WELLER

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INSTALLATION GUIDE
STEERING

VEHICLE MAKE AND MODEL_____ TAG NO_____ MILEAGE IN _____

DATE INSTALLED_____

STEERING GEAR AND PUMP FLUSHING INSTRUCTIONS

To ensure that your new/reman steering gear/pump will operate properly, the following steps should be made to flush your entire steering systems completely.

1. Disconnect the return line from the gear at the point it is attached to the reservoir. Direct the return line into a minimum 2 gallon container. Temporarily plug reservoir return port tube or fitting. Fill reservoir with recommended fluid. Disconnect ignition system. Jack front wheels up from floor. Restrain vehicle with safety blocks. Engage starter motor and turn wheels simultaneously to full travel until oil is no longer pumped. Unplug reservoir return port tube or fitting. Reconnect return line to reservoir. Remove contaminated oil filter, if so equipped. Wipe reservoir clean with a clean shop towel. Replace oil filter. Fill reservoir to capacity. Reconnect ignition system. Start engine and run for 30 seconds. Shut engine off.
2. Fill (or refill) the pump reservoir to the cold fill mark or just enough to cover the internal filter with the manufacturer's recommended fluid.
3. Start the engine and let run at idle speed for a couple of minutes. Cycle the steering wheel a few times to eliminate entrapped air. For pumps having dipstick showing hot full only, allow the truck to reach operating temperature before stopping the engine. For units with cold fill marks, the engine may be stopped after cycling. Fill to indicated levels on sight gauge or dipstick, (depending on the model).

AUTOMATIC POPPET ADJUSTMENT PROCEDURE

For TRW (all TAS and THP models), ZF (all models), Sheppard (all HD, MD, SD, and XD models), and Sheppard M-SERIES models (M80, M90, M100, and M110) with a part number ending in 3 (examples: M100 PHE3 and M110 PHC3).

WARNING! DO NOT TURN OR ROTATE THE STEERING GEAR UNTIL STEPS 1 THROUGH 9 ARE COMPLETED TO ENSURE PROPER ADJUSTMENT!

1. Ensure that the steering gear is not rotated from the center position prior to installation. Check the sector for play prior to installation. Reference TRW Steering Maintenance guide on how to adjust the sector shaft.
2. Make sure that the axle stops are present and set for the proper turning radius as per manufacturer's specifications.
3. Install steering gear to frame.
4. Attach and torque input yoke. Connect hydraulic hoses.
5. Attach pitman arm and torque nut and bolt assembly.
6. Make sure that the timing mark on the sector shaft is:
    A. 90 degrees from center line of worm shaft.
    B. Properly aligned with the mark on the pitman arm.
7. Make sure the pitman arm positioning allows for the center point of the sector and the center point of the drag link to be plumb with each other.
8. With the wheels square to the frame, check the drag link for proper adjustment and install.
9. Once system is flushed (see p. 6) then fill reservoir, start engine, and allow to idle only. Do not allow the reservoir to run low on fluid.
10. With the front axle lifted off the ground and the engine at idle, turn the steering wheel all the way in one direction until "steering stops" bottom out. Repeat procedure in the opposite direction. Return wheels to straight ahead. Lower front axle back to the ground.
11. Poppets are now set and any remaining air should be bled.

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MANUAL POPPET ADJUSTMENT PROCEDURE

For TRW (all HF and HFB models), Sheppard (292, 392, 492, and 592 models) and M-SERIES models (M80, M90, M100, and M110) with a part number ending in a 1 (examples: M100 PCL1 and M110 PHM1).

WARNING! DO NOT TURN OR ROTATE THE STEERING GEAR UNTIL STEPS 1 THROUGH 9 ARE COMPLETED TO ENSURE PROPER ADJUSTMENT!

Adjusting the relief valve plungers is critical to the operation of your complete steering system. The relief plunger adjustment is provided to automatically reduce the steering pressure when the road wheels have reached their limits of turn. This keeps the supply pump from operating at maximum relief pressure when the road wheels are at their steering limits. Systems temperatures are therefore reduced, and high stress loads on the mechanical components of the steering system are relieved.

Adjust the relief valve plunger as follows:

1. Ensure that the steering gear is not rotated from the center position prior to installation. Check the sector for play prior to installation. Reference TRW Steering Maintenance guide on how to adjust the sector shaft.
2. Make sure that the axle stops are present and set for the proper turning radius as per manufacturer's specifications.
3. Install steering gear to frame.
4. Attach and torque input yoke. Connect hydraulic hoses.
5. Attach pitman arm and torque nut and bolt assembly.
6. Make sure that the timing mark on the sector shaft is:
    A. 90 degrees from center line of worm shaft.
    B. Properly aligned with the mark on the pitman arm.
7. Make sure the pitman arm positioning allows for the center point of the sector and the center point of the drag link to be plumb with each other.
8. With the wheels square to the frame, check the drag link for proper adjustment and install.
9. Once system is flushed (see p. 6) then fill reservoir, start engine, and allow to idle only. Do not allow the reservoir to run low on fluid.
10. With full weight of the vehicle on all wheels, turn the steering wheel in one direction until a high pressure hiss is heard or the axle stops contact.
11. Turn the relief valve plunger located on both ends of gear in or out until the high-pressure hiss is heard when there is 1/8 to 3/16 inch clearance between the axle stops.
12. Repeat this procedure for the opposite direction of steer, and adjust the relief valve plunger on the opposite end of the steering gear.

Turning the plungers in too far will trip the relief before a full turn is realized. Turning the plungers out too far will not allow the systems to relieve, and will therefore cause damage. 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 vehicle manufacturer's specifications.

After the relief valve plunger adjustment, always check to ensure that the road wheels and tires have adequate clearance between suspension, brake and frame components.

Standard

Inverted

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When you air bleed a steering system, you are simply allowing air trapped in the cavities of the steering gear to escape. As a general rule, if your steering gear is a "standard mount", you should use the Automatic Bleed method. The Automatic Bleed Method consists of step 10 and 11 in the Automatic Adjustment Procedure. If your gear is an "inverted mount", you will need to use the Manual Bleed method to purge the trapped air from the gear.

Do not turn steering wheel with bleed screw loosened

CAUTION

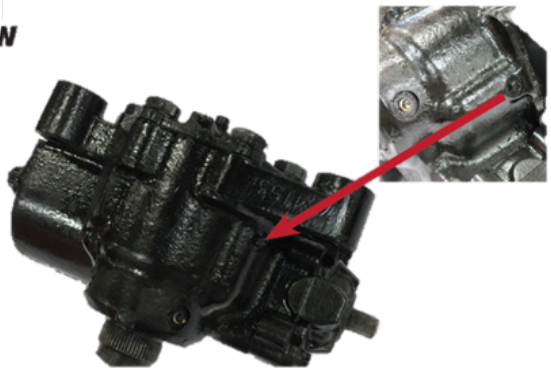
Make sure poppets are set correctly before beginning this procedure

Find and correct the source air entry into the system before attempting these procedures. (Air can naturally enter the system when components are being removed or installed.)

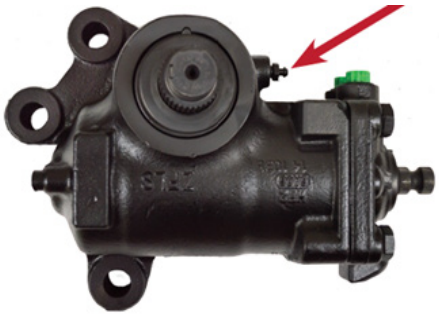
Do not allow the fluid level to drop significantly or run out of the reservoir during the entire procedure. This may introduce air into the system

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 oil every time.
2. Start the engine and let it idle for 2 minutes. Do not steer. Shut the engine off and check the fluid level in the reservoir. Refill as required.
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.
4. With engine idling, steer from full left turn to full right turn several times. Stop steering with the road wheels at straight ahead, and loosen the manual bleed screw 2-3 turns (in the main gear, or the rotary assist cylinder, or both if equipped). Allow air and aerated fluid to "bleed out" until only clear fluid is seen. Close the bleed screw, refill the reservoir if required.
5. Repeat step 4 three to four times until all the air is discharged.

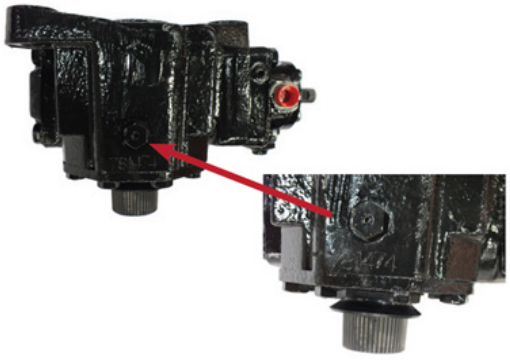
TRW



ZF



Sheppard



Sheppard (Assist Gear Box)

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CORE RETURN INSTRUCTIONS

The Weller Truck Parts core return program is designed to facilitate an efficient and cost effective way of returning your cores. Following the instructions listed below will ensure your core is processed quickly and correctly.

1. Attach the Core Return Tag provided with the remanufactured unit to core
   A. For warranty units, obtain a Warranty Repair Authorization (RA#) from your Weller Truck Representative. If you are not sure who your representative is call the Reman Center at 1-800-872-6697 or email warranty@wellertruck.com.
2. Prepare the unit for shipping.
   A. Drain oil from unit.
   B. Band, wrap, or strap unit(s) to a pallet.
   C. Attach a copy of the warranty invoice, core tag or RA# to the unit for identification
3. Notify Weller Shipping Department when unit is ready for pick up.
   A. Download the Weller App!
      i. Go to wellertruck.com/app
   B. Email corereturn@wellertruck.com or call 1-800-872-6697 Ext. 3794 or 3759

   Provide the following:

   I. Core return tag, Weller Truck Parts invoice, or the RA if the unit is a possible warranty
   II. Your contact information
   III. Hours of operation

Weller will prepare the bill of lading and schedule your unit to be picked up by a Weller approved carrier.

Thank you for choosing Weller Truck Parts!

Failure to follow these procedures could result in core credit delays and freight charge backs.

***Core eligibility is one year from invoice date**

SCAN TO VIEW OUR COMPLETE COLLECTION OF OWNER'S MANUALS