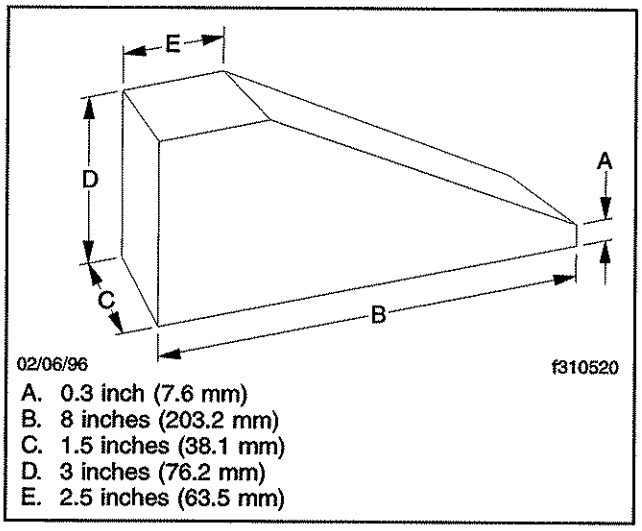
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NOTE: Bottom view shown.

1. Hex Head Capscrew
2. Spring
3. Adjusting Wedge
4. Locking Nut
5. Locking Plunger
6. Plunger Spring
7. Release Arm
8. Roller
9. Washer
10. Torx Screw
11. Cotter Pin
12. Release Handle
13. Extension Spring
14. Cam Arm
15. Hinged Lock
16. Lock Pin
17. Grease Fitting
18. Locknut
19. Bracket Pin
20. Hex Head Capscrew
21. Top Plate

Fig. 1, Fifth Wheel Assembly Components (with left-hand release)

Removal and Disassembly



A. 0.3 inch (7.6 mm)
B. 8 inches (203.2 mm)
C. 1.5 inches (38.1 mm)
D. 3 inches (76.2 mm)
E. 2.5 inches (63.5 mm)

Fig. 2, Fabricated Wedge Dimensions

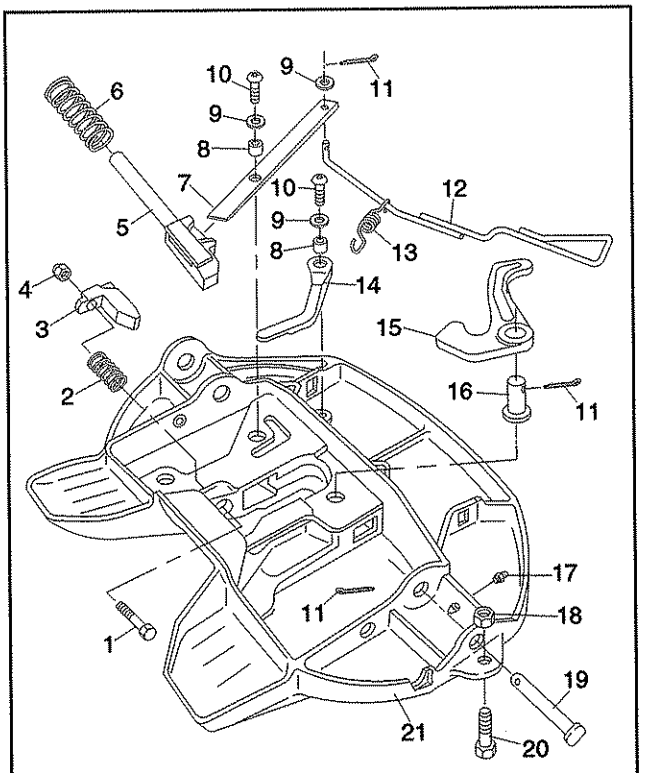
9. Slowly remove the fabricated wedge. Guide the locking plunger from the left throat of the fifth wheel to the right throat. Pull the plunger out of the right throat of the fifth wheel. Remove the plunger spring and adjusting wedge.
10. Remove the Torx screw, washer, and roller. Remove the cam arm.
11. Remove the extension spring and the release handle.
12. Remove the grease fittings.

Assembly (See Fig. 1)

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in a hazardous operating condition due to possible disengagement of the trailer from the tractor.

Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.



NOTE: Bottom view shown.

1. Capscrew
2. Spring
3. Adjusting Wedge
4. Locking Nut
5. Locking Plunger
6. Plunger Spring
7. Release Arm
8. Roller
9. Washer
10. Torx Screw
11. Cotter Pin
12. Release Handle
13. Extension Spring
14. Cam Arm
15. Hinged Lock
16. Lock Pin
17. Grease Fitting
18. Locknut
19. Bracket Pin
20. Capscrew
21. Top Plate

Fig. 1, Fifth Wheel Assembly Components (with left-hand release)

IMPORTANT: When rebuilding use only Holland rebuilding kits. Replace all roll pins, cotter pins, springs, bolts, nuts, and washers. Inspect the rebuild kit to verify that all parts are present.

IMPORTANT: Check the lock pin holes. If the holes are elongated the top plate must be replaced. Replace any parts that show signs of wear, damage, or deterioration. Brackets, bracket bushings, bracket pins, and bracket shoes should be replaced in pairs.

1. Clean all moving parts with no. 2 diesel fuel before assembly.
2. Replace the grease fittings.
3. Apply a thin film of multipurpose chassis grease to the release arm, release arm roller, hinged lock, lock pin, cam arm and roller, adjusting wedge, and locking plunger.
4. Install a 5/8-inch capscrew through the hole in the right side of the throat of the fifth wheel.
5. Slide the wedge spring, and wedge over the capscrew. Thread a 5/8-inch locknut onto the capscrew. Hand tighten the locknut.
6. Install the plunger through the opening in the right throat of the fifth wheel, through the left throat into the plunger spring, and through the hole in the rib of the casting. See **Fig. 2**.
7. Compress the plunger spring by inserting the fabricated block into the throat until the plunger is flush with the throat of the casting. See **Fig. 3**.
8. Insert the cam arm tail into the pocket in the plunger. Align the cam arm hole with the bolt hole in the casting. See **Fig. 4**.
9. Install the roller, washer (rounded edge towards roller), and torx bolt. Tighten the torx bolt 85 to 120 lbf·ft (115 to 163 N·m).
10. Insert the tapered end of the release arm through the main rib of the casting into the plunger. The tapered end of the release arm must face down

Assembly and Installation

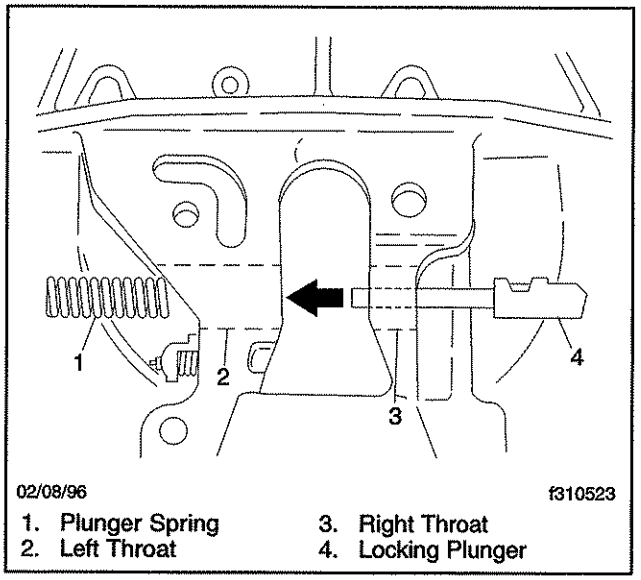


Fig. 2, Plunger Installation

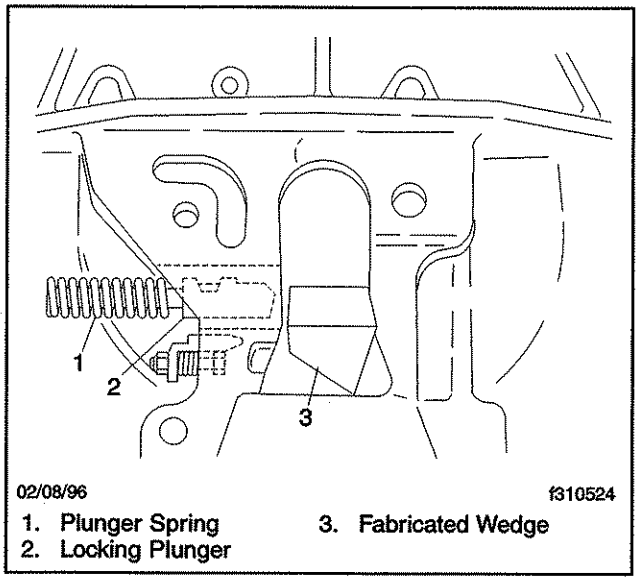


Fig. 3, Inserting Fabricated Wedge

next to the cam arm. Align the release arm hole with the bolt hole in the casting.

The following step applies only to fifth wheels equipped with a left-hand (road side) release. Fifth wheels equipped with a right-hand (curb-side) release (see **Fig. 5**) do not require a roller, washer, and torx bolt to install the release arm.

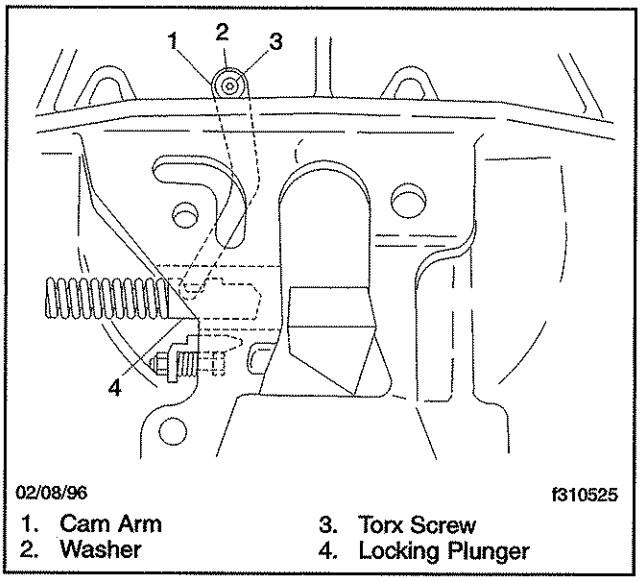


Fig. 4, Cam Arm Installation

11. Install the roller, washer (rounded edge towards roller), and torx bolt. Tighten the torx bolt 85 to 120 lbf·ft (115 to 163 N·m).

12. Feed the release handle through the hole in the casting, through the closed end of the release handle spring, and up through the bottom of the release arm.

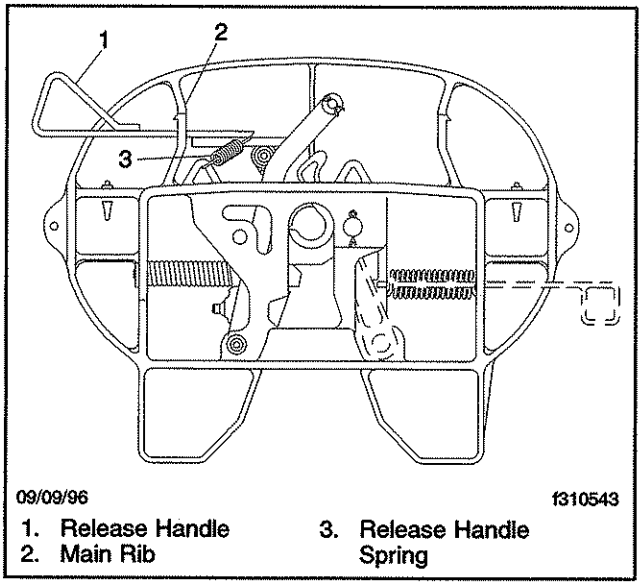


Fig. 5, Right-Hand (curb-side) Release

13. Install the washer and cotter pin.
14. Lubricate the release handle spring contact areas with a light grease. Attach the release handle spring to the casting ear.
15. Pull the release handle and hook it on the unlock notch of the casting.
16. Remove the fabricated block. Keep hands and fingers clear.
17. Grease the lock pin hole and lock contact areas. Slide the hinged lock through the opening in the right-hand side of the throat of the fifth wheel. Align the lock pin hole with the hole in the casting.
18. Slide the lock pin through the casting from the face of the top plate through the lock, then through the bottom of the casting. Install the cotter pin.
19. Unhook the release handle from the notch in the casting.

Installation

NOTE: Before remounting the top plate, inspect the rubber bushings and bracket pins for wear. Replace as necessary. If bushing replacement is required, be sure to use the correct diameter bushing.

1. Using an overhead hoist, position the fifth wheel on the sliding or stationary mount brackets. Clamp the fifth wheel in place to compress the bracket rubbers.
2. Insert the bracket pins and new cotter pins. Lock the cotter pins.

Lock Adjustment

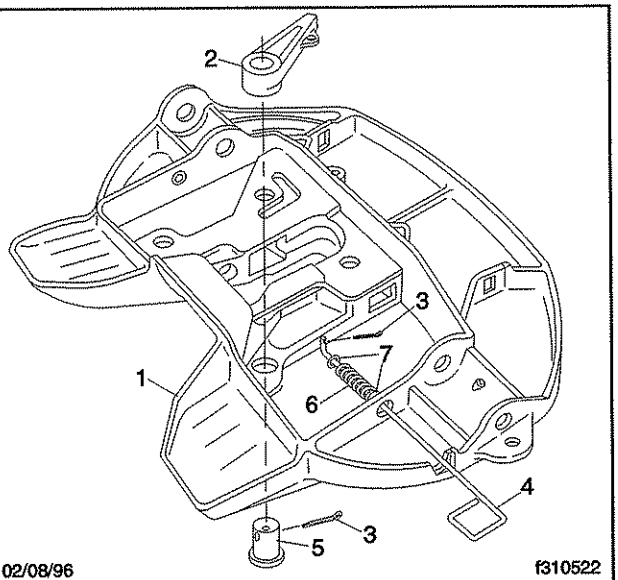
1. Open the hinged lock by pulling the release handle and putting pressure against the hinged lock, moving it towards the open position.
2. Close the fifth wheel using a Holland lock tester. Tighten the adjustment bolt while attempting to rotate the lock tester back and forth.
3. Slowly tighten the bolt until the lock tester just stops rotating. Loosen the adjustment bolt two full turns.
4. Verify proper operation by locking and unlocking the fifth wheel several times using the tester.

⚠ WARNING

If the fifth wheel top plate does not operate properly, do not use it. An improperly functioning fifth wheel could cause loss of vehicle or trailer control, resulting in personal injury. Repeat the above procedure or call your local Holland representative for assistance.

Secondary Lock Installation

1. Using the Holland lock tester, close the fifth wheel lock. See **Fig. 1**.
2. Lubricate the secondary lock arm pin hole with Never Seez grease.
3. Slide the lock arm into the right side of the casting with the lock arm ear facing the outside of the casting.
4. Align the pin holes of the secondary lock arm and the casting. Drive the lock pin through the casting from the top plate, through the secondary lock. Install the cotter pin through the secondary lock.
5. Install a 45-degree lube fitting into the secondary lock pin.
6. Grasp the secondary lock handle handhold, and slide the other end of the handle through the rib of the casting, through the 7/16-inch washer, through the handle spring, through another 7/16-inch washer, and up through the bottom of the loop on the secondary lock arm.
7. Compress the release handle spring and secure the release handle using a cotter pin. Lock the cotter pin.
8. Check the secondary release handle for proper operation.



NOTE: Bottom view shown.

1. Top Plate
2. Secondary Lock Arm
3. Cotter Pin
4. Secondary Lock Release Handle
5. Secondary Lock Pin
6. Spring
7. 7/16-inch Washer

Fig. 1, Optional Secondary Lock Assembly

Troubleshooting

Problem—Hard to Hook Up the Fifth Wheel to the Trailer

Problem—Hard to Hook Up the Fifth Wheel to the Trailer	
Possible Cause	**Remedy**
The trailer may be too high; the kingpin is not entering the lock correctly.	Lower the trailer landing gear until the trailer plate contacts the fifth wheel.
A bent kingpin or damaged trailer plate is interfering with the hinged lock movement.	Check the kingpin and trailer plate. Replace parts as needed.
The hinged lock has not been adjusted correctly.	Check the clearance between the lock and the kingpin. Adjust as described in this section.
Attempting to couple too quickly.	Pick up the trailer with the fifth wheel. Stop. Continue backing up until the fifth wheel locks firmly to the kingpin. Stopping helps prevent hitting the kingpin too hard.
The locks are closed.	Pull the release handle. Hook the handle on the notch in the casting and pry the hinged lock open.
Accumulated rust or grime is interfering with lock operation.	Spray a light lubricant or diesel fuel on all moving parts, including the release handle. Operate the unit several times.
The locks are damaged.	Inspect and replace components as described in this section.
The fifth wheel requires rebuilding	Follow the procedures contained in this section using the appropriate rebuilding kit.
Using a lube plate with the wrong kingpin length.	See Holland Service Bulletins 4 and 4A.

Problem—Hard to Unhook the Fifth Wheel from the Trailer

Problem—Hard to Unhook the Fifth Wheel from the Trailer	
Possible Cause	**Remedy**
The tractor is putting pressure against the locks.	Back the tractor up a little to relieve kingpin load against the fifth wheel lock. Lock the tractor brakes before pulling the release handle and hooking it on the notch in the top of the plate casting.
The optional secondary lock (if equipped) is not released.	Pull out the secondary release handle and move it forward to secure it on the top plate casting.
The release handle will not stay out or must be held out when unlocking.	Follow the procedures contained in this section using the appropriate rebuilding kit.
The primary release handle is not pulled out completely and locked on the notch in the casting.	Slide the primary release handle out and pull it forward. Slide the handle forward, hooking it on the notch on the top plate casting.
Rust or grime is on the locking mechanism.	Spray a light lubricant or diesel fuel on all moving parts including the release handle. Operate the unit several times.
Bent kingpin or damaged bolster plate.	Check the kingpin with a Holland TF–0110 Kingpin Gage and bolster plate with a 48 inch straightedge. Repair or replace as required.
Fifth wheel locks are adjusted too tight.	Check the clearance between the lock and the kingpin. Adjust as described in this section.

NOTE: After the fifth wheel is unlocked and moves freely from the kingpin, it is normal for the release

Troubleshooting

handle to disengage from the notch in the casting to return to a position between locked and unlocked.

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Subject	Subject Number
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General Information

NOTE: For Holland 3500 series fifth wheel service operations, see **Section 31.01**.

NOTE: Prior to June 1, 1996, the Holland sliding fifth wheel mount carried a part number prefix FW2535. Since June 1,1996, the Holland sliding fifth wheel mount part number prefix has been replaced by FW35.

The Holland sliding fifth wheel mount is designed to provide maximum tractor use for different lengths and types of trailers. The FW2535/FW35 sliding fifth wheel mount is used with the Holland 3500 series fifth wheel, and is equipped with either a manually operated or an air-operated release slider.

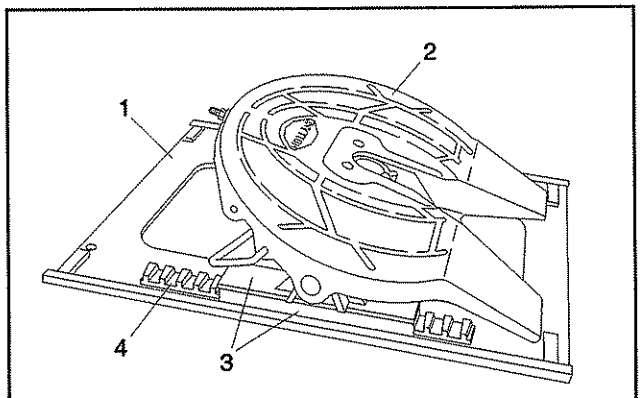
Sliding fifth wheel assemblies are mounted on a baseplate with notched rails. See **Fig. 1**. Plungers are meshed into teeth on the baseplate to lock the fifth wheel. This assembly allows forward or rearward movement of the fifth wheel along the notched rails for optimum weight distribution over the tractor axles. The mounting baseplate is bolted to the tractor frame.

When the fifth wheel is in the desired position, it is locked in place by wedge-shaped plungers that engage in the notched rails under the sliding mount. To release the fifth wheel, the plungers are withdrawn.

The manually operated release slider contains a release lever (**Fig. 2**), which when manually pulled or released, unlocks or locks both sides of the sliding mount at the same time.

The air-operated release slider contains a double-ended air cylinder (**Fig. 3**), which locks and unlocks both sides of the sliding mount at the same time. The air cylinder is activated by a two-position air-control valve in the tractor cab. See **Fig. 4**.

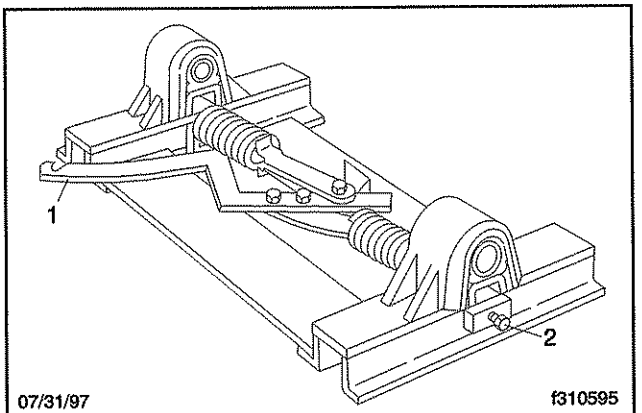
See **Chapter 10** of the *Business Class Trucks Driver's Manual* for complete operating instructions.



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1. Baseplate
2. Fifth Wheel Top Plate (XA–3500)
3. Slide Mount
4. Baseplate Rail

Fig. 1, XA-3500 Sliding Fifth Wheel

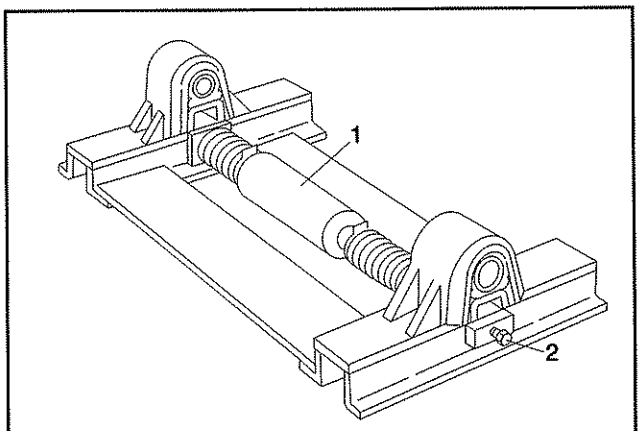


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NOTE: Baseplate rails not shown.

1. Release Lever
2. Slider Plunger Release

Fig. 2, Manual Release Slider Assembly



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NOTE: Baseplate rails not shown.

1. Double-Ended Air Cylinder
2. Slider Plunger Release

Fig. 3, Air Valve Release Slider Assembly

General Information

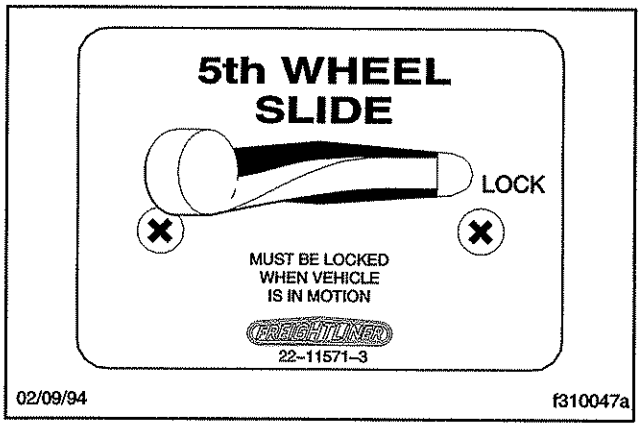


Fig. 4, Control Valve

Sliding Mount Disassembly and Assembly

Disassembly

⚠ WARNING

Fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Incorrect or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

1. Remove the top plate.

   1.1 If equipped with model XA–3501 top plate, remove the roll pins (**Fig. 1**) from both the right and left side of the top plate. Then, remove the bushing pins.

   Using an overhead hoist, lift the fifth wheel off the slide mount assembly.

   1.2 If equipped with model XA–351 top plate, loosen and remove the 1/2–20 bushing pin capscrews and locknuts from both the left and right sides of the top plate. Then, remove the bushing pins (**Fig. 1**) from the bracket assembly.

   Using an overhead hoist, lift the fifth wheel off the slide mount assembly.

⚠ WARNING

When draining the air reservoir, do not look into the air jets, or direct them toward anyone. Dirt or sludge particles may be in the airstream, and could cause injury if ejected.

2. If the fifth wheel has a manual release sliding mount, then go to the next step. Otherwise, drain the air reservoir; then disconnect and plug the air line from the air cylinder.

⚠ WARNING

Parts are under spring compression. Wear safety goggles during disassembly and assembly, and keep fingers away from possible pinch points at the ends of springs. Failure to do so can result in bodily injury, due to parts ejecting with force.

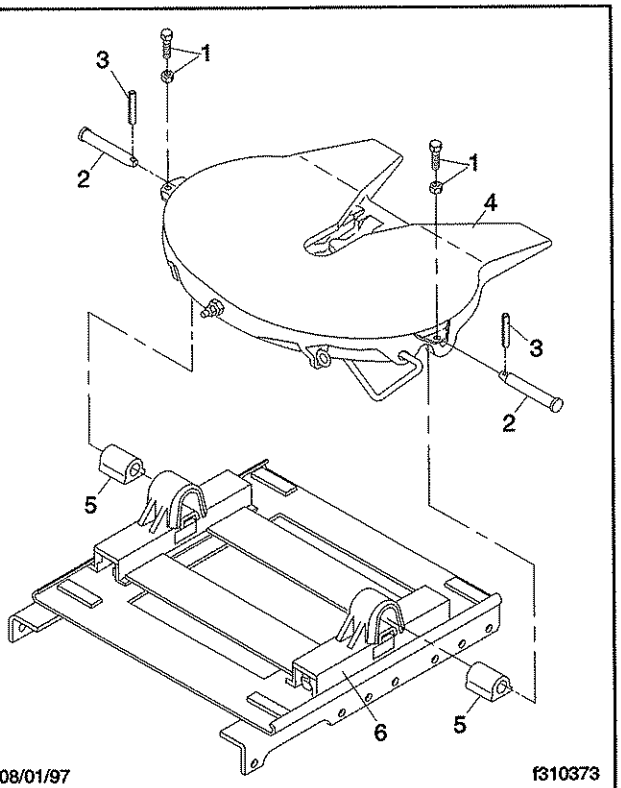
3. Using a Holland TF–TN 2500 spring compressor (**Fig. 2**), compress one of the plunger return springs (**Fig. 3**).

4. Remove the plunger retaining pin (**Fig. 3**) from the plunger end, and either the air-release cylinder or manual release lever clevis. Then remove the plunger.

   If equipped with a fifth wheel height of 6.62 or 8.12 inches (16.8 or 20.6 cm), remove the plunger retaining pin from the release lever, then remove the plunger.

5. Carefully remove the spring compressor; then remove the plunger return spring, the spring compression stop, and the spring retainer (**Fig. 3**).

   Repeat the procedure for the other plunger.



1. Capscrew and Locknut (XA–351 only)
2. Bushing Pin
3. Roll Pin (XA–3501 only)
4. Fifth Wheel Top Plate
5. Rubber Bushing
6. Slide Mount Assembly

Fig. 1, Sliding Mount Components

Sliding Mount Disassembly and Assembly

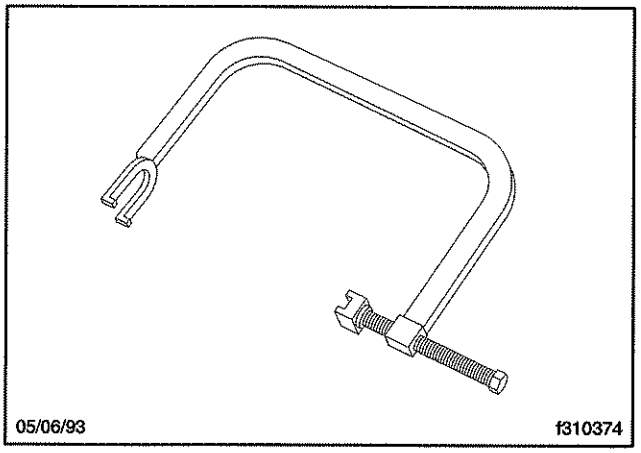


Fig. 2, Spring Compressor

6. Remove the air-release cylinder or the manual release lever.

   If equipped with a fifth wheel height of 6.62 or 8.12 inches (16.8 or 20.6 cm), remove the air-release cylinder or the manual release lever along with the right and left release levers (**Fig. 3**). Disconnect the release levers from the air-release cylinder or manual release lever.

⚠ WARNING

Wear protective eye and facial gear when grinding to remove the rear stops. Failure to do so could result in personal injury due to flying metal debris from the grinding.

7. If the slide mount assembly (**Fig. 3**) is damaged, dismantle it from the baseplate (Ref. 9).

   7.1 Grind down the welded area to remove the rear stops.

   7.2 Remove the slide mount assembly from the baseplate by sliding it off the rear of the tracks.

8. Remove all dirt and grease from the parts. Replace any parts that show signs of wear or damage.

NOTE: If the rubber bushings (**Fig. 1**) are damaged, or if they allow movement of more than 1/8 inch (3 mm), replace them.

Assembly

⚠ WARNING

Fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Incorrect or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

1. Using a rubber lubricant or a waterless hand cleaner, lubricate the outer surfaces of the new rubber bushings.

2. Install the rubber bushings (**Fig. 1**) into the slide mount assembly until they are flush with the outboard ends of the assembly.

3. Using a multipurpose chassis grease, lubricate the flanges on the slide mount assembly. Then slide the assembly onto the tracks of the baseplate.

4. Move the slide mount assembly to the rearmost position. Install the plungers into the outboard ends of the slide mount. Engage the plungers in the rail teeth.

5. Install the rear stops under the curled edge of the baseplate. Allow a clearance of about 1/8 inch (3 mm) from the rear stops to the slide mount (when it's in the full rear position). The stops should be about 1/4 to 1/2 inch (6 to 13 mm) from the rear edge of the baseplate. See **Fig. 4**.

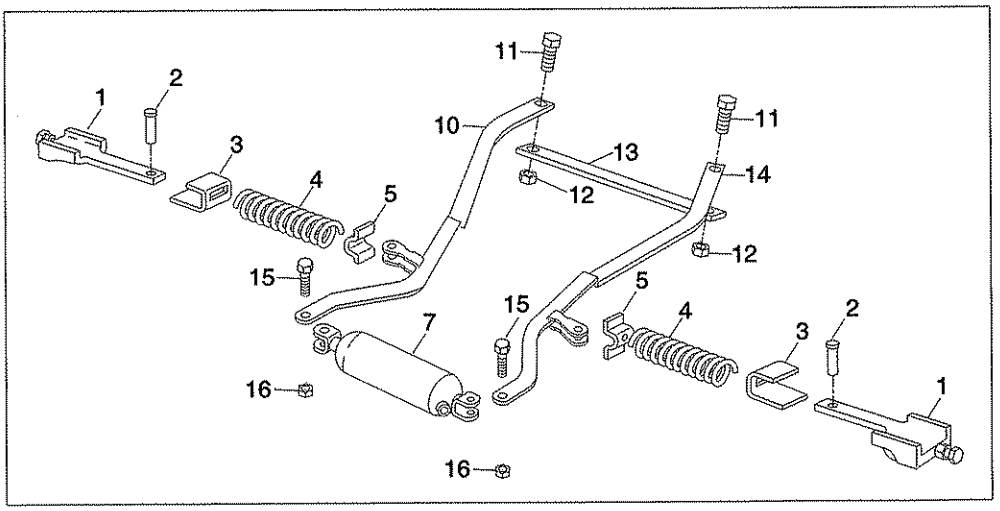
6. Clamp the rear stops in place, then move the slide mount assembly forward and out of the way.

7. Weld the stops in place. The welds should be 1/4-inch (6-mm) fillet. On the forward edge, weld only the center area; not the area where the slide mount assembly contacts the stop. See **Fig. 4**.

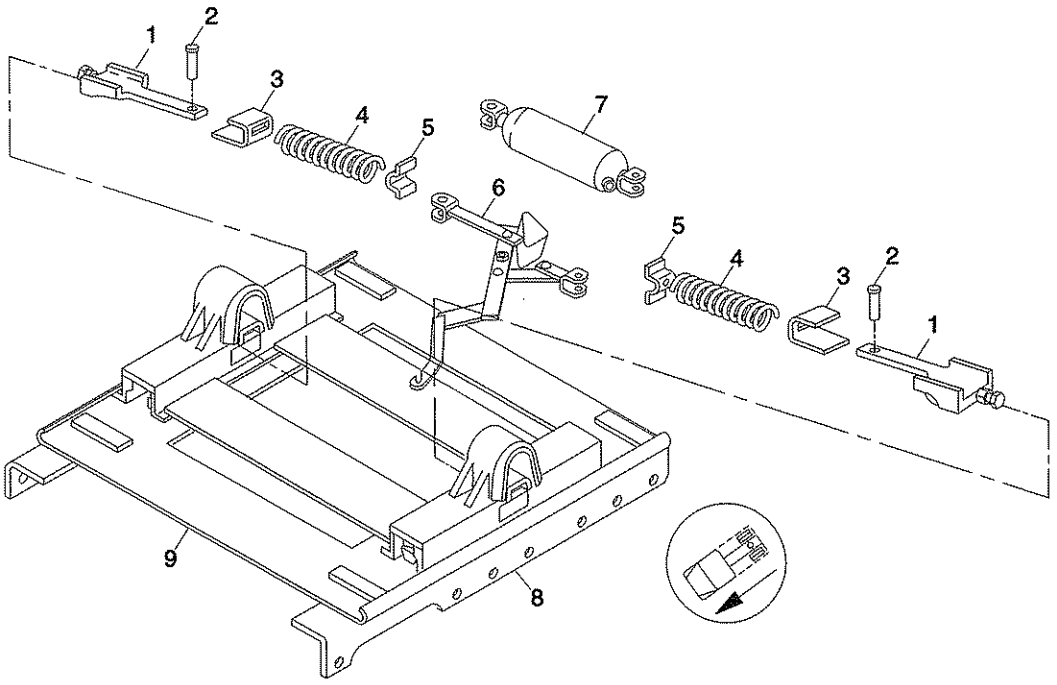
8. Move the slide mount assembly to the rearmost position and check for clearance. Make sure the plungers seat into the rail with all teeth engaged.

9. If equipped with a fifth wheel height of 6.62 or 8.12 inches (16.8 or 20.6 cm), and if new release levers are being installed, attach the right and left release levers to the tie bar (**Fig. 3**). Install 3/8–16 capscrews and locknuts and tighten them firmly, but make sure the parts are not binding.

   Using the 1/2–20 capscrews and locknuts, attach the air-release cylinder or the manual release lever



A



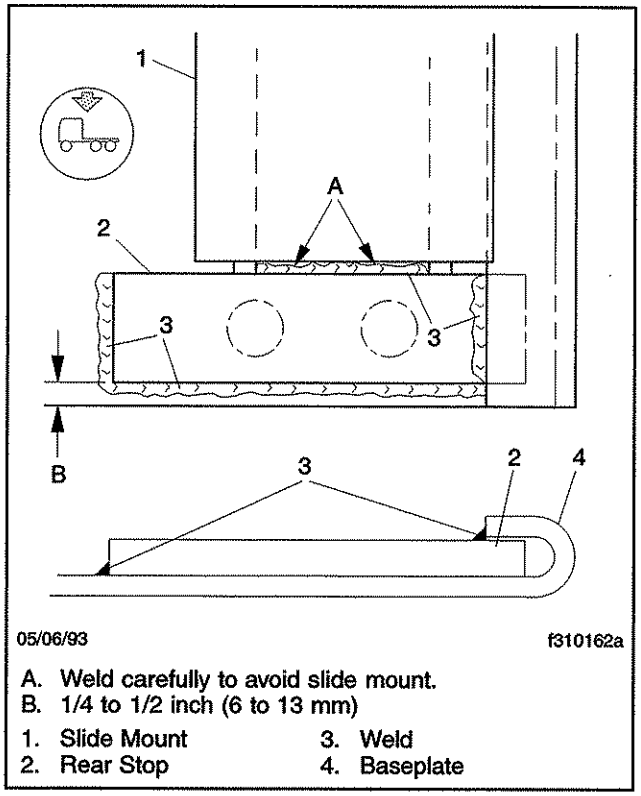
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A. Spring assembly for 6.62 and 8.12 inch (16.8 and 20.6 cm) fifth wheel heights

1. Plunger
2. Retaining Pin
3. Spring Compression Stop
4. Plunger Return Spring
5. Spring Retainer
6. Manual Release Lever
7. Air-Release Cylinder
8. Slide Mount Assembly
9. Baseplate
10. Right Release Lever
11. Capscrew, 3/8–16
12. Locknut, 3/8–16
13. Tie Bar
14. Left Release Lever
15. Capscrew, 1/2–20
16. Locknut, 1/2–20

Fig. 3, Spring Assemblies

Sliding Mount Disassembly and Assembly



A. Weld carefully to avoid slide mount.
B. 1/4 to 1/2 inch (6 to 13 mm)

1. Slide Mount
2. Rear Stop
3. Weld
4. Baseplate

Fig. 4, Slide Stop Installation

to the ends of the release levers, tighten the nuts firmly, but make sure the parts are not binding.

10. Install the spring compression stops and the plunger return springs on the inboard ends of the plungers. Then install the spring retainers.

⚠ WARNING

Parts are under spring compression. Wear safety goggles during disassembly and assembly, and keep fingers away from possible pinch points at the ends of springs. Failure to do so can result in bodily injury, due to parts ejecting with force.

11. Using a Holland TF–TN 2500 spring compressor, compress one of the plunger return springs and its spring retainer enough to access the hole through the end of the plunger shaft.

12. If equipped with a standard fifth wheel, position the air-release cylinder or the manual release lever so that the holes in its clevis line up with the hole through the end of the plunger shaft. Install the retaining pin.

    If equipped with a fifth wheel height of 6.62 or 8.12 inches (16.8 or 20.6 cm), line up the holes in the clevis of one of the release levers (**Fig. 3**) with the hole in the end of the plunger shaft. Install the retaining pin.

13. Carefully remove the spring compressor.

14. Repeat the procedure on the other side of the vehicle.

15. If the fifth wheel has a manual release sliding mount, then go to the next step, otherwise connect the air lines.

    15.1 Remove the plugs from the air line.

    15.2 Connect the air line to the inlet on the air-release cylinder.

    15.3 Start the engine to build air pressure, then check the operation of the slide mechanism.

16. Adjust the plungers, following the procedure in **Subject 110.**

17. Install the top plate.

    17.1 If equipped with model XA–3501 top plate, using an overhead hoist, lift the fifth wheel onto the slide mount assembly.

    From both the right and left side of the top plate, install the bushing pins and the roll pins (**Fig. 1**).

    17.2 If equipped with model XA–351 top plate, using an overhead hoist, lift the fifth wheel onto the slide mount assembly.

    From both the right and left side of the top plate, Install the bushing pins. Then, install and tighten snugly the 1/2–20 bushing pin capscrews and locknuts (**Fig. 1**).

Sliding Mount Assembly Plunger Adjustment

Adjustment

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Incorrect or incomplete procedures could result in loss of trailer connection during vehicle travel, possibly causing bodily injury and property damage.

NOTE: The locking plungers are adjusted at installation and again after one month of operation. Make additional adjustments as needed.

1. The plungers should seat in the pocket with a small amount of play when locked (engaged). See **Fig. 1**. If they wedge or bind, turn the adjusting bolt clockwise or counterclockwise as needed.

   Turning the adjusting bolt clockwise moves the plunger out of the pocket; turning it counterclockwise moves the plunger further into the pocket.

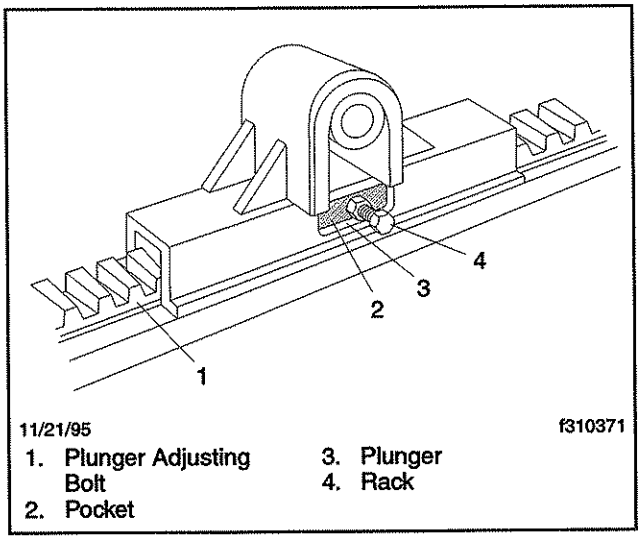
2. If the plungers don't unlock (release), check the air-release cylinder or the manual release lever for correct operation. Replace it if needed. See **Subject 100** for removal and installation instructions.

3. If the adjusted plunger binds on the bottom of the pocket, remove it; then grind the plunger top edges 1/16 inch (2 mm). See **Fig. 2**. Install the plunger. See **Subject 100** for plunger removal and installation instructions.

   Adjust the plunger, following the instructions above.

4. If the plungers are too loose, check the tension of the plunger return springs. If the springs are damaged or worn, replace them, following the instructions in **Subject 100**.

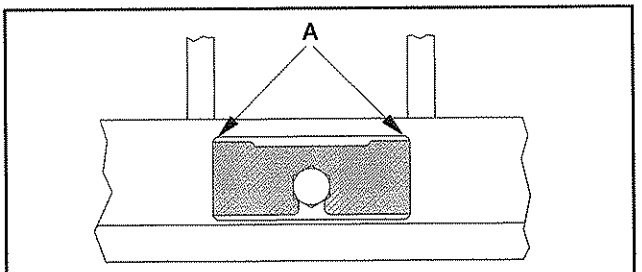
   If the plungers are still too loose, replace the plungers, following the instructions in **Subject 100**.



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1. Plunger Adjusting Bolt
2. Pocket
3. Plunger
4. Rack

Fig. 1, Plunger Position



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A. Check for interference here.

Fig. 2, Plunger Checking

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General Information

Fontaine H5092 series fifth wheels couple to trailers having a standard 2-inch kingpin. When installed as a stationary mount, the fifth wheel is bracket-mounted to the tractor frame in a position that best distributes the trailer load over the tractor axles. Sliding fifth wheels (**Fig. 1**), are mounted on the Fontaine HAWB or HMWS (previously called 5AWB and 5MWS) model slide mounts.

The Fontaine fifth wheel lock mechanism for the trailer kingpin consists of a spring-loaded jaw and sliding wedge. Kingpin release is accomplished by pulling a manual lock control handle located on either the right side (curbside) or left side (roadside) of the fifth wheel. Kingpin coupling occurs when the kingpin enters the throat of the fifth wheel, triggers the jaw and wedge to slide into place behind the kingpin, and moves the lock control handle into the locked position.

As the kingpin enters the lock mechanism, the jaw is moved first with the spring-loaded wedge sliding in place against the jaw. The jaw will move behind the kingpin, followed by the wedge. The wedge reinforces the jaw and automatically adjusts for slack around the kingpin. See **Fig. 2** for an illustration of the jaw and wedge in the locked position.

Placing the lock control handle in the unlocked position moves the wedge and jaw out from behind the kingpin and unlocks the fifth wheel. See **Fig. 3** for an illustration of the jaw and wedge in the unlocked postition.

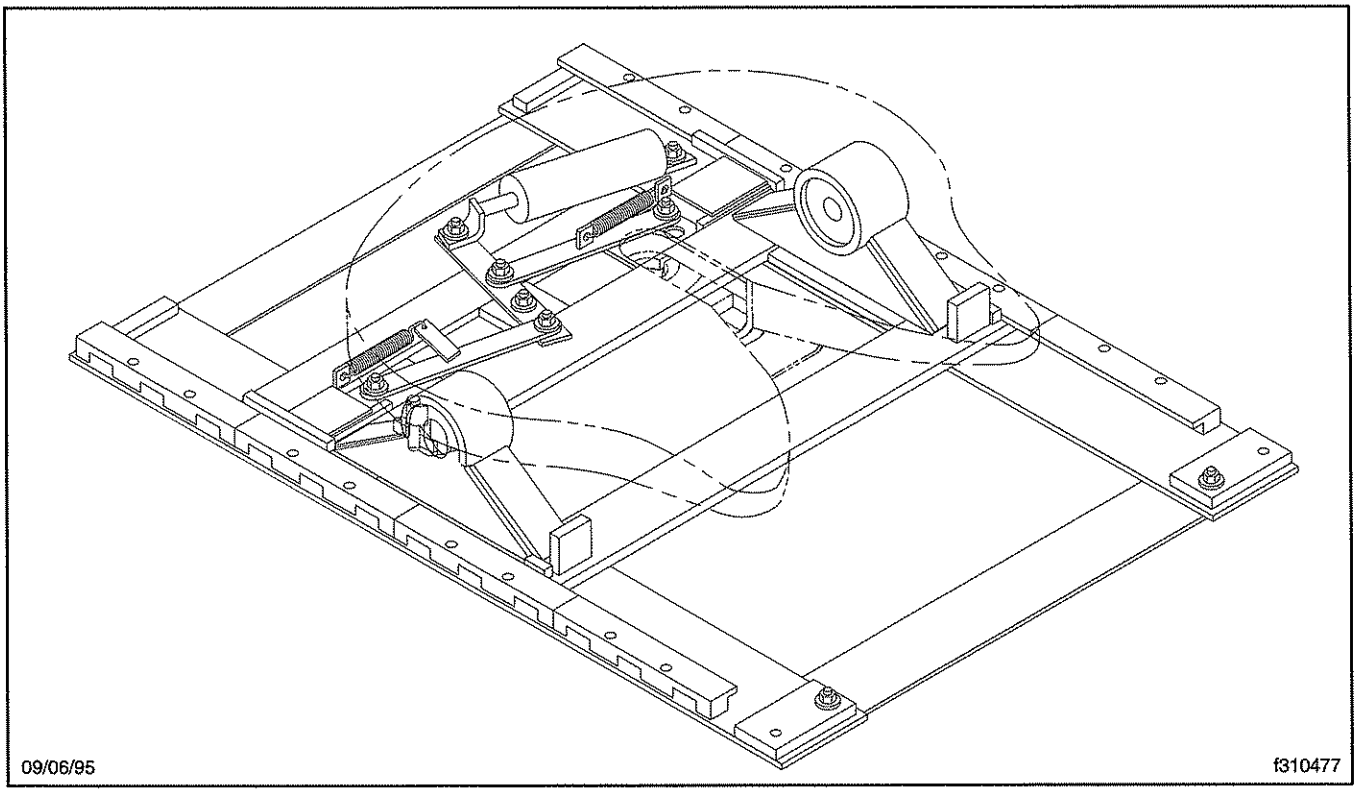


Fig. 1, Fontaine H5092 Series Air Slide Fifth Wheel

General Information

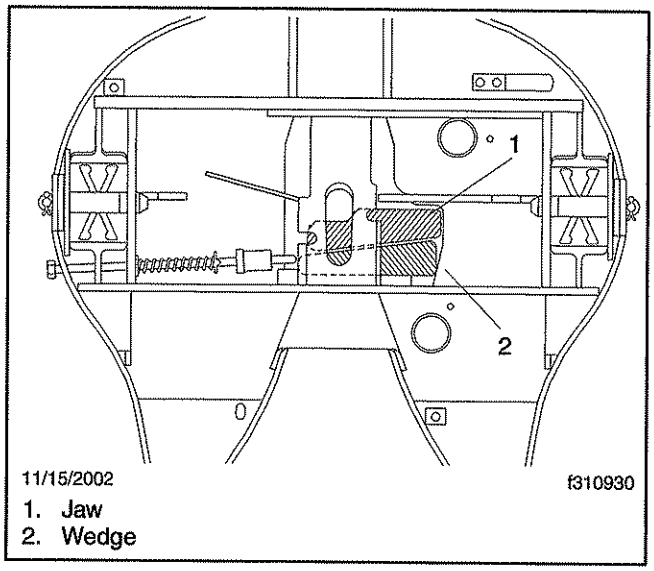


Fig. 2, Locked Position

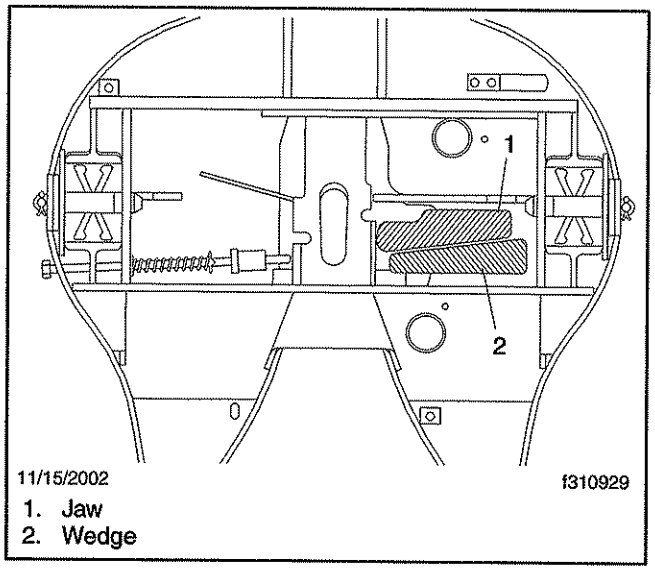


Fig. 3, Unlocked Position

Fifth Wheel Removal and Disassembly

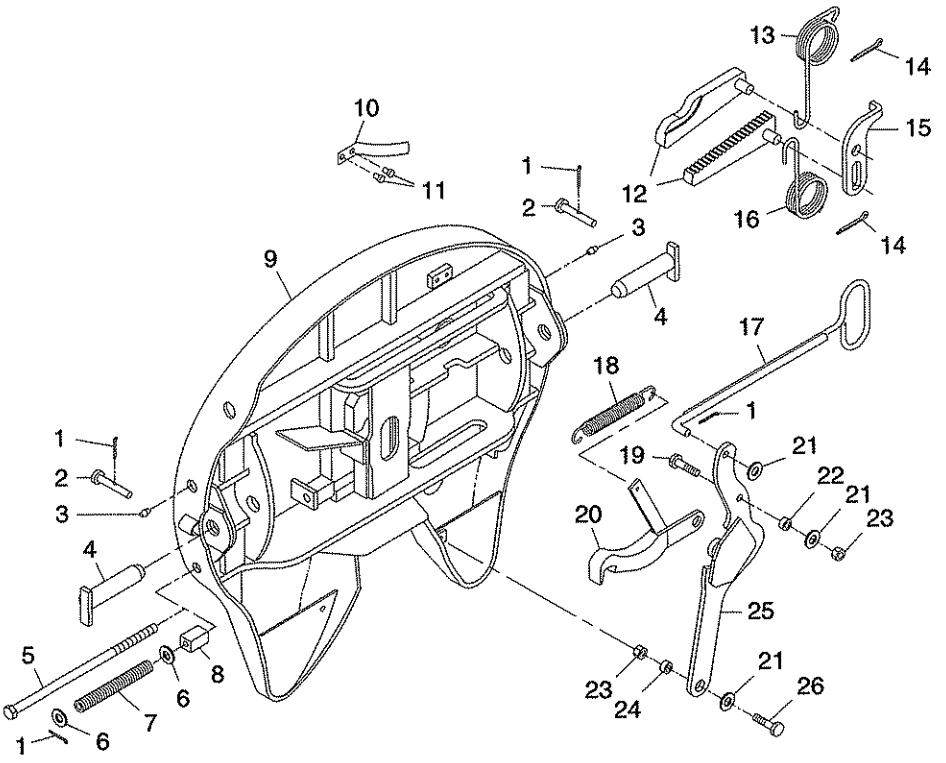
See **Fig. 1** for an exploded view of the Fontaine® H5092 fifth wheel.

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in disengagement of the trailer from the tractor, leading to personal injury or property damage.

Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.

1. Steam clean the top plate. Remove it from the sliding mount by removing the cotter pins from the retaining pins. Remove the retaining pins and bushing pins from both sides of the top plate.



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1. Cotter Pin, 3/16" x 1"
2. Lower Bracket Retainer Pin
3. Grease Fitting
4. Lower Bracket Pin
5. Wedge Stop Rod
6. Flatwasher
7. Wedge Stop Rod Spring
8. Nut, Wedge Stop Rod
9. Upper Assembly, Side Release
10. Leaf Spring
11. Thread-Cutting Screw, 1/4–20 x 3/8"
12. Step Jaw and Wedge
13. Jaw Spring
14. Cotter Pin, 1/4" x 3"
15. Timer
16. Wedge Spring
17. Pull Handle
18. Bumper Handle Spring
19. Hexhead Bolt, 1/2–13 x 2", Bumper Pivot
20. Bumper
21. Flatwasher
22. Bushing, 5/16", Bumper Pivot
23. Hex Locknut, 1/2–13
24. Bushing, 7/16", Handle Pivot
25. Operating Handle, Side Release Only
26. Hexhead Bolt, 1/2–13 x 2", Handle Pivot

Fig. 1, Fontaine H5092 Series Fifth Wheel (left-side release shown)

Removal and Disassembly

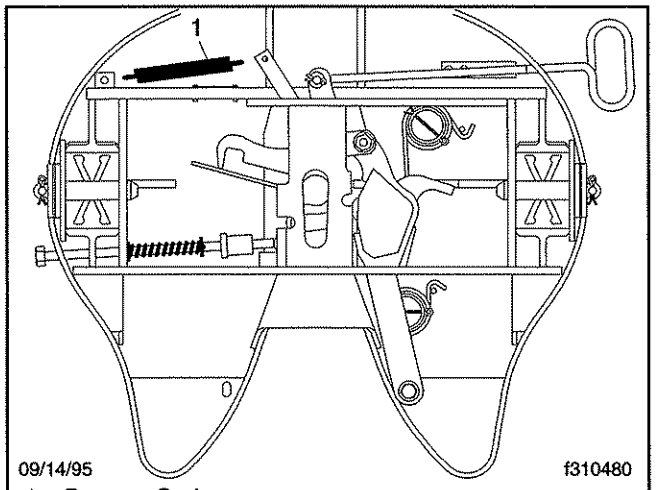
2. Using an overhead hoist, lift the fifth wheel off the sliding mount and tractor frame.
3. Turn the fifth wheel upside down.

NOTE: While disassembling the fifth wheel, check it for cracks and for missing or damaged parts.

⚠ WARNING

Do not attempt to repair or rebuild the top plate if it is cracked or if parts are damaged. The top plate or parts could malfunction. This could result in disengagement of the trailer during vehicle travel, possibly causing personal injury and property damage.

4. Set the fifth wheel in a locked position, then unhook the bumper spring from the bumper tang and the tab on the side of the fifth wheel substructure. See **Fig. 2**. Remove the bumper spring.
5. Remove the two bolts on the operating handle. **Fig. 3.** Each bolt has a nut, washer, and bushing. Discard the bushings.
6. Remove the cotter pin and washer that holds the pull handle to the operating handle. Slide the pull handle out through the side of the fifth wheel. See **Fig. 4**.
7. Slide the operating handle over to the side of the fifth wheel. Slide the bottom part first. This will allow the handle to clear the jaw and wedge studs on the underside and clear the timer. See **Fig. 5**.
8. Remove the timer by lifting upward. See **Fig. 6**.
9. Slide the operating handle out through the slot in the rear crossmember of the fifthwheel. See **Fig. 7**.
10. Slide the bumper toward the operating handle slot and to the rear of the fifth wheel until the bumper tang clears the operating handle slot. Lift upward and remove. See **Fig. 8**.



1. Bumper Spring

Fig. 2, Bumper Spring Removal

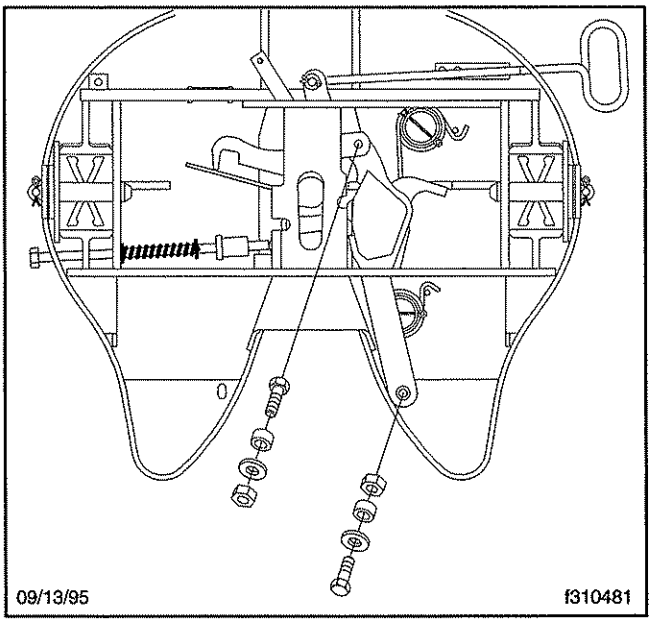


Fig. 3, Bolt Removal

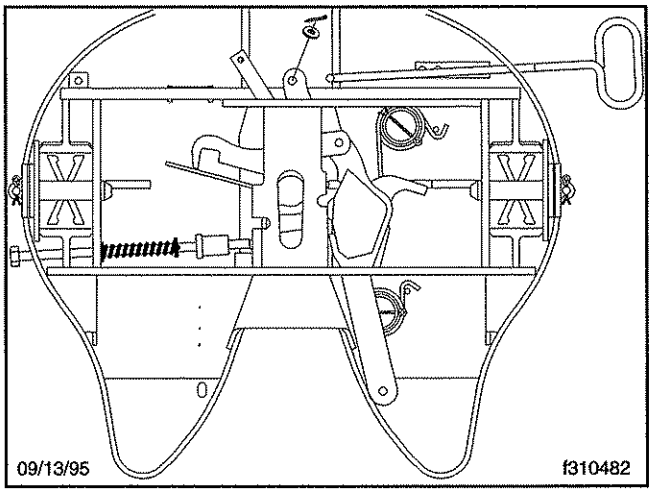
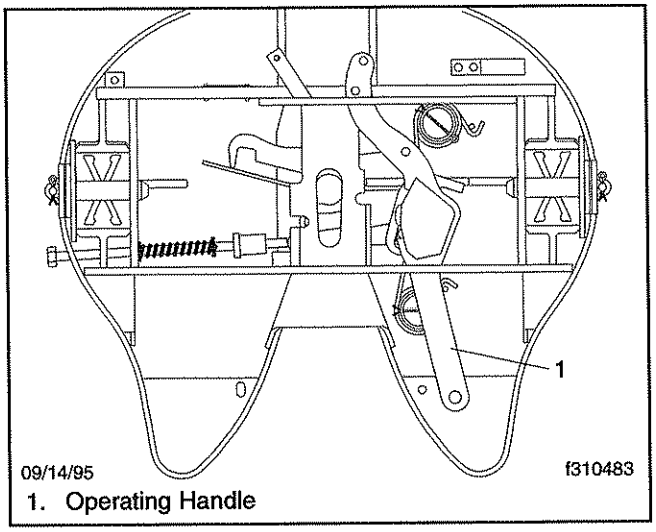
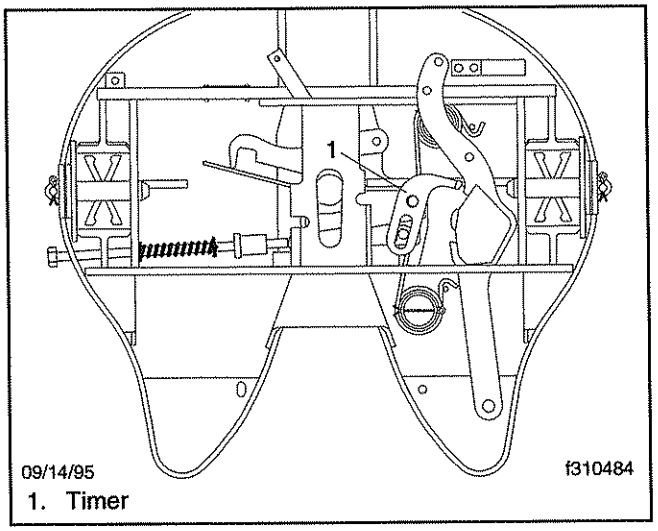


Fig. 4, Pull Handle Removal



1. Operating Handle

Fig. 5, Operating Handle Positioning



1. Timer

Fig. 6, Timer Removal

⚠ WARNING

The wedge spring is under extreme tension. Always wear safety glasses. Do not stand directly over the springs. A flying spring could cause personal injury.

11. Remove the cotter pins from the jaw and wedge springs. Discard the cotter pins, and pry the small hooked tail of the jaw and wedge spring up over the jaw and wedge studs. Remove and discard both springs. See **Fig. 9**.

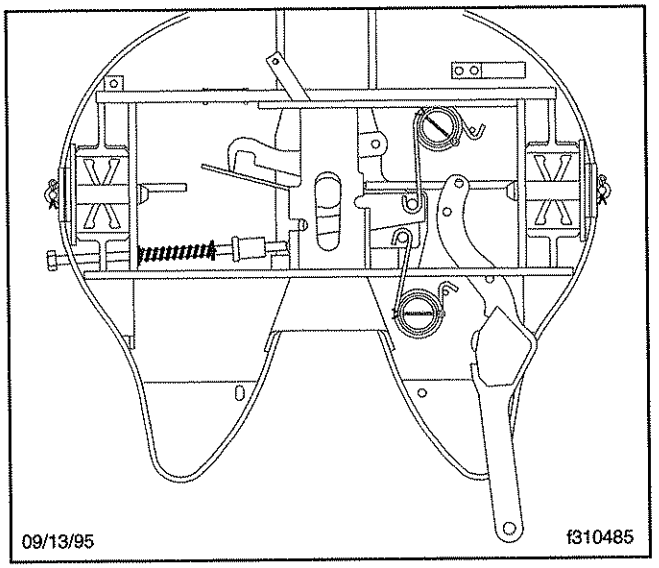
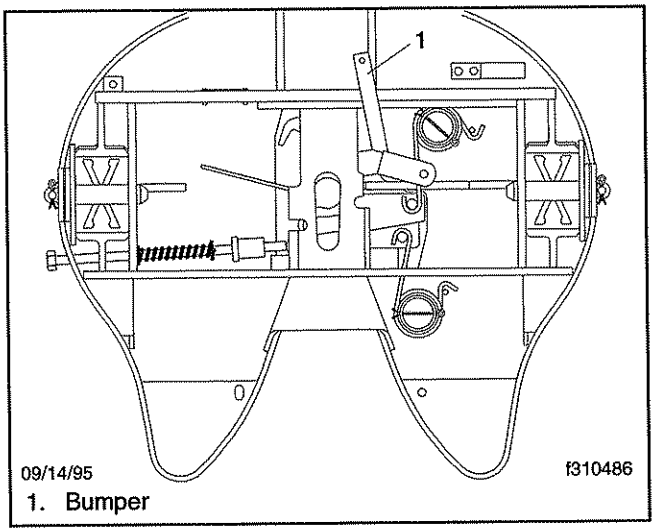


Fig. 7, Operating Handle Removal

12. Remove the wedge first, and then the jaw. Discard the jaw and wedge. See **Fig. 10**.



1. Bumper

Fig. 8, Bumper Removal

Removal and Disassembly

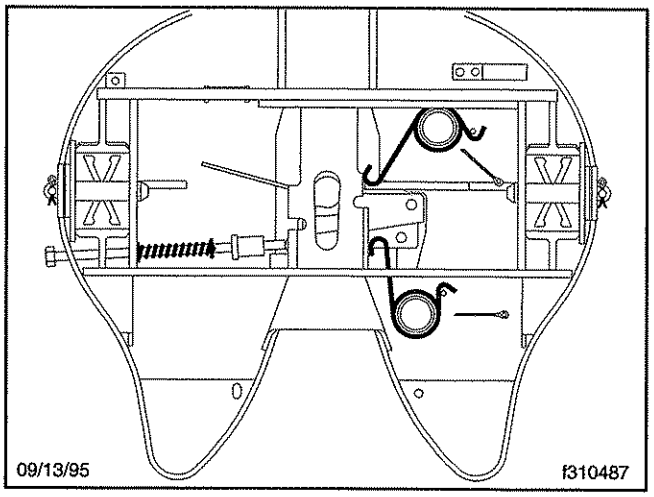


Fig. 9, Spring Removal

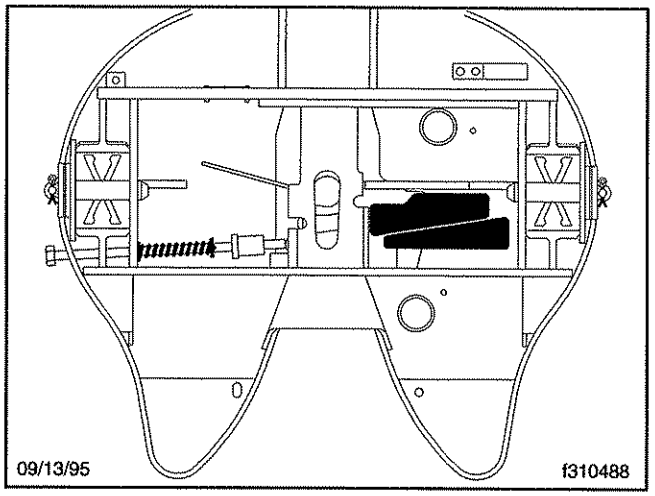


Fig. 10, Jaw and Wedge Removal

Assembly and Installation

See **Fig. 1** for an exploded view of a Fontaine® H5092 fifth wheel.

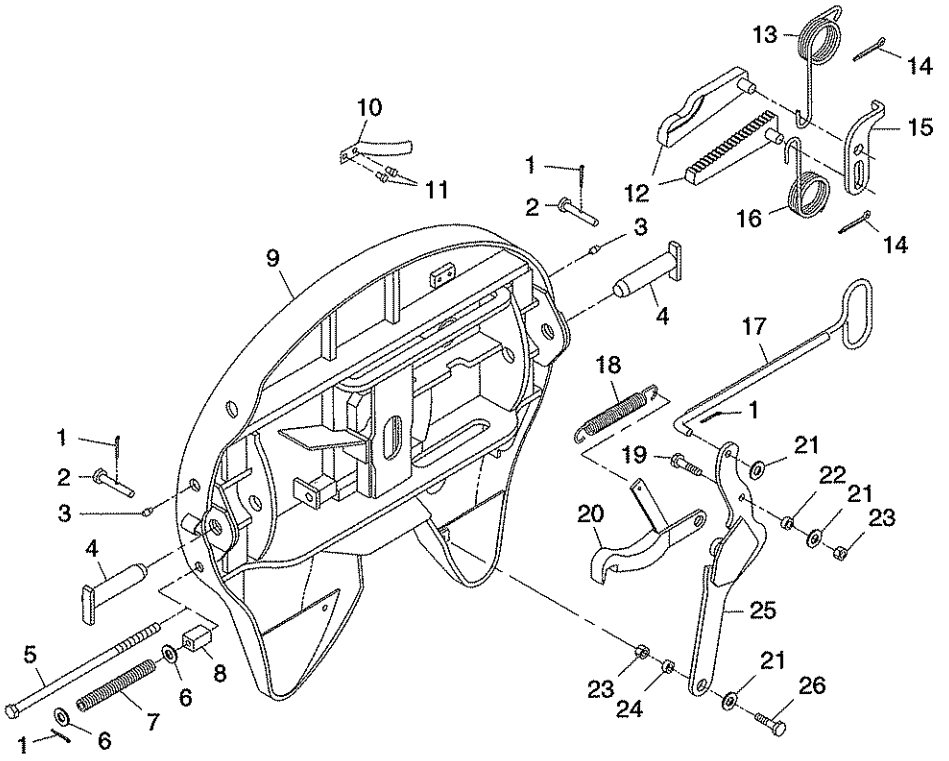
⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in possible disengagement of the trailer from the tractor, leading to personal injury and property damage.

Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.

IMPORTANT: Replace any parts that show signs of wear, damage, or deterioration.

1. Clean all moving parts with no. 2 diesel fuel before assembly.



09/18/95 f310476

1. Cotter Pin, 3/16" x 1"
2. Lower Bracket Retainer Pin
3. Grease Fitting
4. Lower Bracket Pin
5. Wedge Stop Rod
6. Flatwasher
7. Wedge Stop Rod Spring
8. Nut, Wedge Stop Rod
9. Upper Assembly, Side Release
10. Leaf Spring
11. Thread-Cutting Screw, 1/4–20 x 3/8"
12. Step Jaw and Wedge
13. Jaw Spring
14. Cotter Pin, 1/4" x 3"
15. Timer
16. Wedge Spring
17. Pull Handle
18. Bumper Handle Spring
19. Hexhead Bolt, 1/2–13 x 2", Bumper Pivot
20. Bumper
21. Flatwasher
22. Bushing, 5/16", Bumper Pivot
23. Hex Locknut, 1/2–13
24. Bushing, 7/16", Handle Pivot
25. Operating Handle, Side Release Only
26. Hexhead Bolt, 1/2–13 x 2", Handle Pivot

Fig. 1, Fontaine H5092 Series Fifth Wheel (left-side release shown)

Fifth Wheel Assembly and Installation

2. Always assemble the parts around a 2-inch kingpin or a shaft with a 2-inch diameter. Insert the jaw first and then the new wedge below it. Apply a moderate amount of grease having EP (extra pressure) additives to the sides and serrated edges of the jaw and wedge. Also apply grease to the stationary jaw in the throat of the fifth wheel. See **Fig. 2**.
3. Insert the new wedge spring through the slot in the rear crossmember and lay the coil over the spring boss. Using a spring tool, engage the small hooked tail of the wedge spring and wind it around until it is directly over the small stud at the back of the bracket. Using a hammer, nudge the spring downward allowing it to catch on the stud. Insert a new cotter pin. See **Fig. 3**.

   Repeat these steps to replace the jaw spring.

NOTE: The jaw spring has minimal tension and can be replaced by hand.

4. Place the bumper back in position, sliding the bumper tang through the operating handle guide slot and toward the tab on the side of the fifth wheel substructure. See **Fig. 4**.
5. Apply a liberal amount of grease to the grooved middle section of the operating handle, then insert the operating handle and move it over to the side of the wheel. See **Fig. 5**.
6. Insert the timer over the jaw and wedge studs. the small hole on the timer fits over the jaw stud and the slotted hole fits over the wedge stud. Be certain the small bent arm of the timer is facing downward. See **Fig. 6**.
7. Slide the operating handle toward the center of the wheel to engage the handle with the studs on the jaw and wedge. Slide the top part first. This will ensure that the grooves on the operating handle are aligned with the studs. A correctly aligned operating handle should be in a vertical position once it goes over the studs. See **Fig. 7**.
8. Slide the pull handle in through the safety lock and using the cotter pin and washer, fasten it in the top hole of the operating handle. See **Fig. 8**.

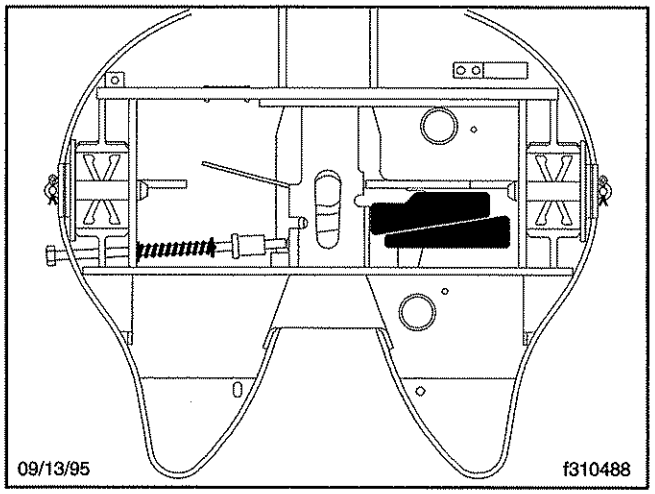


Fig. 2, Wedge and Jaw Installation

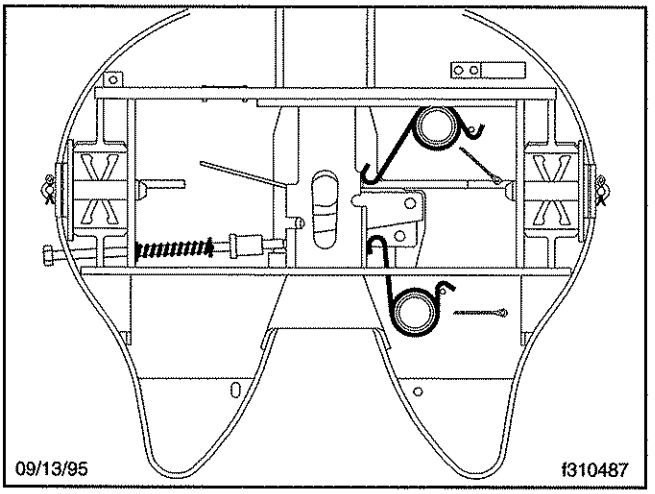


Fig. 3, Spring Installation

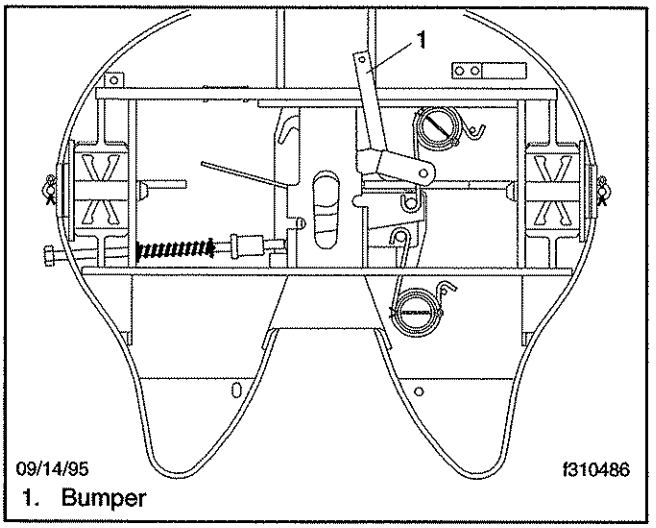


Fig. 4, Bumper Installation

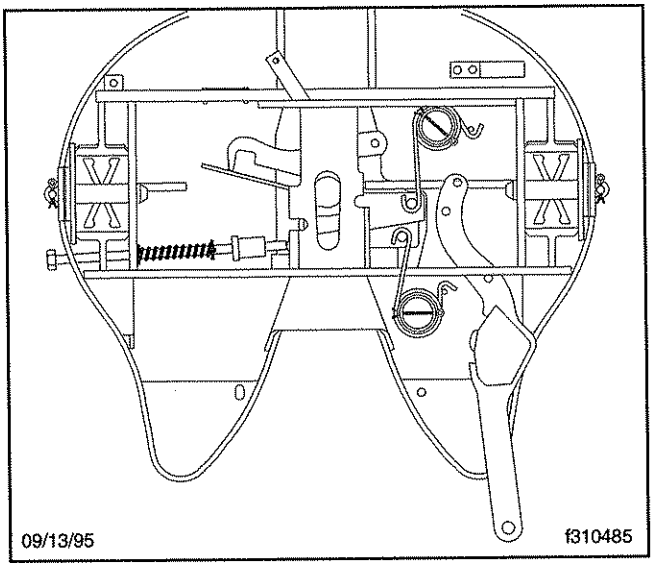


Fig. 5, Operating Handle Installation

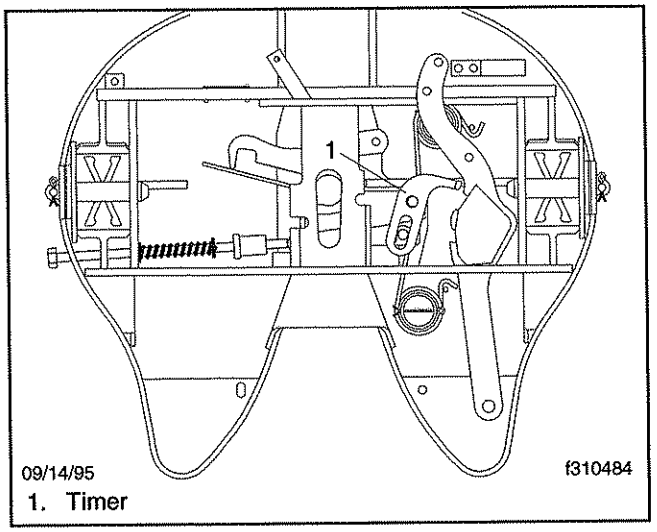


Fig. 6, Timer Installation

9. Align the bumper hole with the hole in the operating handle. Replace the bolts on the operating handle. The bolt which fastens the operating handle to the bumper must be inserted with the threads facing toward you to prevent interference with the jaw springs. The other bolt should be positioned with the threads facing downward. Each bolt has a nut, washer, and new bushings. Apply grease to the bolt parts and where there is metal to metal contact with the operating handle. See **Fig. 9**. Do not overtighten the bolts. Lubricate all pivot points.

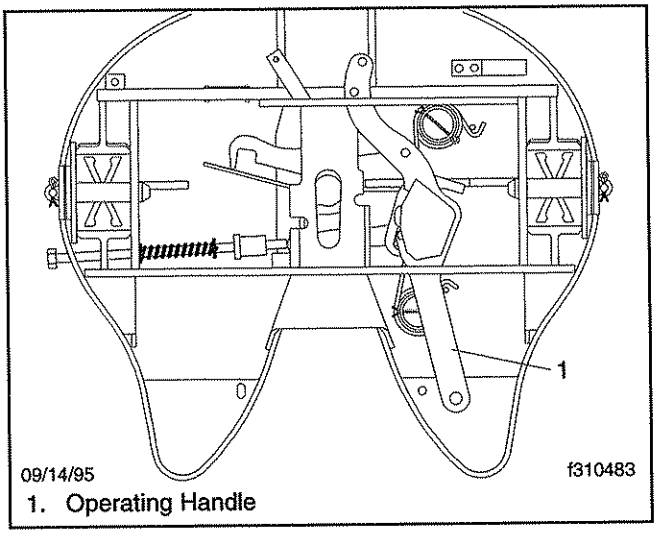


Fig. 7, Operating Handle Positioning

IMPORTANT: The fifth wheel must be well lubricated to operate correctly. Refer to **Group 31** of the *Business Class®: Maintenance Manual* for complete maintenance and lubrication instructions for the fifth wheel assembly.

10. Connect the bumper spring to its clasp. Apply grease to the bracket pockets and to the grease fittings on the side of the fifth wheel until grease flows into the upper brackets. Also apply a liberal amount of grease to the top plate. See **Fig. 10**.

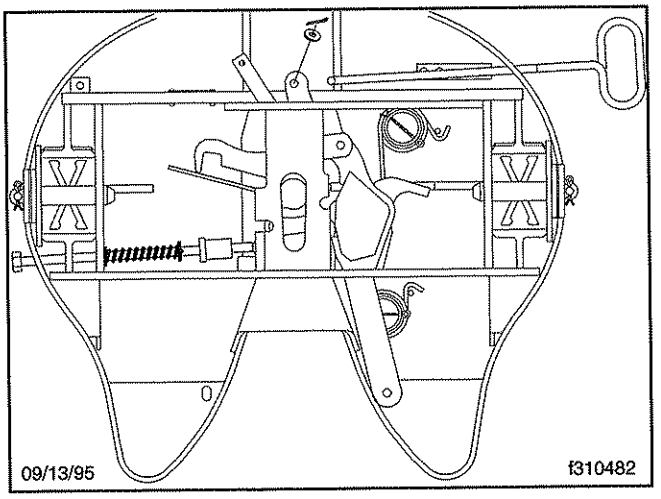


Fig. 8, Pull Handle Installation

Fifth Wheel Assembly and Installation

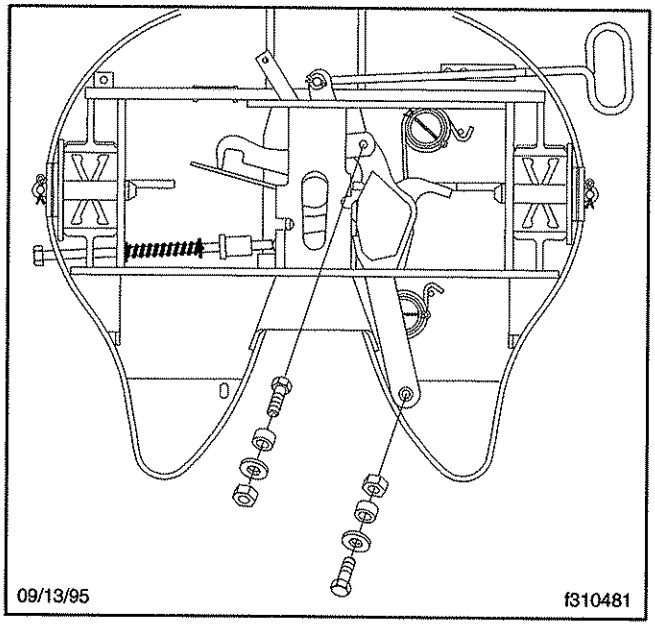
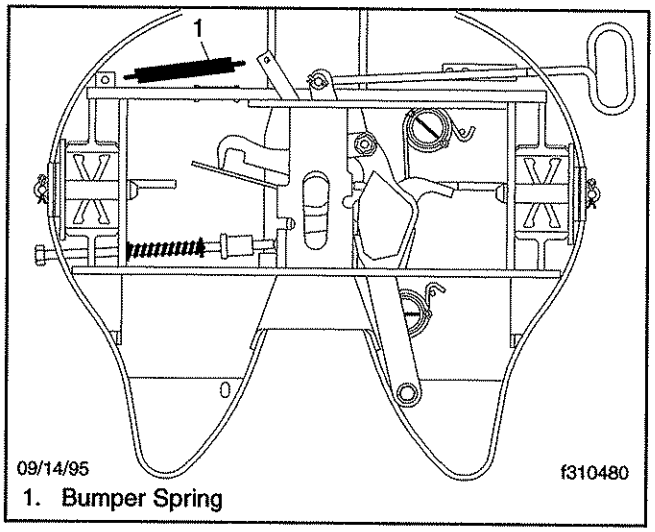


Fig. 9, Bolt Installation

⚠ WARNING

If the fifth wheel does not operate properly, do not use it. The fifth wheel could malfunction, resulting in personal injury or property damage due to possible disengagement of the trailer from the tractor.



1. Bumper Spring

Fig. 10, Spring Installation

11. Using an overhead hoist, position the fifth wheel on the sliding mount assembly. Insert the bushing pins. Install the retaining pins and the 1-inch-long cotter pins.

Troubleshooting Tables

Problem—Difficulty Coupling

Possible Cause	Remedy
The kingpin is too high to trip the latch	Lower the landing gear.
The trailer plate or kingpin is damaged.	Check the trailer plate for flatness. Check the kingpin for squareness with the trailer plate.

Problem—Excessive Wear on the Fifth Wheel Top Plate

Possible Cause	Remedy
Damaged trailer plate	If the trailer plate is not flat, replace it.

Problem—Difficulty Uncoupling

Possible Cause	Remedy
Pressure on the locking mechanism caused by truck drifting apart from the trailer putting excess pressure on the lock	Back up the trailer and set the brakes. Strike the wedge stop rod which protrudes through the side of the fifth wheel. This spring-loaded rod will release the pressure on the locking mechanism.
Oval-shaped kingpin	Lower the landing gear.
Debris build-up in the grease	

Problem—Slack

Possible Cause	Remedy
Undersized kingpin	Replace the kingpin if worn greater than 1/8 inch (3 mm) at the 2-inch (5-cm) diameter.
Worn jaw and wedge	Jaw and wedge could have excessive wear. Replace them.

Contents

Subject	Subject Number
General Information	050
Service Operations	
Fifth Wheel Removal and Disassembly	100
Fifth Wheel Assembly and Installation	110
Troubleshooting	300

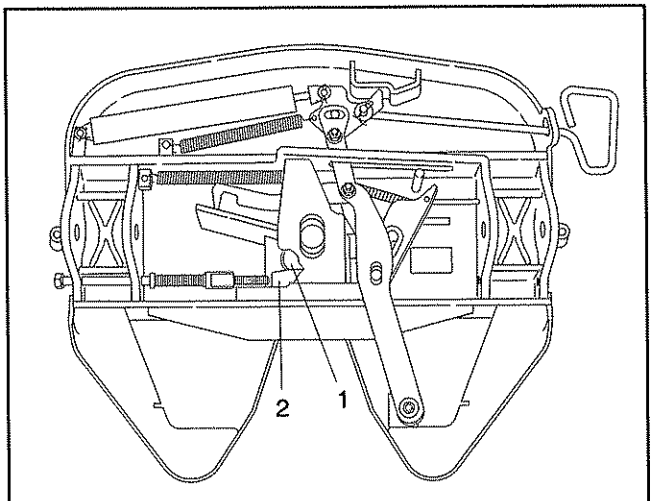
General Information

Fontaine 6000 and 7000 series fifth wheels couple to trailers having a standard 2-inch kingpin. When installed as a stationary mount, the fifth wheel is bracket-mounted to the tractor frame in a position that best distributes the trailer load over the tractor axles. Sliding fifth wheels are mounted on the Fontaine AWB or MWS model slide mounts.

The Fontaine fifth wheel lock mechanism for the trailer kingpin consists of a spring-loaded jaw and sliding wedge. Kingpin release is accomplished by pulling a manual lock control handle located on either the right side (curbside) or left side (roadside) of the fifth wheel. Kingpin coupling occurs when the kingpin enters the throat of the fifth wheel, triggers the jaw and wedge to slide into place behind the kingpin, and moves the lock control handle into the locked position.

As the kingpin enters the lock mechanism, the jaw is moved first with the spring-loaded wedge sliding in place against the jaw. The jaw will move behind the kingpin, followed by the wedge. The wedge reinforces the jaw and automatically adjusts for slack around the kingpin. See **Fig. 1** for an illustration of the jaw and wedge in the locked position.

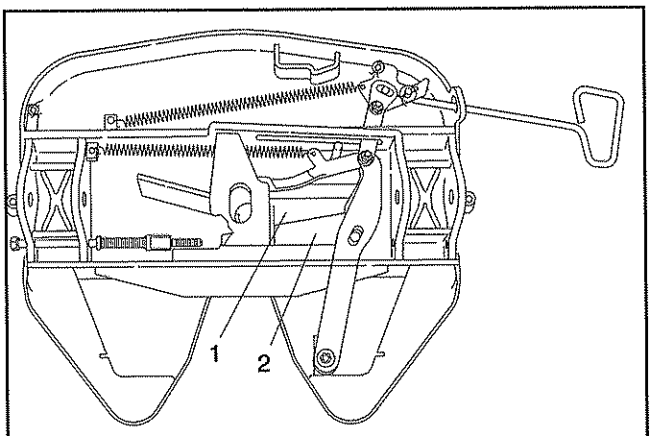
Placing the lock control handle in the unlocked position moves the wedge and jaw out from behind the kingpin and unlocks the fifth wheel. See **Fig. 2** for an illustration of the jaw and wedge in the unlocked postition.



11/18/2002 f310931

1. Jaw
2. Wedge

Fig. 1, Locked Position



11/18/2002 f310932

1. Jaw
2. Wedge

Fig. 2, Unlocked Position

Fifth Wheel Removal and Disassembly

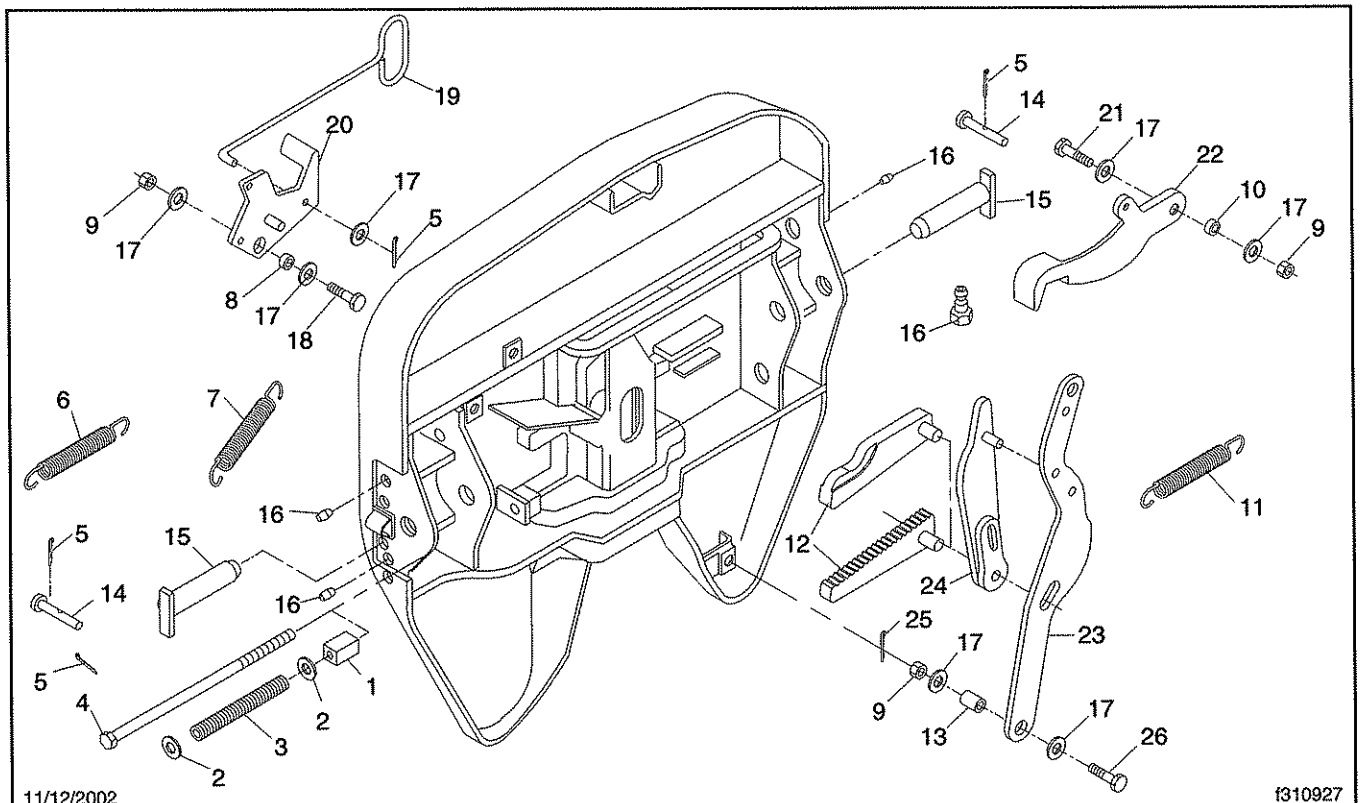
See **Fig. 1** for an exploded view of a Fontaine® 6000 or 7000 No-Slack II series fifth wheel.

⚠ WARNING

All fifth wheel maintenance, adjustment, and rebuilding must be done only by a qualified mechanic. Improper or incomplete procedures could result in disengagement of the trailer from the tractor, leading to personal injury or property damage.

Parts are under spring compression. Wear safety goggles during disassembly and assembly. Failure to do so can result in personal injury, due to parts ejecting with force.

1. Steam clean the top plate. Remove it from the sliding mount by removing the cotter pins from the retaining pins. Remove the retaining pins and bushing pins from both sides of the top plate.



1. Wedge Stop Rod Nut
2. Flatwasher, 5/8", Plain
3. Wedge Stop Rod Spring
4. Wedge Stop Rod
5. Cotter Pin, 3/16 x 1"
6. Bumper Spring
7. Handle Spring
8. Bushing, 7/16"
9. Hex Locknut, 1/2–13
10. Bushing, 5/16"
11. Timer Spring
12. Step Jaw and Wedge Set
13. Bushing
14. Bracket Retainer Pin
15. Bracket Pin
16. Grease Fitting
17. Flatwasher, 1/2" I.D. x 1-3/4" O.D., Plain
18. Hexhead Bolt, 1/2–13 x 1-1/2", Grade 5
19. Pull Handle
20. Secondary Lock
21. Hexhead Bolt, 1/2–13 x 1-3/4", Grade 5
22. Bumper
23. Operating Handle
24. Timer
25. Hairpin Cotter Pin
26. Hexhead Bolt, 1/2–13 x 2-3/4", Grade 5

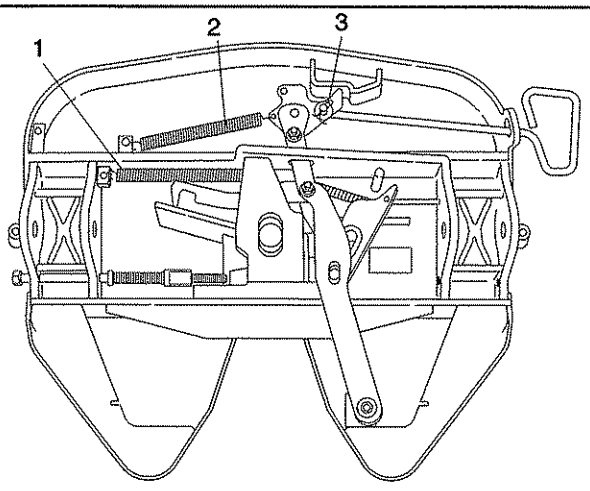
Fig. 1, Fontaine 6000 and 7000 No-slack II Series Fifth Wheel (left side release shown)

Removal and Disassembly

2. Using an overhead hoist, lift the fifth wheel off the sliding mount and tractor frame.
3. Turn the fifth wheel upside down.

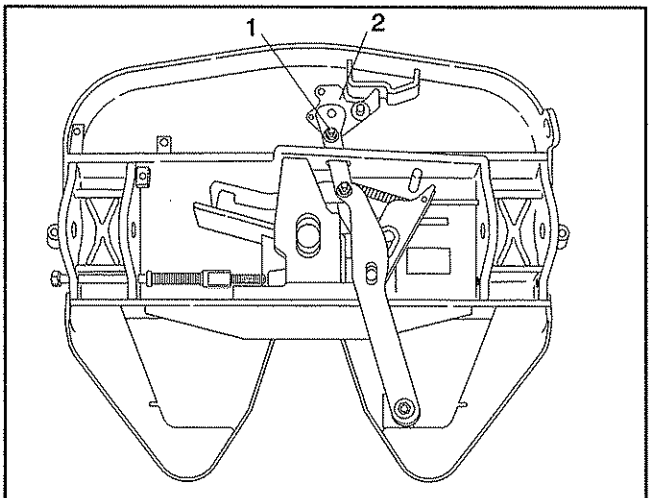
NOTE: While disassembling the fifth wheel, check it for cracks and for missing or damaged parts.

4. Remove the secondary lock spring and bumper spring. See **Fig. 2.** Remove the pull handle cotter pin and washer, then slide out the pull handle.
5. Unbolt and remove the secondary lock from the operating handle. Discard the locknut and bushing. See **Fig. 3.**
6. Unbolt and remove the bumper from the operating handle. Discard the locknut and bushing. See **Fig. 4.**
7. Unbolt the operating handle from the pivot mount and remove. Discard the locknut. See **Fig. 5.**
8. Remove the timer spring and timer. See **Fig. 6.**
9. Remove the jaw and wedge. See **Fig. 7.**



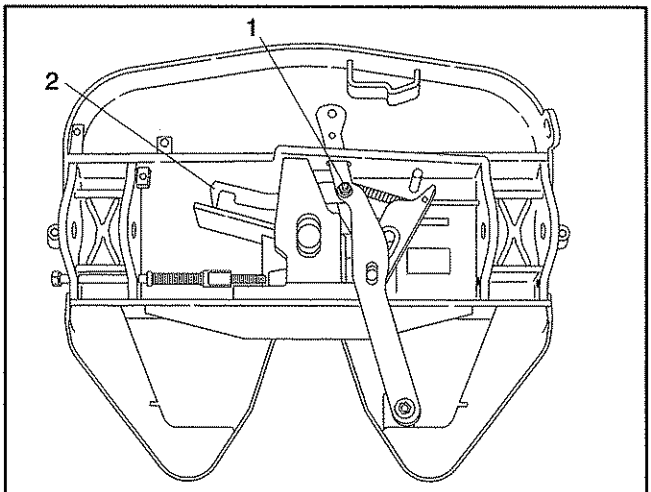
11/12/2002 f310920
1. Bumper Spring
2. Secondary Lock Spring
3. Pull Handle Cotter Pin

Fig. 2, Pull Handle



11/12/2002 f310921
1. Bolt
2. Secondary Lock

Fig. 3, Secondary Lock



11/12/2002 f310922
1. Bolt
2. Bumper

Fig. 4, Bumper

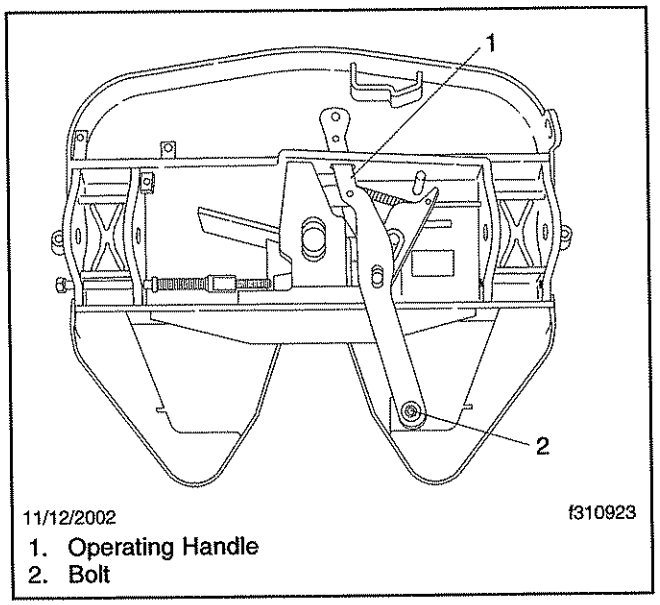


Fig. 5, Operating Handle

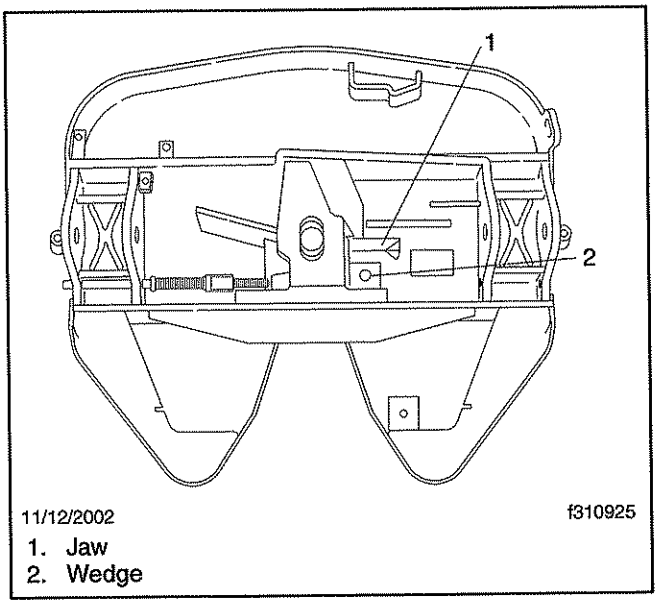


Fig. 7, Jaw and Wedge

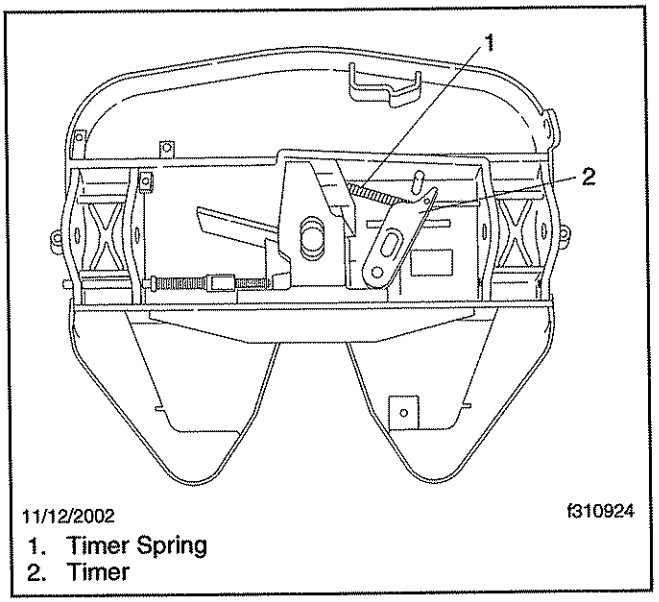


Fig. 6, Timer Spring and Timer

Assembly and Installation

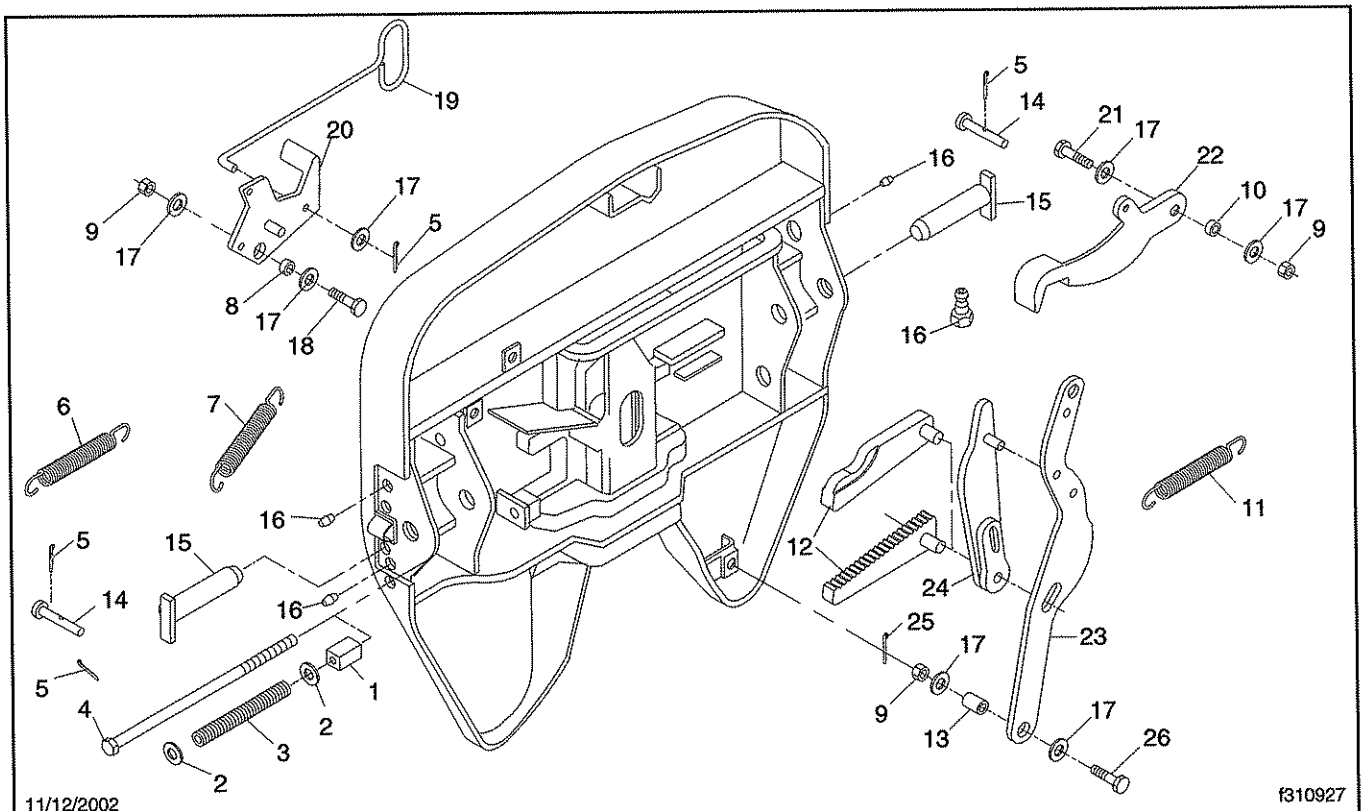
⚠ WARNING

Before rebuilding the assembly, check to make sure that there are no cracks in the crossmembers or other components. Also check the bracket pin holes to ensure they are not worn oversize (pins should fit snugly). Under no circumstances should a fifth wheel be repaired or used if any component (crossmember, saddle bearing, etc.) is cracked. Operating a fifth wheel with damaged components could result in disengagement of the trailer from the tractor, leading to personal injury or property damage.

Use a Moly-based lubricant such as Mobil grease Moly 50 or equivalent when applying lubricant to the locking jaw and wedge. Lightly oil other moving parts in the fifth wheel.

See **Fig. 1** for an exploded view of a Fontaine® 6000 or 7000 No-Slack II series fifth wheel.

1. Always assemble parts around a 2-inch kingpin or a 2-inch-diameter shaft. Insert the jaw first, then



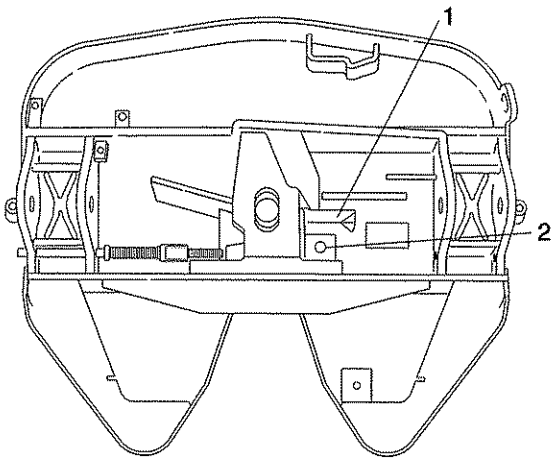
1. Wedge Stop Rod Nut
2. Flatwasher, 5/8", Plain
3. Wedge Stop Rod Spring
4. Wedge Stop Rod
5. Cotter Pin, 3/16 x 1"
6. Bumper Spring
7. Handle Spring
8. Bushing, 7/16"
9. Hex Locknut, 1/2–13
10. Bushing, 5/16"
11. Timer Spring
12. Step Jaw and Wedge Set
13. Bushing
14. Bracket Retainer Pin
15. Bracket Pin
16. Grease Fitting
17. Flatwasher, 1/2" I.D. x 1-3/4" O.D., Plain
18. Hexhead Bolt, 1/2–13 x 1-1/2", Grade 5
19. Pull Handle
20. Secondary Lock
21. Hexhead Bolt, 1/2–13 x 1-3/4", Grade 5
22. Bumper
23. Operating Handle
24. Timer
25. Hairpin Cotter Pin
26. Hexhead Bolt, 1/2–13 x 2-3/4", Grade 5

Fig. 1, Fontaine 6000 and 7000 No-slack II Series (left side release shown)

Assembly and Installation

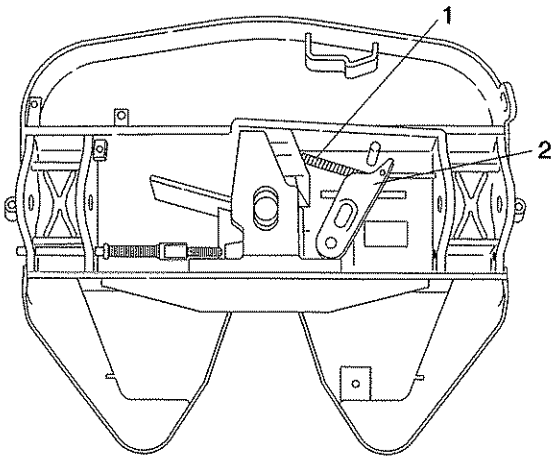
the wedge below it. See **Fig. 2**. Grease the jaw and wedge on the top and bottom.

2. Install the timer and the timer spring. See **Fig. 3**.
3. Install the operating handle and bolt to the pivot mount. See **Fig. 4**. Use the existing bolt, washer, hairpin cotter pin and bushing. Inspect the bushing for wear before using it and replace it if necessary.



11/12/2002 f310925
1. Jaw
2. Wedge

Fig. 2, Jaw and Wedge



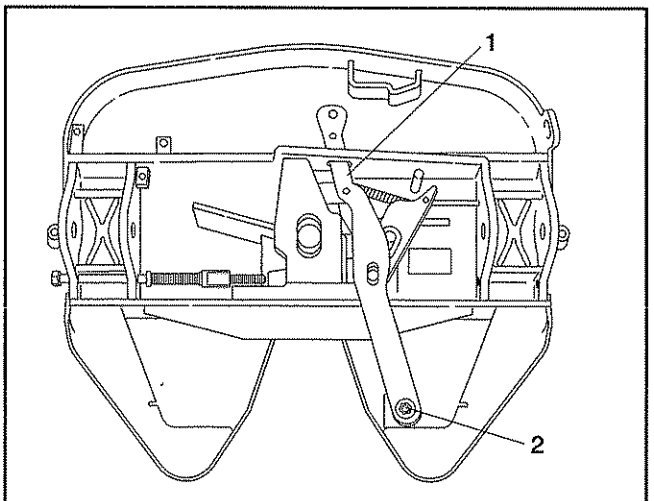
11/12/2002 f310924
1. Timer Spring
2. Timer

Fig. 3, Timer Spring and Timer

Use the new locknut that is supplied in the repair kit. Note the orientation of the bolt (**Fig. 1**).

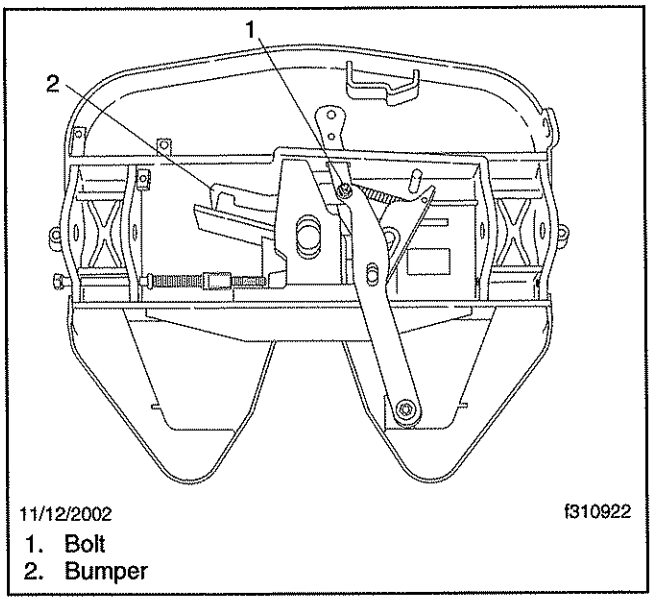
4. Install the bumper and bolt it to the operating handle. See **Fig. 5**. Use the existing bolt and washers (inspect for wear before using and replace if necessary). Use the new locknut and bushing that is supplied in the repair kit. Note the orientation of the bolt (**Fig. 1**). After installing the bumper, check to make sure that it can pivot freely.
5. Insert the secondary lock and bolt it to the operating handle. See **Fig. 6**. Use the existing bolt and washers (inspect for wear before using and replace if necessary). Use the new locknut and bushing that is supplied in the repair kit. Note the orientation of the bolt (**Fig. 1**).
6. Install the pull handle. See **Fig. 7**. Use the existing washer and cotter pin (inspect for wear before using and replace if necessary). Attach the new secondary lock/bumper spring that is supplied in the repair kit. Open and close the fifth wheel to ensure that it works properly. The fifth wheel must be properly lubricated before opening and closing the wheel.

Use a Moly-based lubricant such as Mobil grease Moly 50 or equivalent when applying lubricant to the locking jaw and wedge. Lightly oil other moving parts in the fifth wheel.



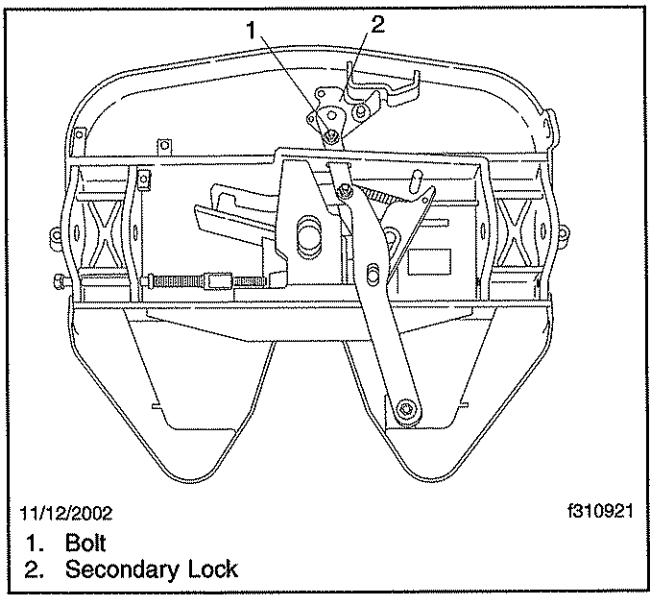
11/12/2002 f310923
1. Operating Handle
2. Bolt

Fig. 4, Operating Handle



1. Bolt
2. Bumper

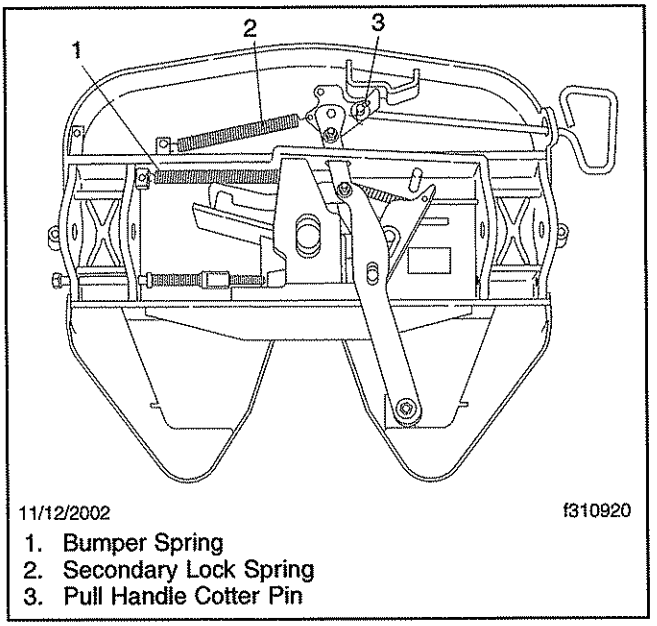
Fig. 5, Bumper



1. Bolt
2. Secondary Lock

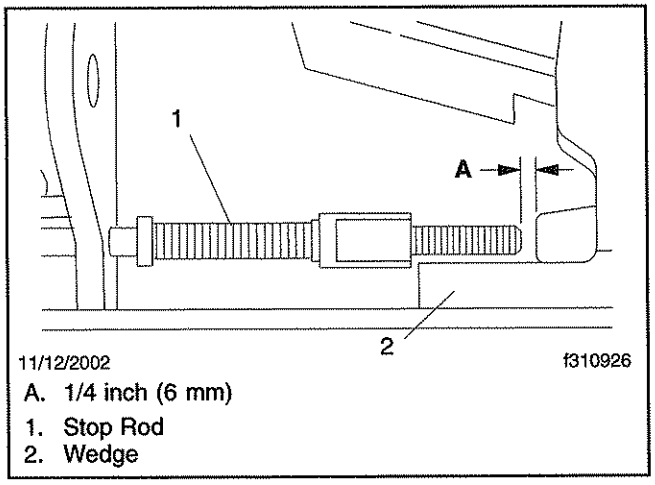
Fig. 6, Secondary Lock

7. Close the fifth wheel several times with a standard 2-inch kingpin tool. With the lock closed, adjust the wedge stop rod so that the end is 1/4-inch (6 mm) from the wedge. See **Fig. 8.**
8. Using an overhead hoist, position the fifth wheel on the sliding mount assembly. Insert the bushing pins. Install the retaining pins and the 1-inch-long cotter pins.



1. Bumper Spring
2. Secondary Lock Spring
3. Pull Handle Cotter Pin

Fig. 7, Pull Handle



A. 1/4 inch (6 mm)
1. Stop Rod
2. Wedge

Fig. 8, Wedge Stop Rod Adjustment

Troubleshooting Tables

Problem—Difficulty Coupling

Possible Cause	Remedy
The kingpin is too high to trip the latch.	Lower the landing gear.
The trailer plate or kingpin is damaged.	Check the trailer plate for flatness. Check the kingpin for squareness with the trailer plate.

Problem—Excessive Wear on the Fifth Wheel Top Plate

Possible Cause	Remedy
Damaged trailer plate.	If the trailer plate is not flat, replace it.

Problem—Difficulty Uncoupling

Possible Cause	Remedy
Pressure on the locking mechanism caused by truck drifting apart from the trailer putting excess pressure on the lock.	Back up the trailer and set the brakes. Strike the wedge stop rod which protrudes through the side of the fifth wheel. This spring-loaded rod will release the pressure on the locking mechanism.
Oval-shaped kingpin.	Lower the landing gear.
Debris build-up in the grease.	

Problem—Slack

Possible Cause	Remedy
Undersized kingpin.	Replace the kingpin if worn greater than 1/8 inch (3 mm) at the 2-inch (5-cm) diameter.
Worn jaw and wedge	Jaw and wedge could have excessive wear. Replace them.