

WELLER

100% Associate Owned



OWNER'S MANUAL: MANUAL TRANSMISSION

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 • Mack • TTC Spicer • ZF • Clark • IHC • Isuzu • GMC

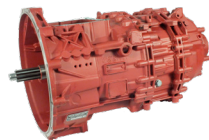
A complete line of Auxiliaries and Transfer Cases



AUTOMATED MANUAL TRANSMISSIONS

Quality Remanufactured Products by WELLER for the Following Applications

Eaton Cummins Endurant • Eaton UltraShift PLUS • Detroit DT12 • Volvo I-Shift • 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 • Mack • Freightliner/Alliance • Clark • GMC • Industrial/Off Road • Terex

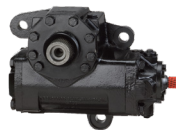


STEERING GEAR BOXES AND PUMPS

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 • Detroit • PACCAR



PROGRAM DESCRIPTION

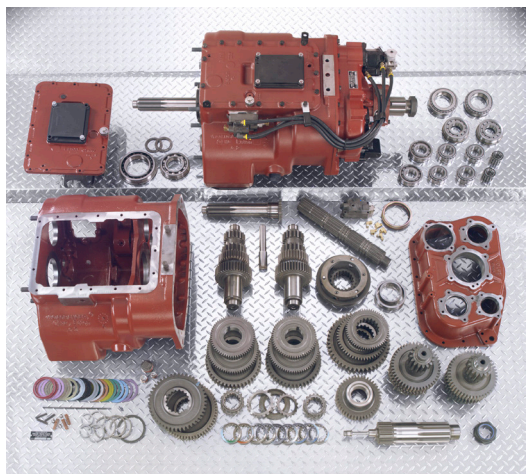
As your company focuses on quality repairs and parts, put Weller on your team! Together we can eliminate downtime with complete coverage of all your drivetrain needs. That's the Weller Way – partnering in select relationships that successfully provide the customer with the best product and service. No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

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).



INSTALLATION GUIDE

- I. This transmission contains NO LUBRICANTS. Fill with OEM approved lubricants.
- II. DO NOT OVER-TORQUE THE BELL STUDS ON INSTALLATION. **DAMAGED BELL STUDS MAY VOID WARRANTY AND BE SUBJECT TO REPAIR CHARGES.**

ALUMINUM BELL

BOLTS: 80 LBS FT

NUTS: 145 LBS FT

CAST BELL

BOLTS: 80 LBS FT

NUTS: 190 LBS FT

- III. This transmission contains NO SPEEDOMETER gears. Be sure to remove speedo gears for your exchange unit.
- IV. Check engine mounts for wear.
- V. Check shift lever assembly
- ☐ Inspect lower gear/finger for wear
 - ☐ Inspect Isolator for wear
- VI. Check clutch, and related components
- ☐ Inspect all clutch related parts for wear. (Forks, pins hydraulics, etc. . .)
 - ☐ Did the flywheel get resurfaced?
 - ☐ Inspect the dowel pins for wear
 - ☐ Inspect pedal shaft bushings
 - ☐ Pre lubricate the input shaft with dry graphite or light amount of white lithium grease
 - ☐ Ensure no grease or oil is on any friction surfaces!
 - ☐ After Installation:
 - ☐ Check Adjustments
 - ☐ Grease pedal shafts
- VI. Check driveline for worn or failed components
- ☐ U-Joints
 - ☐ Carrier Bearing
 - ☐ Yoke seal surface, and splines
 - ☐ Ride height
 - ☐ Driveline phasing
 - ☐ Drive shaft balance
- VII. PTO (If equipped)
- ☐ Is the PTO leaking?
 - ☐ Is your PTO properly shimmed? (Backlash of .006-.012 inch or as specified by PTO Manufacturer
 - ☐ Shim PTO with proper selective gaskets NOT PTO cover gaskets or cork gaskets
 - ☐ Flush PTO out. PTOs are a great catch-all for failed transmission parts
- VIII. Transmission heat exchanger (If equipped)
- ☐ Clean, and flush cooler system
 - ☐ Weller recommends pressure testing cooler for leaks
- IX. Air system
- ☐ Check air dryer
 - ☐ Check truck pressure & inspect for leaks

INSTALLATION GUIDE

CAUTION!

A majority of customer-caused failures are from improper tightening of the yoke or flange and not checking these commonly worn items.

MODEL	OUTPUT YOKE NUT TORQUE SPEC
FRO16210C	650-700 lbs-ft.
RTLO18913A	650-700 lbs-ft.
RTLO18918B	650-700 lbs-ft.
RTLO16713A	450-500 lbs-ft.
ESO66 7B	362-434 lbs-ft.
FROF16210C	650-700 lbs-ft.
FS6406A	300-350 lbs-ft.
RTO16908LL	650-700 lbs-ft.
FSO8406A	300-350 lbs-ft.
PSO165 10S	550-600 lbs-ft.
FS6406N	300-350 lbs-ft.
RTLO18718B	450-500 lbs-ft.
RTLO16610B	450-500 lbs-ft.
MO16G10AM	450-500 lbs-ft.



EATON®

Eaton Approved Lubricant

PS-386 Synthetic Transmission Fluid

- Extended drain intervals up to 500,000 miles
- PS-386 lubricant can improve fuel economy by 1.5 percent
- Excellent gear and bearing protection
- Meets OEM factory fill specifications
- PS-386 is the only fluid approved for use in Eaton's Automated Mechanical transmissions
- PS-386 supersedes PS-164 rev 7



EATON®

Eaton Approved Lubricant

PS-278 Precision Transmission Fluid

- Eaton approved
- Original factory fill fluid
- Ultimate gear and bearing protection
- Excellent seal compatibility to ensure longer life
- Maximum extreme hot and cold temperature performance
- Ensures and maintains smooth transmission operation
- Less maintenance
- PS-278 is the only fluid approved for use in Eaton's Precision transmission

PS-386 and PS-278 are not approved for all transmissions. See OEM bulletins for specific approved lubricants.

EATON PS-386 SYNTHETIC TRANSMISSION FLUID

PERFORMANCE PROFILE



Heat Management

- Lower Sump Temperatures
- Higher Oxidative Stability
- Superior Low Temperature Performance



Fuel Economy

- Minimize Churning Loss
- Up to 1.5% Fuel Economy Improvement*



Improved Durability

- Improved Gear and Bearing Wear
- Copper Cooler Protection



Ecologically Friendly

- Reduced Waste
- CO2 Reduction



Backward Serviceability

- Meets Current Requirements for Eaton Heavy-Duty Manual and Automated Transmissions

* Tested against the previous Eaton synthetic transmission spec PS-164 Rev 7. SAE J1321 Fuel Consumption testing conducted by an independent fleet confirmed up to 1.5% fuel economy improvement.

PS-386 and PS-278 are not approved for all transmissions. See OEM bulletins for specific approved lubricants.

U-JOINT ANGLES

Out of spec u-joint operating angles reduces component life and is a leading cause of premature failure to transmissions, differentials, transfer cases, and PTOs!

Note: Many resources are available regarding u-joint operating angles, yoke phasing, vehicle ride height, and driveline inspection; this bulletin will not cover them all.

You will need:

- Inclinometer for measuring angles and phasing
- Tape measure to measure length of tube and ride height
- Flat surface to park the vehicle and wheel chocks for stabilization
- Driveline worksheet for recordings



Recommend using the Roadranger DAA software and inclinometer.

A detailed worksheet titled 'Roadranger I.T.-N 2-Phase Work with 12-18'. It includes a diagram of a vehicle's driveline with labels for various components like 'Front Drive Shaft', 'Rear Drive Shaft', 'Front U-Joint', and 'Rear U-Joint'. Below the diagram are several tables for recording data, including 'Front Drive Shaft', 'Rear Drive Shaft', 'Front U-Joint', and 'Rear U-Joint'. The worksheet also contains instructions for 'Before measuring angles' and 'To check Drive Shaft Angles'.

Example Roadranger DAA Worksheet

Safety FIRST! Review owners manuals, service manuals, and other OE provided instructions. Confirm driveline series and length is correct for torque, RPM, and vehicle specifications. Wear appropriate PPE.

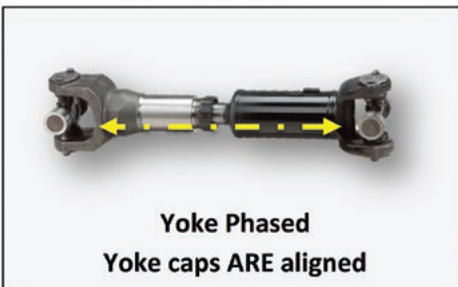
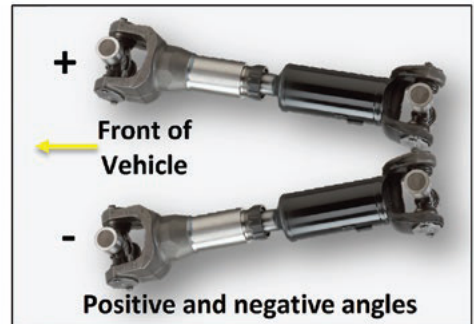
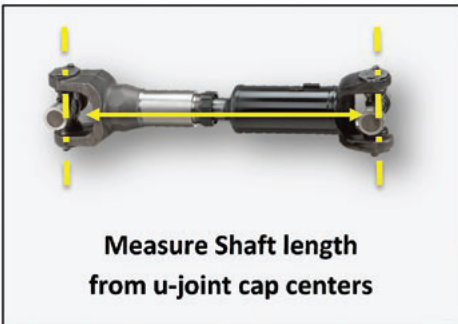
U-JOINT ANGLES

General U-Joint Angle Rules:

- i. Should have a minimum angle of 1°
- ii. Angles on each end of a shaft should ALWAYS be within 1° of each other
- iii. U-Joint angles should NOT be larger than 3°
- iv. Yoke phasing is vehicle specific & set by operating angles

Inspection:

1. Print corresponding worksheet.
2. Park the vehicle on a flat surface, chock the wheels, and release the parking brake.
3. Inspect driveline for u-joint endplay and worn components.
Note: Spicer recommends U-Joint endplay should not exceed .006
4. Measure and record angles, shaft length, and u-joint phase.
Make Corrections as needed



CRACKLE TEST

The crackle test is a simple and cost effective way to identify the presence of water contamination in oil. Contamination has three stages: free, emulsified, and dissolved.

Note: Many resources are available regarding the effects of water contamination and the crackle test. This bulletin will not cover them all.

You will need: a surface that is capable of achieving and sustaining a surface temperature of 380°F and a clean container to gather the sample. Note: For the test, Weller used a SKF bearing heater pictured below.



Safety FIRST! Review all SDS prior. Test must be completed in a well ventilated area as it will produce fumes and vapors that can be hazardous. Wear appropriate PPE.

Test:

1. Preheat surface to 380°F
2. Using a clean uncontaminated container gather sample
3. Pour small amount directly to the heated surface
4. Observe test sample for signs of contamination

CRACKLE TEST

Example: 50W synthetic gear oil with a limit of 2000ppm or .2%

Visible bubbles confirm water has contaminated the sample. The size and quantity of bubbles indicate the percentage or amount of contamination.



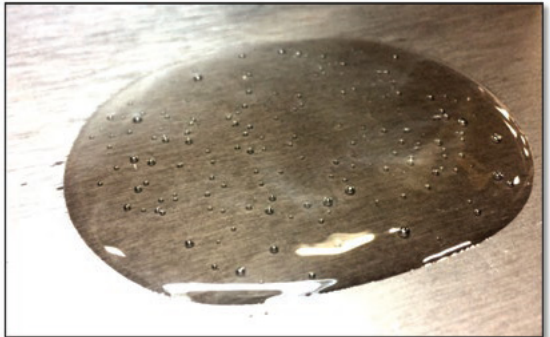
651 PPM .065% of water



*At .065% water contamination, the oil produces very small bubbles
0.5 mm that quickly disappear.*



2310 PPM .23% of water

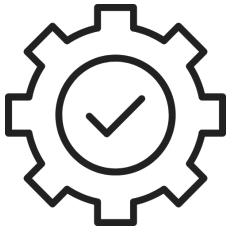


*At .23% water contamination, the oil produces bubbles
approximately 2 mm that quickly disappear.*

Oil exceeds water contamination limit of .2%

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.



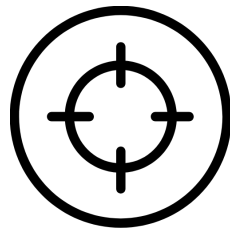
Quality Control

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

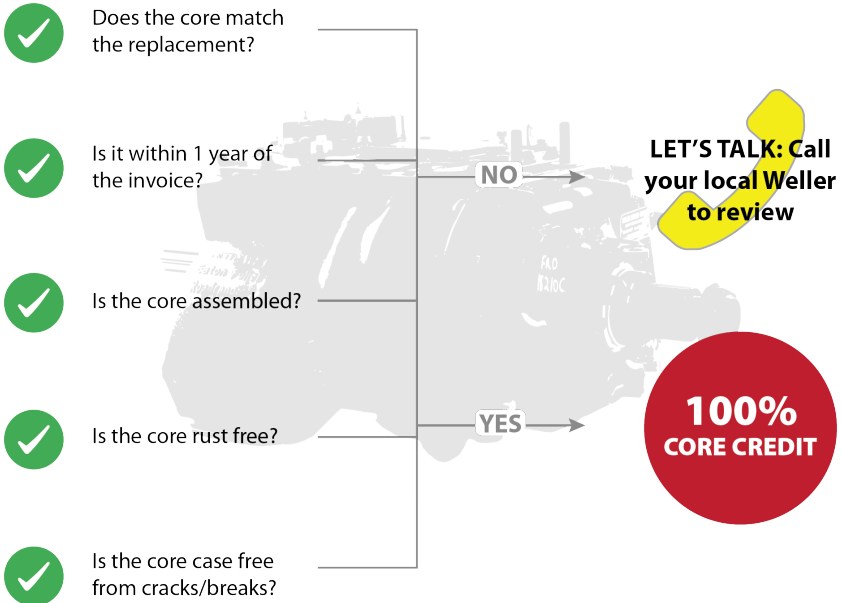
The test allows technicians to fine-tune the transmission's operation, including setting optimal shift points and pressures for improved performance and efficiency.

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***

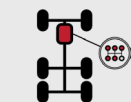
wellertruck.com/weller-warranty

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

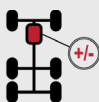
Max Uptime In Your Drivetrain When You Partner with Weller.

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.

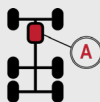
View Our Complete Drivetrain Offerings at wellertruck.com



TRANSMISSIONS
AND TRANSFER
CASES



AUTOMATED MANUAL
TRANSMISSIONS



AUTOMATIC
TRANSMISSIONS



DIFFERENTIALS



DRIVESHAFTS &
END YOKES



STEERING GEAR
BOXES AND
PUMPS



ELECTRONICS &
MECHATRONICS



**Experience
The Weller Way**



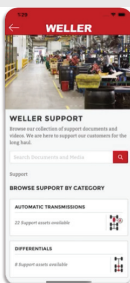
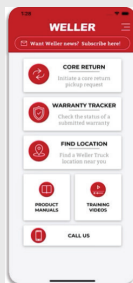
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Tech Support
and Videos**



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Google Play



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You Partner with the Best!**

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