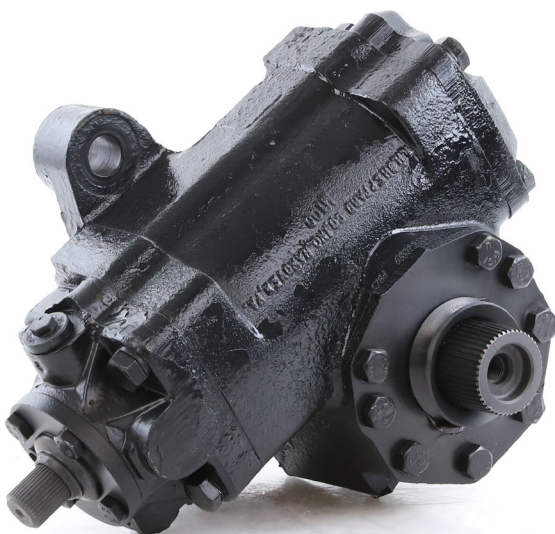


WELLER

100% Associate Owned



**OWNER'S MANUAL:
STEERING GEARS**

Tag # _____

Mileage In: _____

Date Installed: _____

QUALITY REMANUFACTURED

TRANSMISSIONS AND TRANSFER CASES

Quality Remanufactured Products by WELLER for the Following Applications

Medium to Heavy Duty

Eaton/Fuller • Meritor • Volvo (Volvo Truck Compatible Part) • Mack • TTC Spicer • ZF • Clark • IHC • Isuzu • GMC

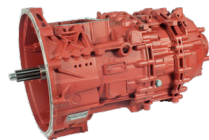
A complete line of Auxiliaries and Transfer Cases



AUTOMATED MANUAL TRANSMISSIONS

Quality Remanufactured Products by WELLER for the Following Applications

Eaton Cummins Endurant • Eaton UltraShift PLUS • Detroit DT12 • Volvo I-Shift* (Volvo Truck Compatible Part) • Mack mDRIVE* • Meritor Freedomline* • ZF AS-Tronic*



AUTOMATIC TRANSMISSIONS

Quality Remanufactured Products by WELLER for the Following Applications

Allison Transmissions* • Clark • Funk • CAT • ZF



DIFFERENTIALS

Quality Remanufactured Products by WELLER for the Following Applications

Complete Stock for quick exchange

Meritor/Rockwell • Dana • Spicer • Eaton • Volvo (Volvo Truck Compatible Part) • Mack • Freightliner/Alliance • Clark • GMC • Industrial/Off Road • Terex

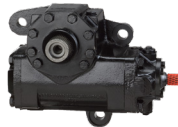


STEERING GEAR BOXES AND PUMPS

Quality Remanufactured Products by WELLER for the Following Applications

Tested on a State-of-the-Art XLT3 Road Simulator

TRW-Ross • Saginaw • Sheppard • Vickers Pumps ZF • Eaton • Luk



ELECTRONICS

Quality Remanufactured Electronics by WELLER for the Following Applications

All units are tested for performance and quality.

Cummins • Eaton • ZF • Allison* • Volvo/Mack (Volvo Truck Compatible Part) • Detroit • PACCAR



PROGRAM DESCRIPTION

As your company focuses on quality repairs and parts, put Weller on your team! Together we can eliminate downtime with complete coverage of all your drivetrain needs. That's the Weller Way – partnering in select relationships that successfully provide the customer with the best product and service. No hype! Just a true competitive advantage through quality and availability.

With 600,000 square feet of remanufacturing facilities and 37 nationwide company-owned distribution locations, we are committed to our customers. Weller's Unit Exchange program maximizes uptime with a 20,000+ unit stock plan of remanufactured transmissions, differentials, steering gears, PTOs, and hydraulic pumps ready to ship.

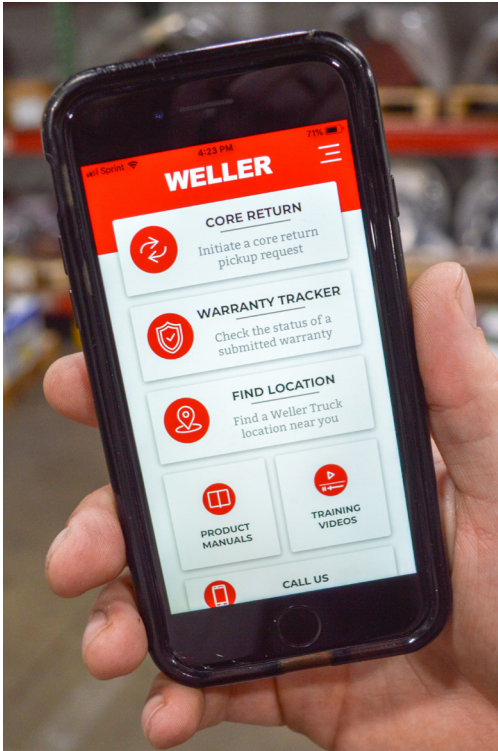
Consider becoming a partner in the industry's leading drivetrain program. Contact us today! With no commitments and no minimums, we are the Drivetrain Partner for you!

Our reman program includes:

- 100% disassembled, cleaned, and inspected
- Remanufactured with only the highest quality parts available.
- Gearsets are replaced in sets only
- All NEW bearings, gaskets, seals and washers
- Our reman program includes:
 - All Makes Coverage – One Call
 - Same Day/Next Day Delivery
 - Obsolete and Discontinued Specialists
- Nationwide One-Year, unlimited mileage, parts and labor warranty



WELLER APP



Designed with our customers in mind, we wanted to bring a user-friendly way for you to access the information you need when you need it most.

Features

Schedule a Core Return: Easily schedule core returns from your phone!

View Warranty Status: Have a warranty you want to know the status of? View all of your warranties with the Warranty Tracker.

Quickly Locate a Store: We are always adding new locations to better serve you.

Weller Literature: Find our Owner's Manuals and other sales literature like our Core Return Program and sales catalogs

Training Videos: Visit our growing collection of videos designed to educate and prevent common issues across a wide range of our products.

How to Download



Scan me

The new Weller Truck Parts app can be downloaded for free from the Apple App Store and Google Play.

Supported devices include iPhone (iOS 11.0 or later) and Android smartphones (5.0 Lollipop and up).



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 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!

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. System temperatures are therefore reduced, and high stress loads on the mechanical components of the steering systems are relieved.

1. Ensure that the steering gear is not rotated from the center position prior to installation.
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.

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.
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.

MANUAL POPPET ADJUSTMENT PROCEDURE

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.

BLEEDING THE SYSTEM

Standard



Inverted



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

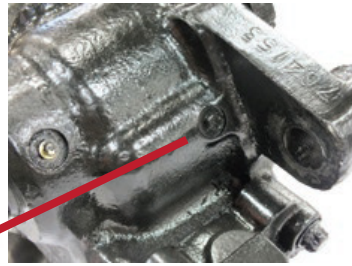
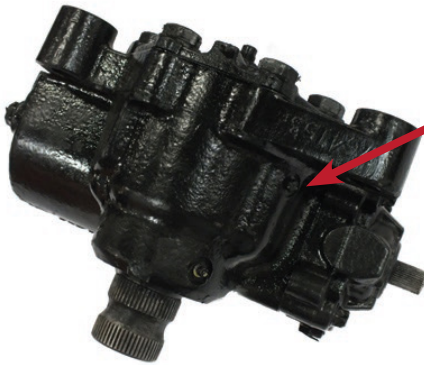
CAUTION

- 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

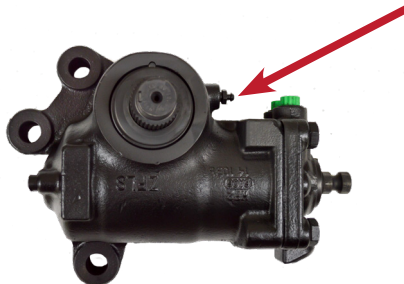
BLEEDING THE SYSTEM

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. 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.
4. 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.
5. Repeat step 4 three to four times until all the air is discharged.

TRW

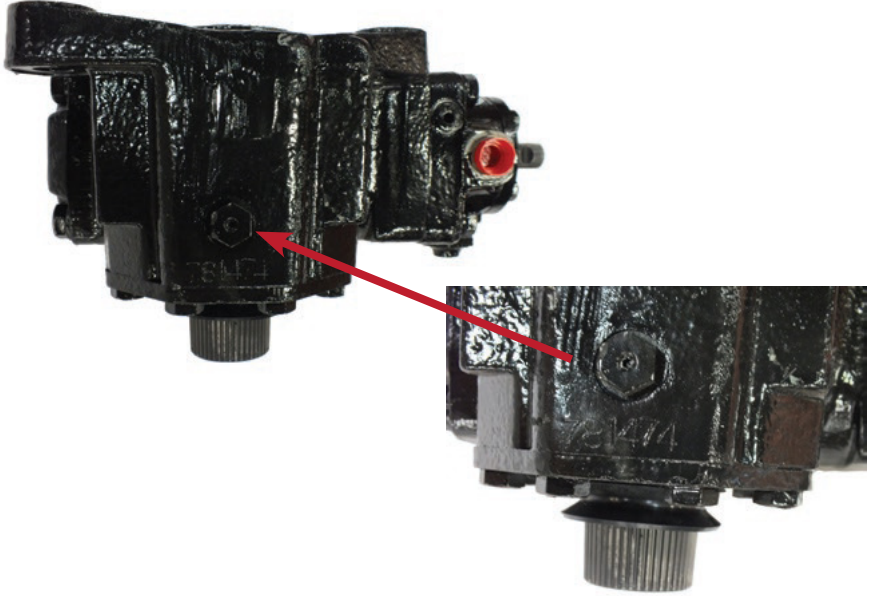


ZF

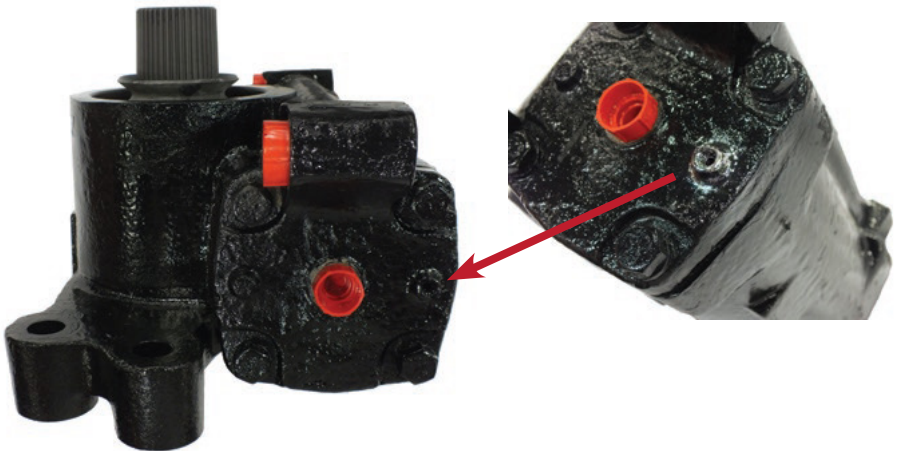


CRACKLE TEST

SHEPPARD



SHEPPARD (Assist Gear Box)

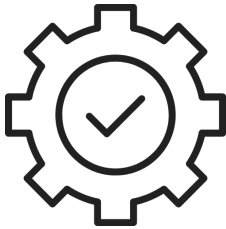


SERVICE RECORDS

DATE	MILEAGE	SERVICE PROVIDER	NOTES

DYNO TESTING

Our transmissions are rigorously tested under realistic load simulations on state-of-the-art dynamometers. This approach guarantees proper torque, leak-free performance, accurate shifting, and optimized oil flow.



Ensuring Functionality

The test replicates the demands placed on a transmission during operation, checking if it shifts gears smoothly, delivers the expected power output, and operates within normal temperature ranges.



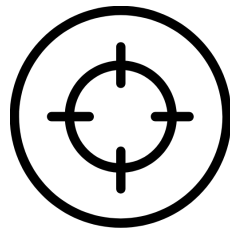
Quality Control

Rebuilt transmissions in particular undergo dyno testing to verify the quality of the rebuild process. This ensures they meet or exceed factory specifications for pressure, performance, and minimize the risk of leaks or malfunctions after installation.



Diagnostics

Dyno testing can pinpoint issues with a transmission, such as abnormal noises, vibrations, or problems with the hydraulic system or clutch packs.



Calibration

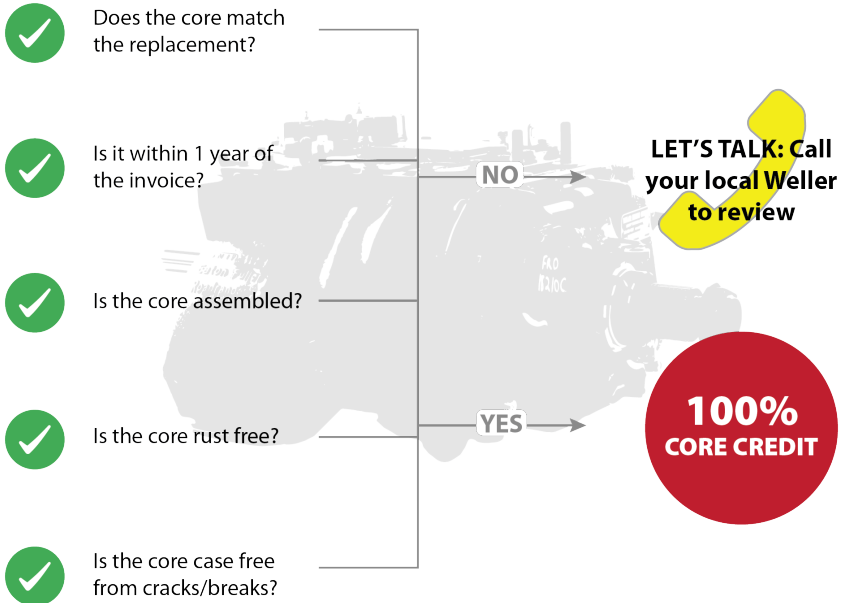
The test allows technicians to fine-tune the transmission's operation, including setting optimal shift points and pressures for improved performance and efficiency.

CORE RETURNS

Fair. Flexible. Fast.

At Weller, we value your business and strive to make the core return process as smooth as possible. Our core return policy is built on **trust and partnership**, ensuring that doing business with Weller is not only easy but also beneficial for our customers. We pride ourselves on having the most flexible core return policy in the industry, including a return window up to a full year.

This generous policy underscores our commitment to you and highlights our dedication to accommodating customer needs. While we do expect a fair rebuildable core, our primary goal is to ensure that you have a **positive and efficient** experience with us.



Don't just take our word for it.
See why Weller is the unmatched industry
leader, before and after the sale.

Our policy reveals all.



WELLER WARRANTY

At Weller, we prioritize not only the quality of our products but also the peace of mind for our valued customers. We understand that purchasing decisions are significant investments, and to underscore our commitment to your satisfaction, we proudly offer a comprehensive warranty on our products.



This warranty is a testament to our confidence in the durability and reliability of our offerings. While we take pride in crafting products of the highest standards, we recognize that unforeseen circumstances may arise. When they do, we have made the process as easy for you as possible, down to choosing the most convenient way for you to start a claim.

To learn more about our warranty and how to file a claim, scan the QR code below or visit our website.

Don't Buy the Paper. Buy the Performance.



***Learn more about the
Weller Warranty***

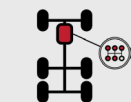
wellertruck.com/weller-warranty

***When You Choose
Weller, You Stop
Playing the
Warranty Game.***

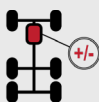
Max Uptime In Your Drivetrain When You Partner with Weller.

We are dedicated to providing best-in-class quality with unmatched value and rapid delivery. Our focus is to keep our customers and America moving.

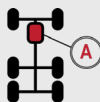
View Our Complete Drivetrain Offerings at wellertruck.com



TRANSMISSIONS
AND TRANSFER
CASES



AUTOMATED MANUAL
TRANSMISSIONS



AUTOMATIC
TRANSMISSIONS



DIFFERENTIALS



DRIVESHAFTS &
END YOKES



STEERING GEAR
BOXES AND
PUMPS



ELECTRONICS &
MECHATRONICS



**Experience
The Weller Way**



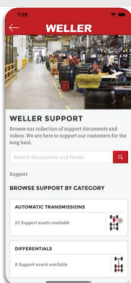
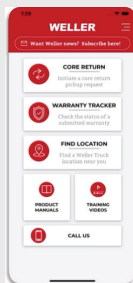
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