



Service Manual

30C, 55C, and 100C Sideshifters

Serial Numbers 660679 through 666361

Manual Number 667434


cascade[®]
corporation

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 **CAUTION: Rated capacity of the truck/sideshifter combination is a responsibility of the original truck manufacturer and may be less than that shown on the sideshifter nameplate. Consult the truck nameplate.**

INTRODUCTION

This manual provides instructions for servicing Cascade's 30C 55C, and 100C Sideshifters and includes information on installation and troubleshooting. Figure 1 illustrates a complete Sideshifter assembly (the backrest may either be included with the Sideshifter or you may use the backrest from your truck carriage). The capacity of each Sideshifter is listed on the following chart.

Model	Capacity, pounds @ 24-inch load center
30C	3,000 lb.
55C	5,500 lb.
100C	10,000 lb.

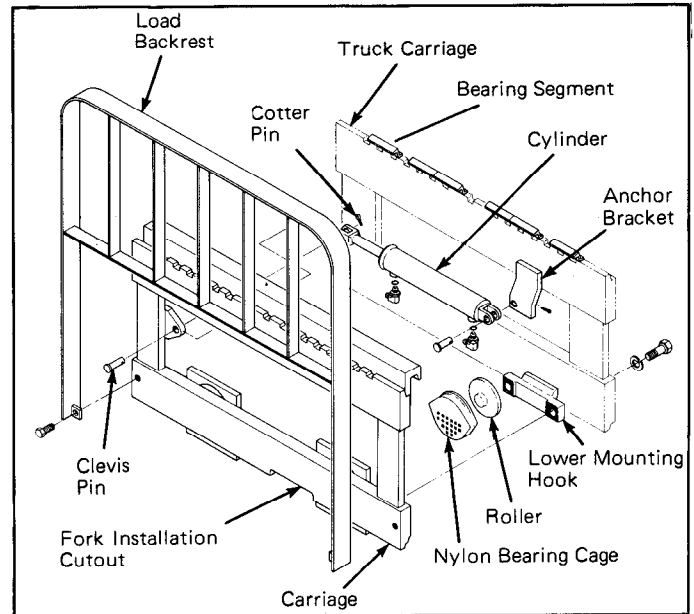


Figure 1. Sideshifter Assembly

TROUBLESHOOTING GUIDE

The following table lists the problems that may be encountered with your Cascade Sideshifter, the probable causes, and the

recommended corrective action that should be taken to restore the unit to normal operating condition.

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Sideshifter fails to move when control lever is actuated	Insufficient hydraulic oil in truck supply tank	Bring hydraulic oil supply to correct level
	Truck relief valve set too low	Set valve to relieve at 2000 psi. See truck Service Manual
	Faulty truck hydraulic system causing insufficient pressure	Repair truck hydraulic system. Check for leaks or faulty pump. See truck Service Manual
	Obstruction to flow in the hydraulic line	Remove obstruction
	Over-capacity load being handled	Reduce load weight to that recommended for the Sideshifter
	Lower hooks binding the Sideshifter	Make sure truck carriage conforms to ITA dimension standards. See Figure 2. You may have to grind some excess material from hooks.
	Insufficient lubrication	Lubricate top bearing segments and lower rollers
Lower rollers fail to turn	Oil bypassing sideshifter cylinder piston packing	Replace worn or damaged piston seals
	Insufficient lubrication	Lubricate all wear points
	Contamination on rollers	Remove roller cage and clean. Lubricate and reassemble
	Flat surface worn on roller	Replace roller assembly
Sideshifter cylinder leaks	Bent or damaged truck carriage	Straighten or replace truck carriage
	Worn retainer packing seals	Replace retainer packing
	Damaged or nicked finish on piston rod	Polish the rod until the surface is smooth; if damage is too deep to smooth, replace rod
Excessive looseness of Sideshifter on truck carriage	Worn bearing segments	Replace bearing segments
	Lower mounting hook(s) loose or damaged	Repair or replace hook(s) as required
	Truck carriage undersize	Repair or replace truck carriage to conform to ITA standards

SIDESHIFTER SERVICE

Perform the following procedures **at least** every 1000 hours of operation; more frequently in very abrasive environments. Refer to Figure 2.

1. Remove the forks.
2. Disconnect the cylinder rod from the Sideshifter by removing the cotter pin and clevis pin.

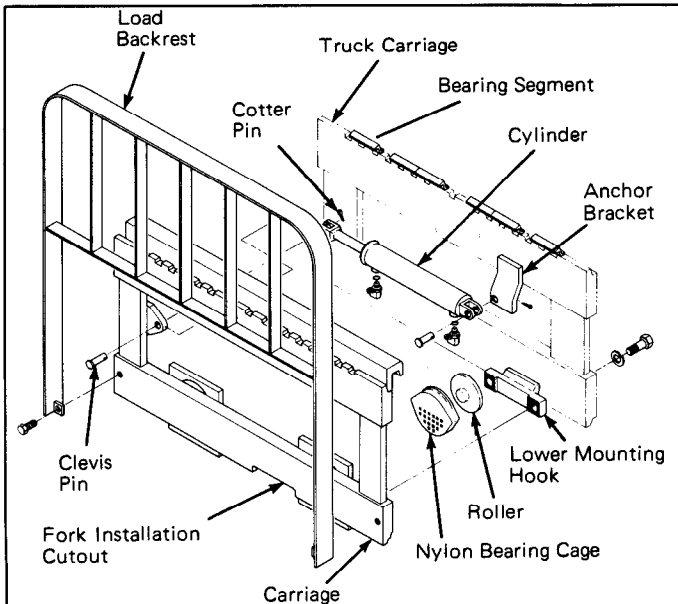


Figure 2. Sideshifter Assembly

3. Remove the lower mounting hooks.

CAUTION

The Sideshifter is free to slide off the truck carriage at this point, so be careful in handling the Sideshifter.

4. Manually shift the Sideshifter to one side just far enough to expose half of the upper bearing segments and one lower roller bearing assembly.
5. Service the upper bearing segments:

- a. Remove the bearing segments and inspect them for wear. Replace **all** bearing segments if any one is worn to less than 3/32 inch thick.
- b. Clean the truck carriage notches and upper surfaces of any built-up contaminants.
- c. Re-install the bearing segments as shown in Figure 14. Apply one of the recommended lubricants listed on the following chart about 1/32 inch thick to the bearing segments.

PREFERRED – SHELL DARINA AX #2

ALTERNATES – SHELL ALVANIA #2

- CHEVRON MOLY-LUBE-1
- MOLYKOTE-BR2-S
- MOBIL EP #2

6. Service the lower roller bearing assemblies:

- a. Remove the roller bearing assembly from the lower bar on the Sideshifter. The roller bearing should be free to rotate. The roller bearing should have a bright, doughnut-shaped wear pattern as shown in Figure 3.

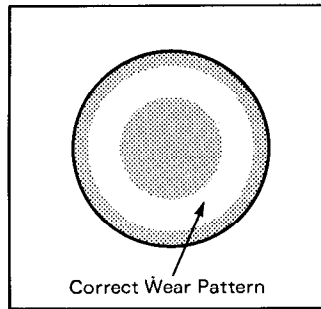


Figure 3. Roller Bearing Wear Pattern

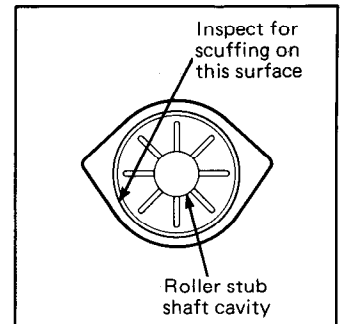


Figure 4. Roller Bearing Cage

- b. Remove the roller from the nylon bearing cage by tapping the edge of the cage on a work bench. Clean both parts thoroughly of any built-up contaminants and buff the roller until it is bright and smooth.
- c. Replace the nylon bearing cage if the roller cavity has worn enough to allow the roller to scuff the bearing cage. See Figure 4.
- d. Fill the roller cavity of the nylon bearing cage about 2/3 full with a Cascade recommended lubricant (refer to the chart, Step 5C, page 4).
- e. Place the roller in the nylon bearing cage. The roller should be free to rotate.
- f. Tap the bearing assembly into its cavity on the Sideshifter.
- g. Manually shift the Sideshifter to the opposite side to expose the remaining bearing segments and roller bearing assembly. Repeat Steps 5 and 6.

7. Install the adjustable lower mounting hooks. **NOTE:** The hooks should not contact the truck carriage lower crossbar. The serrations on the hook allow you to move the hook up or down to attain a clearance between the minimum and maximum clearance shown in Figure 5. Torque the mounting cap-screws to 65–70 ft.-lbs.

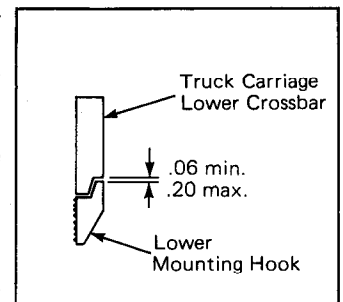


Figure 5. Lower Hook Clearance

8. Reconnect the cylinder rod to the Sideshifter with the clevis pin and a new cotter pin. See Figure 2.
9. Sideshift the unit to each side and check for any binding or hose damage.
10. Install the forks. See page 7.

CYLINDER SERVICE

1. Disconnect and cap the cylinder hoses and cylinder ports.
2. Remove the cylinder from the Sideshifter by removing the cotter pins and clevis pins. See Figure 6.

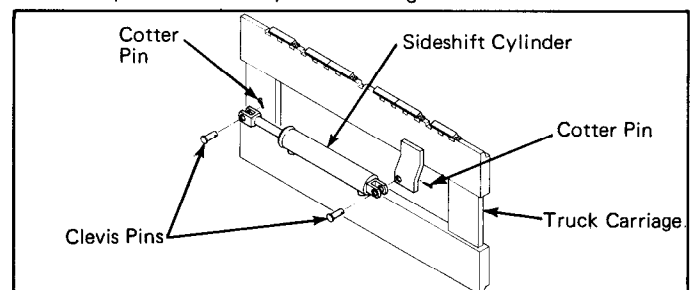


Figure 6. Removing the Sideshift Cylinder

- Place the cylinder in a soft-jawed vise and remove the three socket head capscrews and lockwashers from the retainer washer at the rod end of the cylinder. Slip the retainer washer out of the shell. See Figure 7.

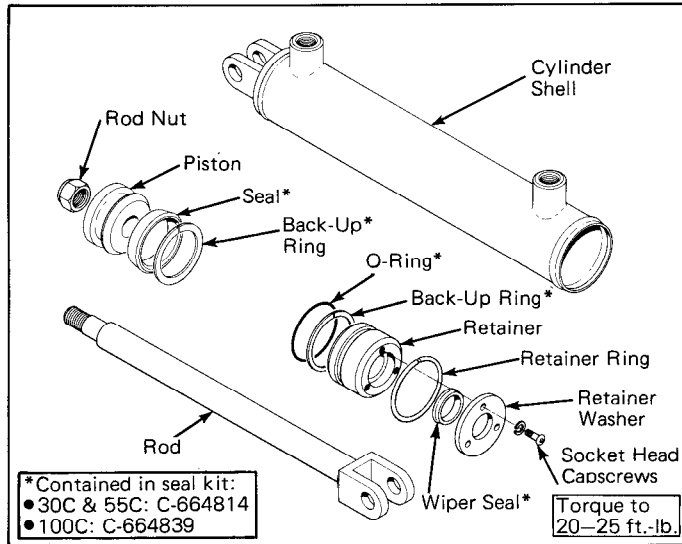


Figure 7. Cylinder Assembly

- Remove the retainer ring by placing a screwdriver on one side of the ring near the split. See Figure 8. Tap the screwdriver gently with a hammer. The retainer ring should compress at the split and turn sideways. Grasp the ring and pull it out.

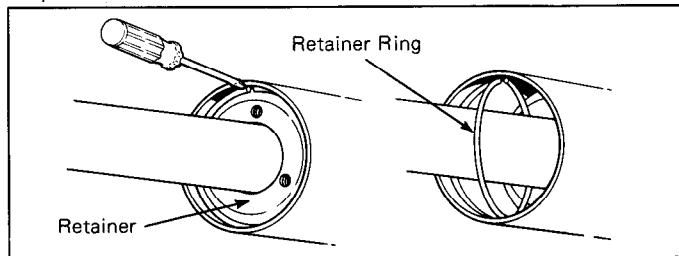


Figure 8. Removing the Retainer Ring

- Pull the rod out of the shell assembly, taking care not to score the inside of the cylinder shell. A severely scored shell should be replaced.
- Loosen the rod nut and remove the piston from the rod. See Figure 7.
- Remove the retainer from the rod. Inspect the rod for nicks and scratches. A nicked or scratched rod should be replaced.
- Service the retainer and the piston.
 - Remove the O-ring, back-up ring, and wiper seal from the retainer. See Figure 7.
 - Remove the back-up ring from the piston. To remove the seal, place the piston in a soft-jawed vise, pry up the seal with a blunt screwdriver, and cut the seal with a knife. See Figure 9.
 - Inspect the grooves in the retainer and the piston for sharp nicks or projections that could cut the seals during installation. Use an emery cloth to smooth small nicks or projections. Polish the chamfer angle on the piston outside diameter to produce a broad radius and a smooth surface. A badly gouged retainer and/or piston should be replaced.
 - Clean the retainer and the piston with a non-corrosive solvent.
 - Lubricate the replacement seals with hydraulic oil.
 - Place the piston in a soft-jawed vise and lubricate the piston with hydraulic oil. Hook one side of the seal in the groove and push it over the piston, see Figure 10. Install the back-up ring. See Figure 11 for correct placement of seals.

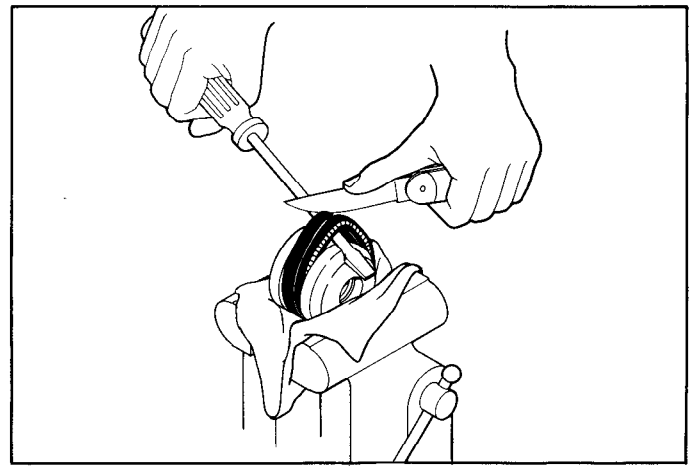


Figure 9. Cut Seal

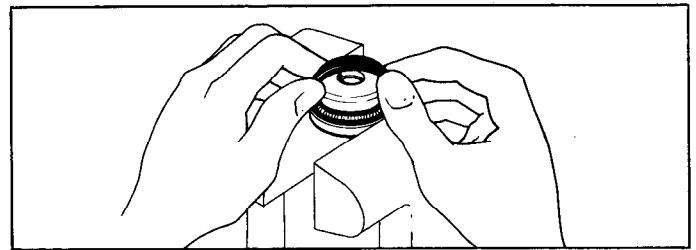


Figure 10. Install Seal

- Place the retainer in a soft-jawed vise and lubricate the retainer with hydraulic oil. Hook one side of the O-ring in the groove and push it over the retainer. Avoid excessive stretching of the O-ring. Install the back-up ring. See Figure 11 for correct seal placement. Remove the retainer from the vise and install the wiper seal.
- Slide the retainer washer and the retainer assembly onto the rod. See Figure 11.
 - Slide the piston in place on the rod. Install and torque the rod nut on 30C and 55C units to 40–45 ft.-lb. (lubed) and on 100C units to 120 ft.-lb. (lubed). See Figure 11.
 - Liberaly apply petroleum jelly or hydraulic oil to the seals, rod, and cylinder bore, then slide the rod assembly into the cylinder shell.
 - Install the retainer ring in its groove, keeping the retainer washer against the rod clevis. See Figure 11. Position the retainer washer over the retainer and tighten the three socket head capscrews and lockwashers to 20–25 ft.-lb. (lubed).
 - Install the cylinder onto the Sideshifter as shown in Figure 2, using new cotter pins to secure the clevis pins.
 - Test the Sideshifter as described in the Installation section, "Testing Prior to Operation". Check the cylinder for leaks.

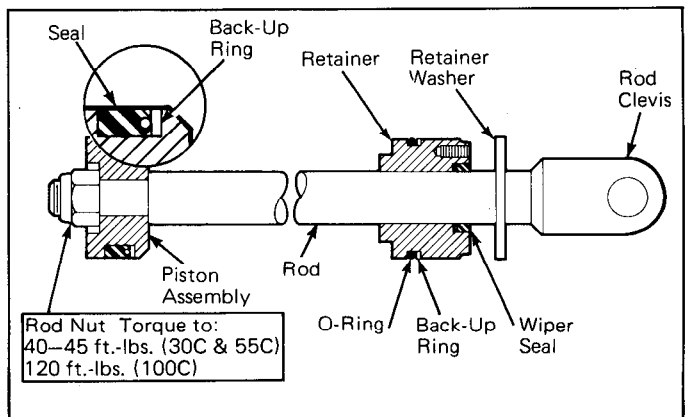


Figure 11. Rod Assembly

INSTALLATION

CAUTION

Rated capacity of the truck/sidshifter combination is a responsibility of the original truck manufacturer and may be less than shown on the sidshifter nameplate. Consult the truck nameplate.

INTRODUCTION

These instructions contain installation procedures for the 30C, 55C, and 100C Sidshifter. Figure 12 is an illustration of the complete sidshifter assembly (the backrest may either be included with the sidshifter or you may use the backrest from your truck carriage). Refer to this illustration when installing the sidshifter. The capacity of each sidshifter is listed on the following chart.

Model	Capacity, Pounds @ 24 inch Load Center
30C	3,000 lbs.
55C	5,500 lbs.
100C	10,000 lbs.

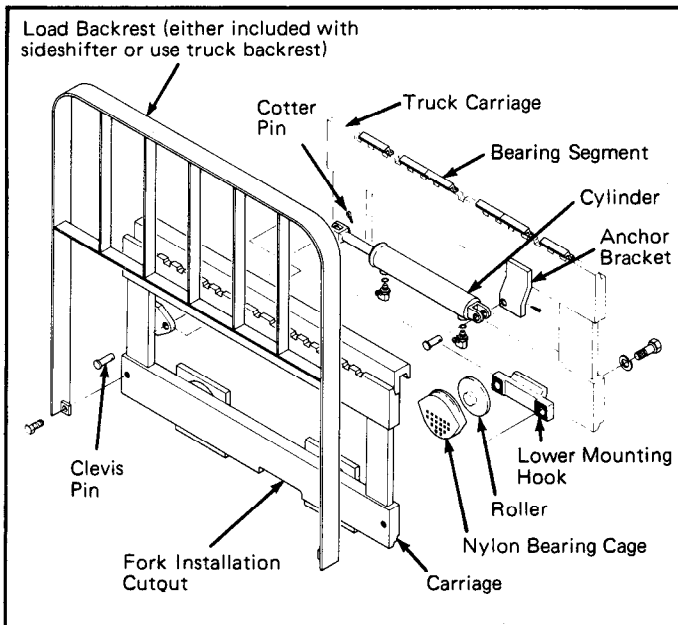


Figure 12. Sidshifter Assembly

TRUCK REQUIREMENTS

- Truck relief valve setting: 2000 psi. Refer to your truck service manual.
- Recommended hose size: No. 6 (3/8 in. I.D.); minimum required: No. 5 (5/16 in. I.D.).
- Truck carriage must conform to Industrial Truck Association (ITA) dimensional standards as shown in Figure 13.

Mounting	Dimension A (in.)	
	Min.	Max.
Class 2	14.94	15.00
Class 3	18.68	18.74

Figure 13. ITA Carriage Dimensions

TRUCK CARRIAGE PREPARATION

- Remove the forks and load backrest from the truck carriage.
 - Clean the upper and lower fork bar of built up grease and mill scale. Inspect the condition of the notches. Remove any burrs or sharp edges. Make sure the front surface of the two carriage crossbars are straight within .125 inches.
1. Fold the template (supplied with the sidshifter) along the crease lines. Fit the smaller fold into the center notch on the truck carriage and fold the remaining template over the notches to the right of the centerline. See Figure 14.
 2. Mark the two lines as shown in Figure 14.

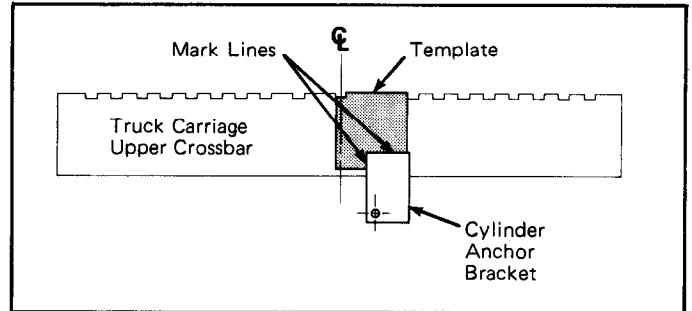


Figure 14. Use Template to Locate Cylinder Anchor Bracket on Truck Carriage.

3. Position the cylinder anchor bracket on the marks and weld the bracket in place using AWS E7018 rod. Pre-heat to 300°–350° F. and weld the sides and top with 0.40 inch fillet weld. See Figure 15.

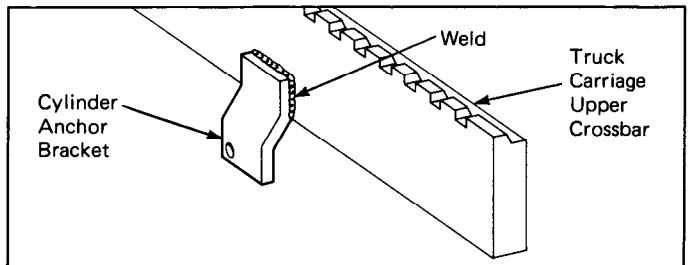


Figure 15. Weld the Top and Sides of Anchor Bracket

4. Install the bearing segments on the truck carriage as shown in Figure 16. Use the grease provided to coat the top surface of each segment.

SIDSHIFTER MODEL	CARRIAGE OVERALL WIDTH (in.)	DIMENSIONS (inches)	
		A	B
30C	32	11.25 min.—12.25 max.	1.25 min.
55C	36 & 42	14 min.—15 max.	
100C	42	16 min.—17 max.	1.50 min.
	48	19 min.—20 max.	
	60	22 min.—23 max.	

Figure 16. Bearing Segment Location

PRIOR TO INSTALLATION (SEE FIGURE 12)

1. Install the lower roller bearing assemblies in the sideshifter by locating the nylon bearing cages in their cavities and tapping them in place. Be careful not to damage the nylon bearing cages.
2. Remove the lower mounting hooks.

INSTALLATION

1. Using a suitable hoist, mount the sideshifter on the truck carriage.
2. Install the adjustable lower mounting hooks. **NOTE:** The hooks should not contact the truck carriage lower crossbar. The serrations on the hook allow you to move the hook up or down to attain a clearance between the minimum and maximum clearance shown in Figure 17.
3. Torque the mounting capscrews to 65–70 ft.-lbs.
4. Install the cylinder and secure the clevis pin with the cotter pin as shown in Figure 12.
5. Install the load backrest. Lube torque the capscrews on the 30C and 55C to 35–40 ft.-lbs. and on the 100C to 40–45 ft.-lbs.

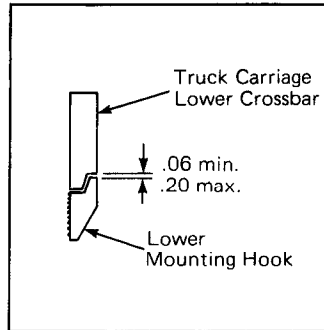


Figure 17. Lower Hook Clearance

PLUMBING

1. After the sideshifter has been mounted on the truck carriage, install Cascade Attachment Installation Kit No. C-663536 OR use hoses and fittings shown in Figure 18. Be careful not to pinch, twist, or otherwise damage the hoses. Do not route the hoses where moving parts can damage them.

IMPORTANT

In order to conform to industry standard practice, the hoses should be connected to the truck auxiliary valve as indicated by the following chart.

Sideshifter Movement	Motion of the operator's hand
Sideshift Right	Rearward or Up
Sideshift Left	Forward or Down

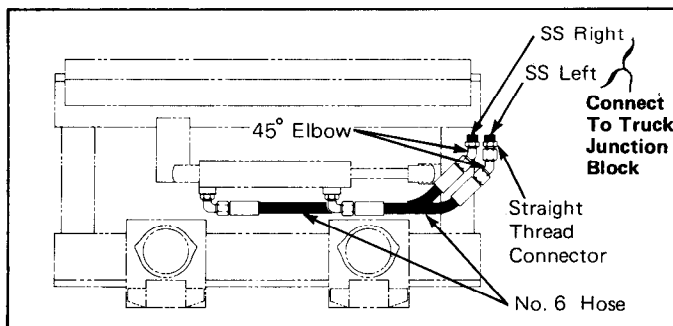


Figure 18. Plumbing the Sideshifter Assembly

2. Flush the hoses according to the following procedures to prevent damage to the cylinder.
 - a. Disconnect the sideshift hoses at the sideshift cylinder and connect the ends together using a nipple as shown in Figure 19.

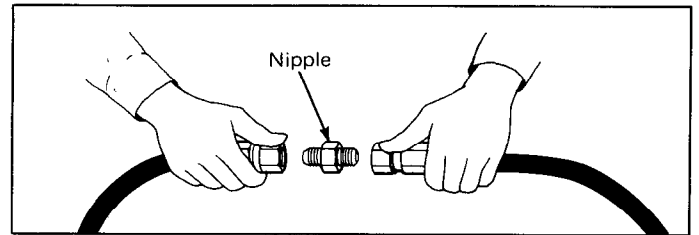


Figure 19. Connect Hoses Together Using a Nipple

- b. Start the truck and operate the sideshift lever approximately 30 seconds in both directions. This causes a flow through the hoses and will carry any debris left in the hoses to the truck hydraulic tank.
- c. Reconnect the sideshift hoses to the sideshift cylinder.

TESTING PRIOR TO OPERATION

1. Shift the sideshifter to each side and check for any binding.
2. Check the position of the upper bearing segments. To provide the best load-carrying abilities and longest wear, the bearing segments should be as close as possible to the end of the sideshifter when it is sideshifted to each extreme side. The edge of the sideshifter must not expose over 1/2 of the bearing segment in the sideshifted position.

HOW TO INSTALL AND POSITION THE FORKS

1. Release the spring lock on the top of each fork by lifting the lever on the backside of the fork as shown in Figure 20.
2. Place each fork over the cutout in the lower fork bar of the sideshifter. See Figure 12.
3. Slide the fork to the desired position.
4. Lock the fork in place by pushing the lever down as shown in Figure 21. Make sure the pin is engaged in the notch.

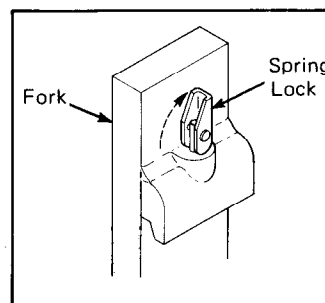


Figure 20. Release the Spring Lock

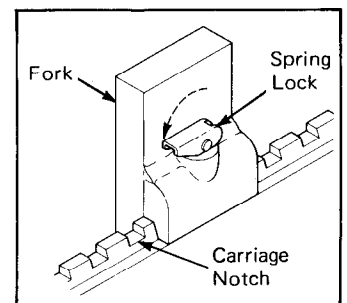


Figure 21. Lock Fork in Place



**Do you have questions
you need answered
right now?**

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