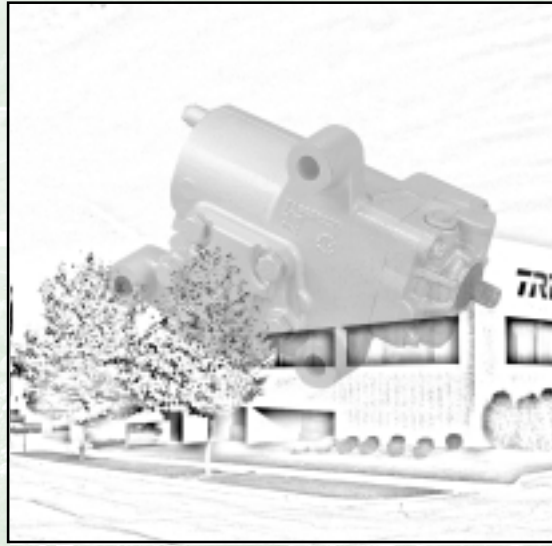




TRW Automotive
Commercial Steering Systems

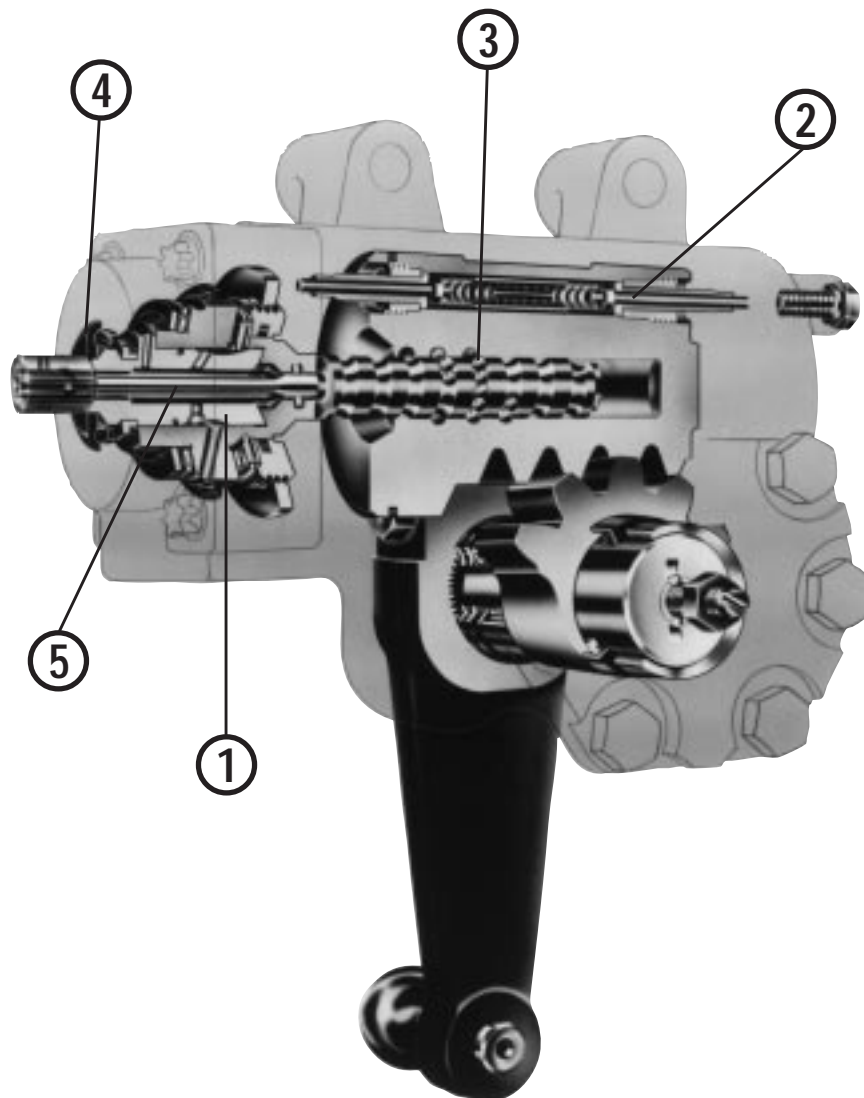
TAS Steering Gear Service Manual

TAS 40,55,65, AND 85 SERIES - STANDARD/STEP BORE





Design Features

- ① **Rotary Valve** - This device provides responsive steering control.
 - ② **Poppets (optional)**- These unloading valves are automatically set to furnish power steering pump protection and reduce pressure to unload steering linkage at vehicle axle stop settings.
 - ③ **Recirculating Balls** - Combine high mechanical efficiency with smooth operation.
 - ④ **Dirt & Water Seals** - Lip-type seals on both input and output shafts.
 - ⑤ **Torsion Bar** - Provides positive valve centering with definitive "feel of the road".
- Relief valves furnish pump protection by limiting maximum pressure (optional).
 - Balanced area cylinder so back pressures cannot affect steering stability.
 - High temperature seals were developed to withstand temperatures of 250°F.
 - Manual steering capability provides for steering control in the event of hydraulic failure.
 - Auxiliary porting available for auxiliary cylinder control.
 - Seal protectors provide protection from harsh environment conditions.



Hazard Warning Definitions

 WARNING	A warning describes hazards or unsafe practices which could result in severe personal injury or death.
 CAUTION	A caution describes hazards or unsafe practices which could result in personal injury or product or property damage.
NOTE	A note gives key information to make following a procedure easier or quicker.

Disclaimer

This Service Manual has been prepared by TRW Commercial Steering Division for reference and use by mechanics who have been trained to repair and service steering components and systems on heavy commercial vehicles. TRW Commercial Steering Division has exercised reasonable care and diligence to present accurate, clear and complete information and instructions regarding the TRW Commercial Steering TAS Series Integral Power Steering Gears. Since this is a general Service Manual, the photographs and illustrations may not look exactly like the steering gear being serviced. The procedures, therefore, must be carefully read and understood before servicing.

If inspection or testing reveals evidence of abnormal wear or damage to the TAS steering gear or if you encounter circumstances not covered in the Manual, **Stop - Consult the vehicle manufacturer's Service Manual and warranty. Do not try to repair or service a TAS steering gear which has been damaged or includes any part that shows excessive wear unless the damaged and worn parts are replaced with original TRW replacement and service parts and the unit is restored to TRW's specifications for the TAS steering gear.**

It is the responsibility of the mechanic performing the maintenance, repairs or service on a particular TAS steering gear to (a) inspect the steering gear for abnormal wear and damage, (b) choose a repair procedure which will not endanger his/her safety, the safety of others, the vehicle, or the safe operation of the vehicle, and (c) fully inspect and test the TAS steering gear and the vehicle steering system to ensure that the repair or service of the steering gear has been properly performed and that the steering gear and system will function properly.

Patents

TRW Commercial Steering Division TAS power steering gears are covered by several United States and foreign patents, either issued or pending.

Section 3 **On-Vehicle Service**

Filling and Air Bleeding the System	21
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Filling and Air Bleeding the System

Tools Required

$\frac{5}{16}$ " Socket
Lbf•in. Torque wrench

Materials Required

Hydraulic fluid

CAUTION

Make sure poppets are set correctly before beginning this procedure.

Run engine for 10 seconds, turn off and fill reservoir

Hydraulic fluid

1. Fill the reservoir nearly full. Do not steer. Start and run the engine for 10 seconds, then shut it off. Check and refill the reservoir. Repeat at least three times, checking the reservoir each time.

CAUTION

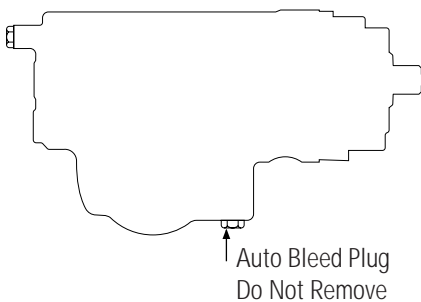
Do not allow the fluid level to drop significantly or run out of the reservoir. This may induce air into the system.

Run engine for 2 minutes, turn off and fill reservoir

Hydraulic fluid

2. Start the engine and let it idle for 2 minutes. Do not steer. Shut off the engine and check the fluid level in the reservoir. Refill as required.

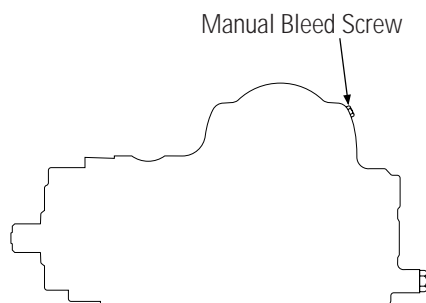
Steer vehicle



3. Start the engine again. Steer the vehicle from full left to full right several times. Add fluid, as necessary, to the full line on the dip stick.

Automatic bleed systems should now be free from trapped air. **Manual bleed systems continue with step 4.**

Allow air to bleed out from bleed screw



Lbf•in. Torque wrench
 $\frac{5}{16}$ " Socket

4. With engine idling, steer from full left turn to full right turn several times. Stop steering and loosen the manual bleed screw about one turn. Allow air and aerated fluid to "bleed out" until only clear fluid is seen. Close the bleed screw, refill the reservoir if required.

Repeat step 4 three to four times until all the air is discharged. Torque manual bleed screw to **45 lbf•in.**

CAUTION

Do not turn steering wheel with bleed screw loosened.

Input Shaft Seal Replacement

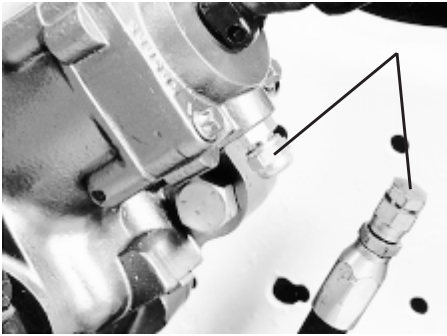
Tools Required

Hammer
J37073
Screwdriver

Materials Required

Clean cloth
Drip pan
High pressure fitting
Hydraulic fluid
Plug
Shop towel

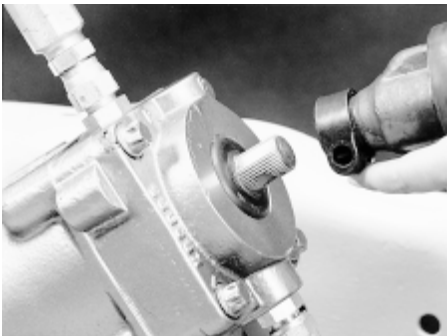
This procedure uses the vehicle's power steering pump to force out the input shaft seal. To use this procedure, the power steering pump should have a minimum of 1,500 psi available.



Disconnect return line

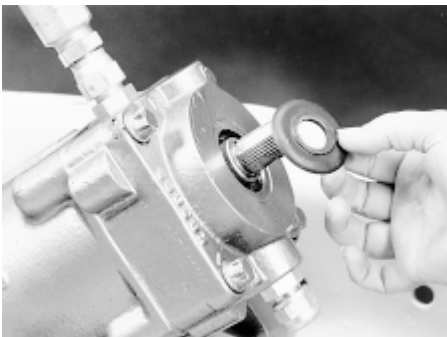
High pressure fitting
Plug

1. Disconnect return line from the steering gear and plug the line. Also cap the return port of the gear with a high pressure fitting.



Disconnect column

2. Remove the steering column from the gear input shaft.



Remove dirt & water seal

3. Remove the dirt and water seal from the steering gear. Save this seal to match the new seal to the correct size.



Remove retaining ring

Clean cloth
Screwdriver

4. Wipe out the grease and then remove the spiral retaining ring. Use a screwdriver inserted into the notch formed in the end of the ring. Be careful not to scratch the bore with the screwdriver.



Replace column

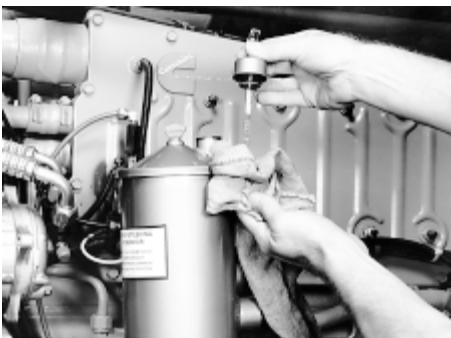
- Slip the steering column back onto the input shaft with the pinch bolt installed, but not tightened.



Wrap exposed area

Drip pan
Shop towel

- Tie or wrap a shop towel around the input shaft area and place a drip pan under the vehicle to catch the oil.



Fill reservoir

Hydraulic fluid

- Add fluid as necessary, to the full line on the dipstick. Do not mix fluid types.

⚠ WARNING Any mixture of fluid types, or use of any unapproved fluid could lead to seal deterioration and leaks. A leak could ultimately cause the loss of fluid, which could result in a loss of power steering assist.

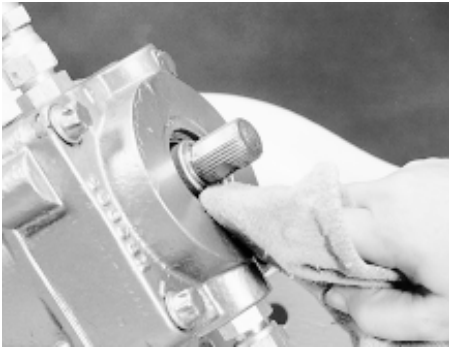
Force out the seal

- With the vehicle in neutral, momentarily turn the starter (quickly turn off the engine if it starts).



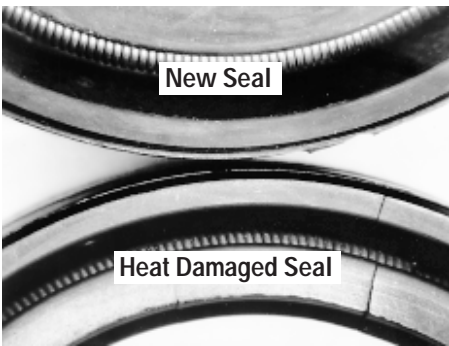
Remove input shaft seal

- Remove the shop towel. Disconnect the steering column, and remove the input shaft seal.



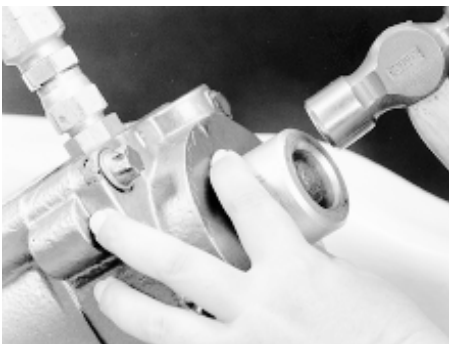
Inspect seal area

- 10. Check the seal area of the valve housing for any seal fragments. Remove any that are found.



Inspect old seal

- 11. Check the seal for heat damage. If the seal is stiff and brittle, and not pliable like the new seal, it is probably heat damaged. Determine and fix the cause of excessive heat in the vehicle.

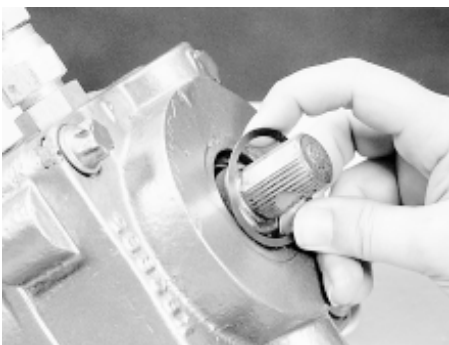


Install new seal

Hammer
J37073

- 12. Put clean grease 406038 on the inside dia. of the new input shaft seal, and place it over the input shaft. With the small dia. of tool J37073 against the seal, tap the tool until the tool shoulder is square against the valve housing. Remove any seal material that may have sheared off in the seal bore or retaining ring groove.

CAUTION Do not use a socket to install this seal because you will not be able to control seal installation depth, possibly causing a leak.



Install retaining ring

- 13. Insert new retaining ring into the groove.



Install dirt & water seal

- 14. Pack the end of the valve housing bore around the input shaft with grease 406038. Choose the correct size dirt & water seal by comparing the choices to the old seal, or by measuring the major diameter of the input shaft serrations (see chart next page). Apply more grease 406038 to the new dirt & water seal and install it over the input shaft. Seat it in the groove behind the serrations and against the valve housing.



Reconnect column

15. Reconnect the steering column to the input shaft and tighten the pinch bolt to torque level specified.



Reconnect return line

16. Reconnect the return line to the steering gear return port.

Air bleed system

17. Air bleed the system using the procedure on page 21.

Seal Part No.	Serration Size	Major Serration Dia.
478044	13/16" x 36	0.807 / 0.799
478060	7/8 x 36	0.866 / 0.857
478050	1" x 36	0.987 / 0.977
478050	1" x 79	1.008 / 1.000

Sector Shaft Adjustment

Tools Required

Screwdriver
3/4" Socket
3/4" Open end wrench

Materials Required

This adjustment can only be completed on the vehicle if the adjusting screw jam nut is accessible. This nut is located on the side cover.

Photos in this section were taken on a mock frame rail for clarity.



Center the sector shaft

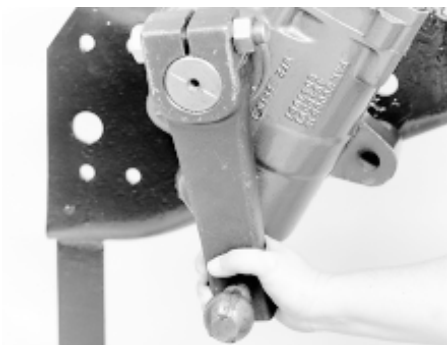
1. With the engine on, rotate the steering wheel (input shaft) until the timing mark on the sector shaft lines up with the mark on the housing. The line on the sector shaft should be at a 90° angle from the input shaft. The sector shaft is now on its "center of travel". Turn the vehicle off.



Remove the drag link

2. Remove the drag link from the pitman arm.

CAUTION To avoid resetting the poppets, do not rotate the input shaft more than 1½ turns from the "center of travel" position while the drag link is disconnected.



Check for sector shaft lash

3. From the "center of travel" position, grasp the pitman arm and gently try to rotate it back and forth. If looseness or lash is felt at this point, the sector shaft is out of adjustment.



Loosen jam nut

3/4" Socket

4. Loosen the jam nut.

NOTE

If the gear is removed from the vehicle to adjust the lash:

- Leave the pitman arm connected to the gear.
- Best option is to follow the Final Adjustment procedure on page 67.
- Alternate option is to continue with step 5 of this procedure.



Position adjusting screw

Screwdriver

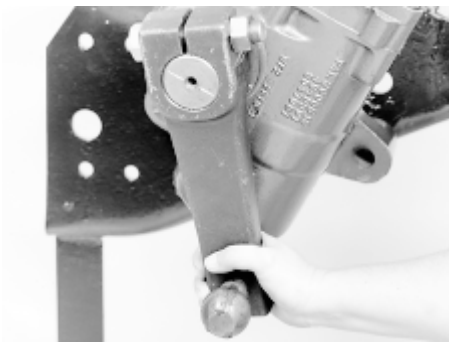
5. If no lash was detected in step 3, turn the shaft adjusting screw counterclockwise until you feel lash at the output shaft.



Adjust shaft

Screwdriver
3/4" Open end wrench

6. Slowly turn the shaft adjusting screw clockwise until you feel no lash at the output shaft without using more than 10 lbf•ft (14 N•m) of torque. From this position, turn the screw clockwise 1/8 to 3/16 of a turn more. Hold the adjusting screw in place, and tighten the jam nut. **Final jam nut torque 43 lbf•ft (58 N•m).**



Recheck for lash

7. Turn the steering wheel 1/4 turn each side of center, then back to center and recheck the pitman arm for lash. You should feel no lash; if there is lash, repeat steps 4, 6 and 7.



Connect drag link

8. Reconnect the drag link to the pitman arm according to manufacturer's specifications.

⚠ CAUTION Maintain grease in the sector shaft bearing through the grease fitting in the housing using only a hand operated grease gun. Add grease until it begins to extrude past the dirt and water seal. Do not use a power grease gun because it will supply grease too fast; this could adversely affect the high pressure seal and contaminate the hydraulic fluid.

Poppet Readjustment - Single Gears

Tools Required

7/32" Allen wrench
 5/8" Open end wrench
 3/4" Open end wrench
 3/4" Socket
 Lbf•lb Torque wrench

Materials Required

Hydraulic fluid
 Jack

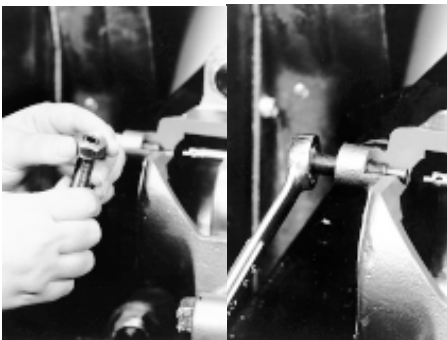
This resetting procedure will work in most cases with at least 1 3/4 hand-wheel-turns from each side of center. If you're making a large reduction in wheelcut and this procedure does not work, you may have to replace or internally reset the poppets using the procedure described in the Poppet Component section of this Service Manual.



Set axle stops, warm-up system

1. Set the axle stops to vehicle manufacturer's wheelcut or clearance specifications.

Start the engine and allow the vehicle to idle for 5-10 minutes to warm the hydraulic fluid. Shut off the engine.



Assemble adjusting screw into nut

2. If a new poppet adjusting screw and nut are being used, turn the screw into the non-sealing end of the jam nut until the drive end of screw is flush with the nut.

Your steering gear will have either a fixed stop bolt or an adjusting screw. If the adjusting screw is already part of the steering gear, back the nut off of the adjusting screw until it is flush with the end of the adjusting screw.

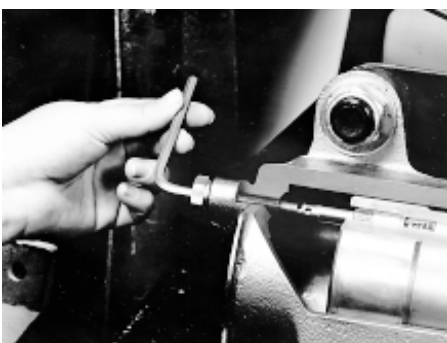


Remove poppet stop bolt

5/8" Open end wrench

3. Make sure the engine is off and the road wheels are in straight ahead position. Remove and discard the poppet fixed stop bolt (if equipped) and washer (if equipped) from the lower end of the housing.

If the unit has a poppet adjusting screw and sealing nut that need to be replaced, remove and discard them.



Turn adjusting screw assembly into housing

7/32" Allen wrench

4. Turn the adjusting screw and sealing nut assembly, without rotating the nut on the screw, into the housing until the nut is firmly against the housing using a 7/32" Allen wrench. Tighten the sealing nut against the housing.

CAUTION

If the drive end of the screw is below the face of the nut, the poppet seat flange will break during step 7d.

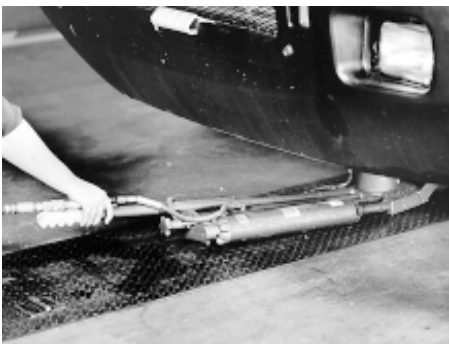


Refill reservoir

Hydraulic fluid

5. Refill the system reservoir with approved hydraulic fluid.

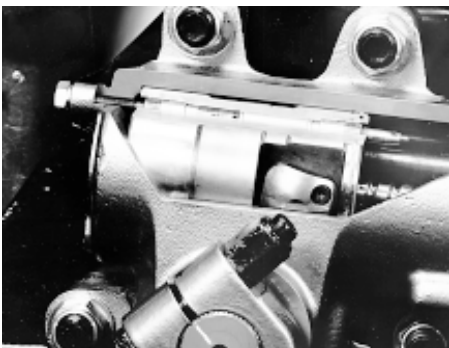
CAUTION Do not mix fluid types. Mixing of transmission fluid, motor oil, or other hydraulic fluids will cause seals to deteriorate faster.



Jack up vehicle

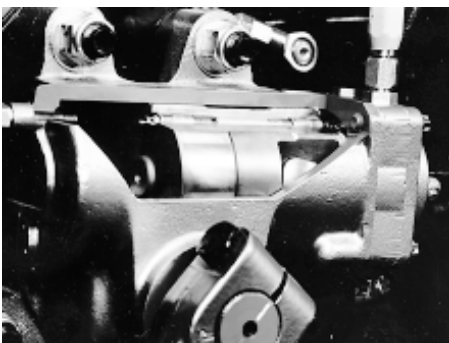
Jack

6. Place a jack under the center of the front axle and jack up the front end of the vehicle so the steer axle tires are off the ground.



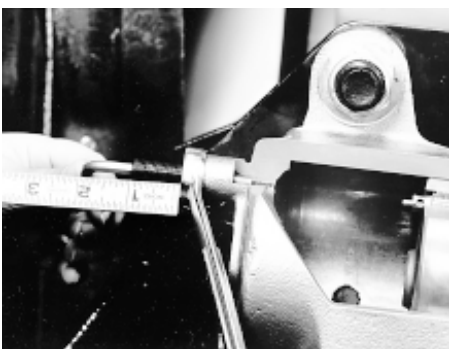
Push upper poppet out to prepare it for setting

7. a) Start the engine and let it run at idle speed.
b) Note which output shaft timing mark is nearest the housing piston bore.
c) Turn the steering wheel in the direction that makes this timing mark move toward the adjusting screw just installed. Turn in this direction until axle stop contact is made.
d) Pull hard on the steering wheel (put up to 40 lb rim pull on a 20" dia. steering wheel) after the axle stop is contacted.



Set upper poppet

8. a) Turn the steering wheel in the opposite direction (end of timing mark away from adjusting screw) until the other axle stop is contacted.
b) Pull hard on the steering wheel (put up to 40 lb rim pull on a 20" dia. steering wheel).
c) Release the steering wheel and shut off the engine.



Back out adjusting screw

$\frac{7}{32}$ " Allen wrench
 $\frac{3}{4}$ " Open end wrench

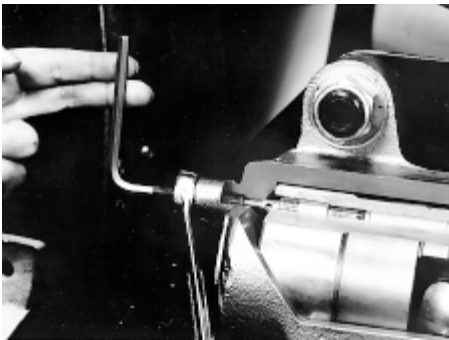
9. Loosen the sealing nut and back out the adjusting screw until 1" is past the nut. Tighten the sealing nut against the housing.

CAUTION Do not hold the steering wheel at full turn for more than 10 seconds at a time; the heat build-up at pump relief pressure may damage components.



Set lower poppet

10. a) Start the engine and let it idle.
- b) Turn the steering wheel in the original direction (end of timing mark toward adjusting screw), until axle stop contact is made.
- c) Hold the steering wheel in this position (with up to 40 lb rim pull) for 10 seconds, then release. Repeat this hold and release process as many times as necessary while completing step 11.



Position adjusting screw

$\frac{7}{32}$ " Allen wrench
 $\frac{3}{4}$ " Open end wrench
 $\frac{3}{4}$ " Socket
Lbf•ft Torque wrench

11. a) With steering wheel held tightly at full turn loosen the jam nut and hold it in place with a wrench.
- b) Turn the adjusting screw in (clockwise) using **finger-pressure only (don't use a ratchet)**, until the Allen wrench stops. Do not attempt to turn it in further. Pause the turning-in process each time the driver releases the steering wheel; continue turning only while the wheel is held at full turn.
- c) Back off the adjusting screw $3\frac{1}{4}$ turns and tighten the sealing nut. Torque sealing nut to **35 lbf•ft**.

The procedure is complete

12. The poppets have now been completely reset. Lower the vehicle. Check the reservoir and fill if required.

⚠ WARNING The length of the adjusting screw beyond the nut must be no more than $1\frac{1}{16}$ " for proper thread engagement.

NOTE The length of adjusting screw beyond the sealing nut may be different for each vehicle.

Poppet Readjustment - Dual Gears

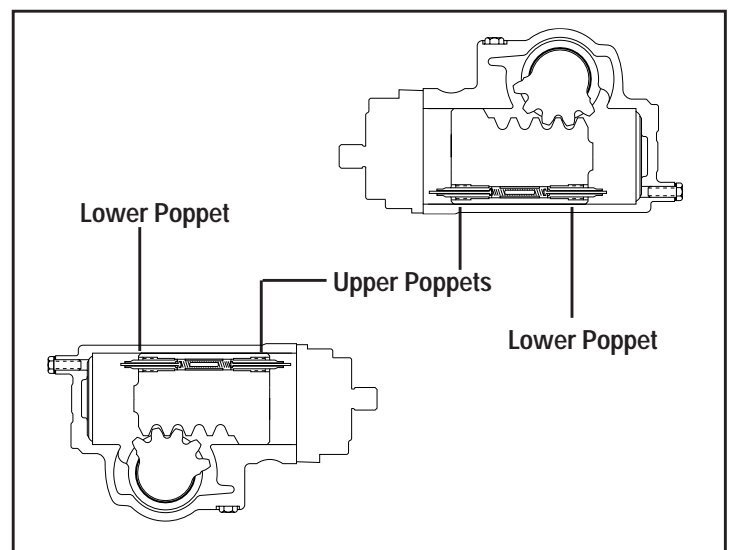
Mirror Image Systems and Reversed Image Systems

Before setting poppets on a dual gear system, you must determine whether the system has mirror image gears or reversed image gears. The procedures are slightly different for each type of system.

1. Park the vehicle with the wheels turned all the way to the axle stop in either direction. Turn the vehicle off.
2. Look at the output shaft timing mark nearest the housing piston bore on the master gear. Is this mark pointing toward the poppet screw or away from it?
3. Now check the same timing mark on the rotary cylinder. Does it point toward the poppet screw or away from it?

If they point to opposite ends of the gears you have a mirror image system.

If they both point toward the poppet screws or both point toward the end opposite the poppet screws, you have a reversed image system.



Poppet Readjustment - Dual Gears - Mirror Image

Tools Required

7/32" Allen wrench
5/8" Open end wrench
3/4" Open end wrench
3/4" Socket
Lbf•lb Torque wrench

Materials Required

Hydraulic fluid
Jack

This resetting procedure will work in most cases with at least 1¾ hand-wheel-turns from each side of center. If you're making a large reduction in wheelcut and this procedure does not work, you may have to replace or internally reset the poppets using the procedure described in the Poppet Component section of this Service Manual.

1. Set the axle stops to vehicle manufacturer's wheelcut or clearance specifications.

Start the engine, and allow the vehicle to idle for 5-10 minutes to warm the hydraulic fluid. Shut off the engine.

2. If new poppet adjusting screws and nuts will be used, turn each screw into the non-sealing end of the jam nut until the drive end of screw is flush with the nut.

Your steering gear and rotary cylinder will both have either fixed stop bolts or adjusting screws. If the adjusting screw is already part of the gear or cylinder, back the nut off of the adjusting screw until it is flush with the end of the adjusting screw.

3. Make sure the engine is off and the road wheels are in straight ahead position. Remove and discard the poppet fixed stop bolt (if equipped) and washer (if equipped) from the lower end of housing on both the gear and the cylinder.

If either unit has a poppet adjusting screw and sealing nut that need to be replaced, remove and discard them.

4. On both the master gear and the rotary cylinder, turn the adjusting screw and sealing nut assembly, without rotating the nut on the screw, into the housing until the nut is firmly against the housing using a 7/32" allen wrench. Tighten the sealing nut against the housing.

5. Refill system reservoir with approved hydraulic fluid.

CAUTION Do not mix fluid types. Mixing of transmission fluid, motor oil, or other hydraulic fluids will cause seals to deteriorate faster.

6. Place a jack under the center of the front axle and jack up the front end of the vehicle so the steer axle tires are off the ground.

7.
 - a) Start the engine and let it run at idle speed.
 - b) Turn the steering wheel in the direction that makes the timing mark on the master gear move toward the adjusting screw just installed. Turn in this direction until axle stop contact is made.
 - c) Pull hard on the steering wheel (put 40 lbs. rim pull on a 20" dia. steering wheel) after the axle stop is contacted.
8.
 - a) Turn the steering wheel in the opposite direction (end of timing mark on the master gear away from adjusting screw) until the other axle stop is contacted.
 - b) Pull hard on the steering wheel (put 40 lbs. rim pull on a 20" dia. steering wheel).
 - c) Release the steering wheel and shut off the engine.
9. Loosen the sealing nut and back out the adjusting screw on the master gear until 1" is past the nut. Tighten the sealing nut against the housing.

CAUTION Do not hold the steering wheel at full turn for more than 10 seconds at a time; the heat build-up at pump relief pressure may damage components.

10.
 - a) Start the engine and let it idle.
 - b) Turn the steering wheel in the original direction (end of timing mark on the gears toward adjusting screw), until axle stop contact is made.
 - c) Hold the steering wheel in this position (with 40 lbs. rim pull) for 10 seconds, then release. Repeat this hold and release process as many times as necessary while completing steps 11 & 12.

11.
 - a) With steering wheel held at full turn, loosen the jam nut on the master gear and hold it in place with a wrench.
 - b) Turn the adjusting screw in (clockwise) using finger- pressure only (don't use a ratchet), until the Allen wrench comes to a stop. Do not attempt to turn it in farther. Pause the turning-in process each time the driver releases the steering wheel; Continue turning only while the wheel is held at full turn.
 - c) Back off the adjusting screw 3¼ turns and tighten the sealing nut. Torque the sealing nut to **33-37 lbf-ft.**
 - d) Release the steering wheel and shut off the engine.
12. Loosen the sealing nut and back out the adjusting screw on the rotary cylinder until 1" is past the nut. Tighten the sealing nut against the housing.
13.
 - a) Start the engine and let it idle.
 - b) Turn the steering wheel in the opposite direction (end of timing mark on master gear away from adjusting screw), until axle stop contact is made.
 - c) Hold the steering wheel in this position (put up to 40 lb. rim pull on a 20" dia. steering wheel) for 10 seconds, then release. Repeat this hold and release process as many times as necessary while completing step 14
14.
 - a) With steering wheel held at full turn, loosen the jam nut on the rotary cylinder and hold it in place with a wrench.
 - b) Turn the adjusting screw in (clockwise) using finger- pressure only (don't use a ratchet), until the Allen wrench comes to a stop. Do not attempt to turn it in farther. Pause the turning-in process each time the driver releases the steering wheel; Continue turning only while the wheel is held at full turn.
 - c) Back off the adjusting screw 3¼ turns and tighten the sealing nut. Torque the sealing nut to **33-37 lbf-ft.**
 - d) Release the steering wheel and shut off the engine.

15. The poppets have now been completely reset. Lower the vehicle . Check the reservoir and fill if required.

⚠ WARNING	The length of the adjusting screw beyond the nut must be <u>no more than 1¼"</u> for proper thread engagement.
NOTE	The length of adjusting screw beyond the sealing nut may be different for each vehicle.

Poppet Readjustment - Dual Gears - Reversed Image

Tools Required

7/32" Allen wrench
5/8" Open end wrench
3/4" Open end wrench
3/4" Socket
Lbf•lb Torque wrench

Materials Required

Hydraulic fluid
Jack

This resetting procedure will work in most cases with at least 1 3/4 hand-wheel-turns from each side of center. If you're making a large reduction in wheelcut and this procedure does not work, you may have to replace or internally reset the poppets using the procedure described in the Poppet Component section of this Service Manual.

1. Set the axle stops to vehicle manufacturer's wheelcut or clearance specifications.

Start the engine, and allow the vehicle to idle for 5-10 minutes to warm the hydraulic fluid. Shut off the engine.

2. If new poppet adjusting screws and nuts are being used, turn the screws into the non-sealing end of the jam nuts until the drive end of screw is flush with the nut.

Your steering gear and rotary cylinder will have either fixed stop bolts or adjusting screws. If the adjusting screw is already part of the steering gear or cylinder, back the nut off of the adjusting screw until it is flush with the end of the adjusting screw.

3. Make sure the engine is off and the road wheels are in straight ahead position. Remove and discard the poppet fixed stop bolts (if equipped) and washers (if equipped) from the lower end of housing on both the master gear and the rotary cylinder.

If the unit has poppet adjusting screws and sealing nuts that need to be replaced, remove and discard them.

4. Turn the adjusting screws and sealing nut assemblies, without rotating the nut on the screw, into the housing until the nut is firmly against the housing, on both the master gear and the rotary cylinder, using a 7/32" allen wrench. Tighten the sealing nut against the housing.

5. Refill system reservoir with approved hydraulic fluid.

CAUTION Do not mix fluid types. Mixing of transmission fluid, motor oil, or other hydraulic fluids will cause seals to deteriorate faster.

6. Place a jack under the center of the front axle and jack up the front end of the vehicle so the steer axle tires are off the ground.

7.
 - a) Start the engine and let it run at idle speed.

- b) Note which output shaft timing mark is nearest the housing piston bore.

- c) Turn the steering wheel in the direction that makes this timing mark move toward the adjusting screws just installed on both the gear and the cylinder. Turn in this direction until axle stop contact is made.

- d) Pull hard on the steering wheel (put 40 lbs. rim pull on a 20" dia. steering wheel) after the axle stop is contacted.

8.
 - a) Turn the steering wheel in the opposite direction (end of timing mark away from adjusting screw) until the other axle stop is contacted.

- b) Pull hard on the steering wheel (put 40 lbs. rim pull on a 20" dia. steering wheel).

- c) Release the steering wheel and shut off the engine.

9. Loosen the sealing nut and back out the adjusting screw until 1" is past the nut on both the master gear and the rotary cylinder. Tighten the sealing nuts against both housings.

CAUTION Do not hold the steering wheel at full turn for more than 10 seconds at a time; the heat build-up at pump relief pressure may damage components.

10.
 - a) Start the engine and let it idle.

- b) Turn the steering wheel in the original direction (end of timing mark toward adjusting screw), until axle stop contact is made.

- c) Hold the steering wheel in this position (with 40 lbs. rim pull) for 10 seconds, then release. Repeat this hold and release process as many times as necessary while completing steps 11 and 12, first on the master gear, then on the rotary cylinder.

11.
 - a) With steering wheel held at full turn, loosen the jam nut on the master gear, and hold it in place with a wrench.
 - b) Turn the adjusting screw in (clockwise) using finger- pressure only (don't use a ratchet), until the Allen wrench comes to a stop. Do not attempt to turn it in farther. Pause the turning-in process each time the driver releases the steering wheel; Continue turning only while the wheel is held at full turn.
 - c) Back off the adjusting screw $3\frac{1}{4}$ turns and tighten the sealing nut. Torque nut to **33-37 lbf-ft.**

12.
 - a) With steering wheel held at full turn, loosen the jam nut on the rotary cylinder and hold it in place with a wrench.
 - b) Turn the adjusting screw in (clockwise) using finger- pressure only (don't use a ratchet), until the Allen wrench comes to a stop. Do not attempt to turn it in farther. Pause the turning-in process each time the driver releases the steering wheel; Continue turning only while the wheel is held at full turn.
 - c) Back off the adjusting screw $3\frac{1}{4}$ turns and tighten the sealing nut. Torque nut to **33-37 lbf-ft.**

13. The poppets on both the master gear and rotary cylinder have now been completely reset. Lower the vehicle . Check the reservoir and fill if required.

**WARNING**

The length of the adjusting screw beyond the nut must be no more than 1 $\frac{1}{16}$ " for proper thread engagement.

NOTE

The length of adjusting screw beyond the sealing nut may be different for each vehicle.



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