

STEERING REBUILDERS & TRUCK PARTS, INC.

764 CR 383 - CLEVELAND, TEXAS 77327

Phone: (281) 386-7229 Fax: (281) 432-1332 Email: rwhitten_srtp@yahoo.com

STEERING “INSTALLATION PROCEDURES”

**INSTALLATION INSTRUCTIONS
MUST BE FOLLOWED, OR
WARRANTY WILL BE VOIDED!!**

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FLUSHING INSTRUCTIONS

WHEN REPLACING THE PUMP ONLY:

1. Begin by lifting front axle off of the ground and support with axle stands, block rear tires.
2. Install pump as required, except for reconnecting the return line from the gear to where it attaches to the reservoir, use a plug on the reservoir to contain fluid during flushing. Place return hose into a 5 gallon container.
3. Select proper oil as recommended for the steering gear. (Note: See "Fluid Specifications" page #5 for info)
Note: A good rule of thumb is to use twice the amount of fluid necessary for the entire steering system.
4. Whenever possible, disconnect the ignition so that the engine will not start. An assistant is needed to crank over the engine and to rotate the steering wheel at the same time (Note: Steering wheel may need to be rotated back and forth A minimum of 10-15 times). **CAUTION: AVOID HITTING OR HOLDING AGAINST AXLE STOPS OR DAMAGE WILL OCCUR TO SYSTEM!!** At the same time fill reservoir with recommended fluid and **DO NOT** let pump run dry. Continue to flush until fluid comes out clean. This should allow the entire steering system to be purge of the old fluid and all foreign material.
5. Take return line from container and re-attach to reservoir, top off reservoir, re-connect the ignition system, start engine and move the steering wheel to one side. Stop engine and re-check fluid. **CAUTION: DO NOT OVERFILL SYSTEM!**
6. Start engine and turn steering wheel stop to stop approximately 5-6 times. Let run until system is at running temperature and repeat turning steering wheel from stop to stop approximately 5-6 times. **CAUTION: DO NOT HOLD STEERING SYSTEM AGAINST AXLE STOPS!**
7. Remove axle stands and rear tire blocks and lower to ground, top of reservoir. **Always Replace filter in reservoir.** Re-test system and test drive.

WHEN REPLACING THE GEAR ONLY:

1. Begin by lifting front axle off of the ground and support with axle stands, block rear tires.
2. Install gear except for pressure and return hoses. Place pressure hose into a 5 gallon container.
3. Select proper oil as recommended for the steering gear. (Note: See "Fluid Specifications" page #5 for info)
Note: A good rule of thumb is to use twice the amount of fluid necessary for the entire steering system.
4. Whenever possible, disconnect the ignition so that the engine will not start. An assistant is needed to crank over the engine and to rotate the steering wheel at the same time (Note: Steering wheel may need to be rotated back and forth A minimum of 10-15 times). **CAUTION: AVOID HITTING OR HOLDING AGAINST AXLE STOPS OR DAMAGE WILL OCCUR TO SYSTEM!!** At the same time fill reservoir with recommended fluid and **DO NOT** let pump run dry. Continue to flush until fluid comes out clean. This should allow the entire steering system to be purge of the old fluid and all foreign material.
5. Remove return hose from the reservoir. Inspect to make sure hose is in good shape, clean with solvent and air blow dry. Re-install. Do the same thing with pressure hose. **NOTE: Thoroughly inspect hoses, many problems can occur due to hoses being bad (Brittle, Cracking, Collapsing & Etc.)**
6. After re-connecting hoses, fill reservoir and crank engine over 5 seconds. At this time turn steering wheel stop to stop without cranking engine. This may or may not help pull fluid into gear or cylinder. Top off reservoir.
7. Re-connect the ignition system, start engine and turn steering wheel stop to stop approximately 5-6 times. Let run until system is at running temperature and repeat steering stop to stop 5-6 times. **CAUTION: DO NOT HOLD AGAINST AXLE STOPS.**
8. Remove axle stands and rear tire blocks and lower to ground, top of reservoir. **Always Replace filter in reservoir.** Re-test system and test drive.

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FILLING & AIR BLEEDING

“SINGLE STEERING SYSTEMS”

Caution: For steps 1 and 2 do not turn steering wheel. Otherwise, air may be induced into the system.

1. Fill the reservoir to nearly full. Crank the engine for 10 seconds without allowing it to start, if possible. If engine starts, shut it off immediately. Check and refill the reservoir. Repeat at least 3 times, each time checking and refilling the reservoir and make sure the engine does not start.

Caution: Do not allow the fluid level to drop significantly or this may induce air into the system.

2. Start the engine and let it idle for 2 minutes. Shut the engine off and check the fluid level in the reservoir.
3. With the poppets properly adjusted to relieve pressure at the end of travel, start the engine again. Steer the vehicle from full left to right several times. Add fluid, as necessary, to the full line on the dip stick.

The above procedure should remove all air from the steering system, unless the gear is mounted in an inverted position and is equipped with a manual bleed screw as shown in the illustrations below. If equipped, refer to step #4. Note: “Dual Piston / 710 Series” gears do not come equipped with a bleeder screw from factory. TPSR installs bleed screws on all Remanufactured “Dual Piston / 710 Series” Saginaw gears. See Illustrations listed below and Refer to step 4

4. Follow steps 1 thru 3. Leave engine idling. With the steering gear in its center position, loosen the manual bleed screw (Note: See illustration below) about 1 turn (5/16” socket required), allowing the air and aerated fluid to “Bleed out” around the bleed screw until only clear (Non-aerated) fluid is bleeding out. Then close the bleed screw. Check and refill reservoir. Repeat procedure 3 or 4 times (If necessary). Torque the manual bleed screw to 27 - 33 in. lbs.

Caution: Do not turn steering wheel with bleed screw loosened as this could allow air into system.



TPSR installs a bleed screw to help release any air trapped in unit.



Bleeder screw: Use 5/16” socket to

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FILLING & AIR BLEEDING

“DUAL STEERING SYSTEMS”

To bleed the air from the steering system on the vehicle after installing the steering gears, the pitman arms may be installed if there is not clearance problem with the pitman arms hitting any object during the full travel of the gears. Install them by aligning the timing mark on the output shafts with the timing mark on the pitman arms. Then proceed in the following manner.

1. Fill pump reservoir with the recommended engine oil. (Continue filling reservoir after starting engine **and during the bleeding operation until correct oil level is maintained**).
2. Set parking brake. Start engine and allow it to operate at fast idle speed.
3. With engine running and draglinks disconnected, turn steering wheel to the left and hold until the “slave” gear pitman arm moves the full travel. Then turn to the right and hold until the “slave” gear pitman arm again moves the full travel. Repeat this process three or more time.
4. Connect the draglink to the “master” gear. Do not connect the “slave” gear draglink. Turn steering wheel to the left and hold until the “slave” gear pitman arm moves the full travel. Then turn to the right and hold until “slave” gear pitman arm lines up with the draglink. Then install pitman arm. (After installing, DO NOT move the pitman arm or air will be induced back into the system).

“POWER STEERING ASSIST CYLINDERS”

1. If you have a tie rod mounted assist cylinder, you may need to slightly loosen the return side of hose while Pressure is applied to the other hose. Be sure to retighten before the cylinder hits the end of its stroke. Extreme care should be given to avoid placing hands or arms between the tie rod and axle or cylinder. Same care should also be given to avoid wheel travel. Severe personal injury could occur if either of these circumstances were to occur!! Since both hoses act pressure and return. It will be necessary to repeat this procedure for both directions several times.
2. If your vehicle is equipped with a frame mounted assist cylinder, the same procedure as in step 1 will apply, but it will be necessary to disconnect one end of the cylinder to allow the ports to be positioned above the cylinder. If this is done again, extra care should be given to prevent injury as the cylinder is extended and retracted.

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FLUID SPECIFICATIONS

The fluids listed in this section are listed by the Gear Manufacturer (**Rather than by the Pump Manufacturer**) and the Unit Series. In order to locate the specifications needed, it is first necessary to identify the type of power steering gear on customer's truck. The picture ID section of this catalog will help you in doing so. If necessary, we suggest that you consult the vehicle owner's manual for the exact fluid for your application.

“DO NOT MIX OIL TYPES”

We recommend that when either a steering gear, pump or cylinder is replaced, that the following items are replaced or checked:

- A) Fluid is always flushed
- B) Filter is always replaced
- C) Hoses and Fittings are inspected

Inspect all steering related parts (Yoke & U-Joints, Steering Column, Pitman Arm, Draglinks, Tie Rod Ends, King Pins & any other related parts). Replace any part that's questionable or bad. Grease those parts that need it. **Note: These parts play a vital role in the steering system functioning correctly.** Consult the vehicle owner's manual for "General Maintenance Specifications"

Gear Manufacturer	Series	Recommended Fluid Type
BENDIX	C300N / C500 / C500N	30W Motor Oil
ROSS / TRW (All Power Gears)	HF54 / HF64 HFB52 - HFB70 TAS40 - TAS85	30W Motor Oil or 15W-40 Motor Oil
GEMMER / ROSS / TRW (All Manual Gears)	Manual Gear 35JC / 408 / 503	90W / Note: Do not fill with Grease!
SAGINAW	710 / Dual Piston Rotary Valve / Semi-Integral: Top Half of Gear - 4 port Valve Bottom Half of Gear	(Any) Power Steering Fluid or ATF (Any) Power Steering Fluid or ATF 90 weight Gear Oil
SHEPPARD	292 - 592 M80 - M110	10W-40 or 15W-40 Motor Oil

Applications not listed, call for assistance: (281) 386-7229 or Email: rwhitten_srtp@yahoo.com

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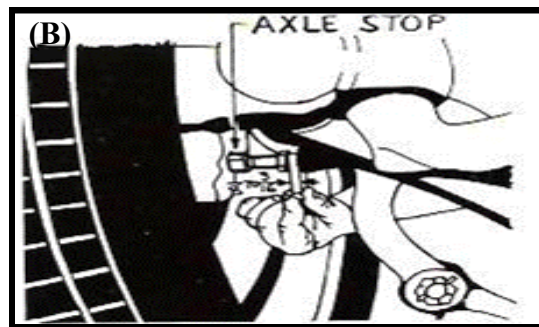
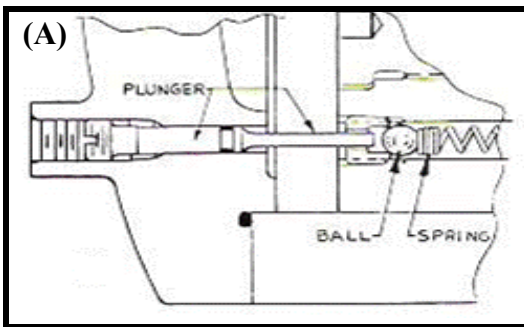
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POPPETS - GEARS

“MANUAL POPPETS”

ADJUSTMENT PROCEEDURE:

1. Start engine and allow it to run at idle speed.
2. With full weight on vehicle on all wheels, turn the steering wheel in one direction until a high-pressure hiss is heard or the axle stops contact.
3. Turn the relief plunger in or out until the high-pressure hiss is heard when there is 1/8” to 3/16” clearance between the axle stops. See illustration (B)
4. Repeat thin procedure for the opposite direction of steer, and adjust the relief valve plunger on the opposite end of the steering gear. **Note: Axle stops should only be adjusted in accordance with the vehicles manufacturers specifications.**



Note: Turning the plungers in will increase the space between the axle stops. Turning the plungers out will decrease the clearance between the stops. Do not turn the slotted plungers out beyond flush with the plunger boss or a leak will occur. Axle stops should only be adjusted in accordance with the vehicles manufacturer's specifications. After relief valve plunger adjustment, always check to ensure that the road wheels and tires have adequate clearance between suspension, brake and frame components.

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POPPETS - GEARS

“AUTOMATIC POPPETS”

TAS40, TAS55, TAS65, TAS85

All “TAS” series steering gears are equipped with self adjusting poppets which are set once the unit is mounted to vehicle. (**NOTE: DO NOT STEER UNTIL UNIT AND ALL RELATED PARTS ARE FULLY INSTALLED ON VEHICLE**). As steering wheel is rotated full left or full right, poppets are set when axle stop contact is made.

ADJUSTMENT PROCEDURE:

1. With the engine at idle and the truck unloaded, turn steering wheel toward full travel in one direction until the steering gear linkage fully bottoms against axle stops. Maximum input torque is 25 ft lbs or 30 ft lbs rim pull on a 20” diameter steering wheel. This will automatically position the poppet adjuster and sleeve assembly.
2. Follow the same procedure while turning the steering wheel in the other direction.

CAUTION: The axle stops and all steering linkage must be set according to the truck manufacturer’s specifications, and pitman arm must be correctly aligned on the sector shaft for poppets to be set correctly.

3. Flush and Bleed the steering system **AFTER** the gear is installed and all steering components are assembled.