

# WELLER

100% Associate Owned



**OWNER'S MANUAL:  
EATON CUMMINS ENDURANT  
AUTOMATED 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 (Volvo Truck Compatible Part) • Mack • TTC Spicer • ZF • Clark • IHC • Isuzu • GMC

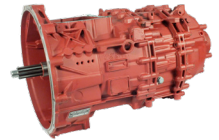
*A complete line of Auxiliaries and Transfer Cases*



## 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

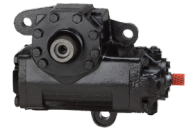


## STEERING GEAR BOXES AND PUMPS

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.



Scan me

## 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).



# ENDURANT ELECTRONICS

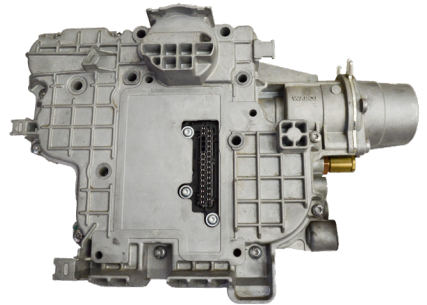
As we move to the future, the landscape of our industry is changing. Electric trucks and components are becoming more of a reality every day. We root our business in service before and after the sale, providing you with the units you need when you need them. Due to the increasing demand for electronic products, we are growing to a dedicated Electronics building!

The new building boasts 10,000+ square feet of space, solely dedicated to the production of electronics and mechatronics.

This is a vast expansion from our current production area and allows us to meet demand to the Weller standard for years to come.



*Linear Clutch Actuator*



*Mechatronic Transmission Module*

**Quality Parts  
Offered  
Individually by  
Weller**

# 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.**

## 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.

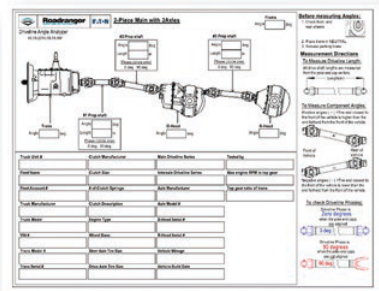
*Note: Many resources are available regarding u-joint operating angles, yoke phasing, vehicle ride height, and driveline inspection; this bulletin will not cover them all.*

### 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.



Example Roadranger DAA Worksheet

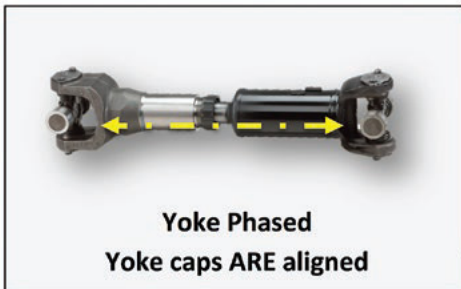
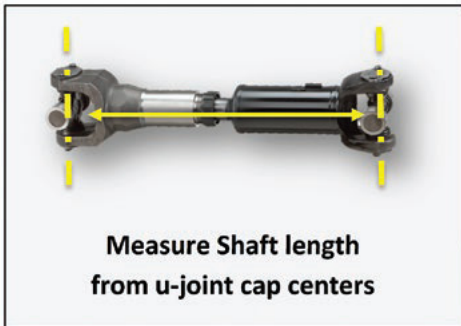
# U-JOINT ANGLES

## General U-Joint Angle Rules:

- i. Should have a minimum angle of  $1^{\circ}$
- ii. Angles on each end of a shaft should ALWAYS be within  $1^{\circ}$  of each other
- iii. U-Joint angles should NOT be larger than  $3^{\circ}$
- 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\*



# INSTALLATION GUIDE

## 1. Clutch storage, removal from packaging, and general handling

- Verify clutch assemblies are stored in a manner to prevent rust and physical damage.
- Verify lifting devices are designed to prevent physical damage to diaphragm spring, clutch cover, pressure plate, and driven disk assembly.
- Verify handling technique avoids harsh physical contact with pressure plate control fingers.

## 2. Transmission storage, removal from packaging, and general handling

- Verify transmission assemblies are stored in a manner to prevent rust and physical damage.
- Ensure lifting equipment and handling technique avoid physical damage to pre-installed output yokes, speed sensor harness, fluid pressure sensor, MTM, TCM, LCA, and all enclosures.

## 3. Transmission assembly preparation

- Output yoke installation or replacement: Verify retaining screw is torqued to 455 - 509 lb. ft. (617 - 690 Nm) NOTE: A new output yoke retaining screw is required if the installed output yoke is removed for any reason.
- Verify installation of air supply fitting does not damage MTM inlet threads.
- Verify that any brackets installed on transmission only utilize existing mounting provisions and that no transmission fasteners are removed.
- Verify that no OEM-installed equipment is attached to output shaft speed sensor harness.

## 4. PTO (If equipped)

- Verify suitable tooling and procedure for cleaning PTO mounting surface after PTO cover is removed. Refer to PTO installation in section 11 of the Installation Guide TRIG0950.

## 5. Pilot bearing installation:

- Verify pilot bearing driver is designed to contact only the outer bearing race.

## 6. Clutch installation

- Verify appropriate work instructions or installation diagrams are available at point of installation.
- Verify flywheel is cleaned of any rust, rust preventatives, decals, or other oily residue or debris.
- Verify proper use of clutch assembly alignment shaft.
- Verify proper use of clutch-to-flywheel alignment and support dowels.
- Verify installers understand proper driven disk orientation
- Verify installation technique avoids "slamming" the pressure plate control fingers into the flywheel.
- Verify all clutch fasteners are torqued to OEM specification. NOTE: If a single-spindle driver is used, verify installer tightens all fasteners slowly and progressively touching each fastener multiple times.
- Verify operation for setting pressure plate control fingers to the flywheel.



# INSTALLATION GUIDE

## 7. Transmission Installation

- Verify appropriate work instructions or installation diagrams are available at point of installation.
- Verify input shaft shipping cone is removed.
- Verify clutch release bearing is not allowed to escape clutch release yoke.
- Verify all legs of lifting chains are of suitable length to keep transmission level.
- Ensure lifting equipment and handling technique avoid physical damage to all transmission components.
- Verify clutch housing is fully seated to flywheel housing before any clutch housing fasteners are torqued.
- Verify grade of transmission mounting bolt meets OEM specification.
- Verify all clutch housing fasteners are torqued to OEM specification.

## 8. Transmission pull-to-neutral and LCA unlock

- Verify air supply pressure, MTM fitting, and air filtration meet all requirements documented in "Transmission Pull-to-Neutral and Clutch Actuator Unlock" of section 11 of the Installation Guide TRIG0950. Perform transmission service routines
- Verify TCM electrical connections are free of physical damage and debris.

## 9. Lubrication fill

- Verify lubricant meets Eaton specification PS-386
- Verify lubrication dispensing equipment avoids damaging transmission fill hole threads
- Verify 7.5 liters volume dispensed or 16 pints

## 10. TCM connections and OEM harness routing and clipping

- Verify installers are properly latching TCM connectors
- Verify provided harness anchor points or approved alternative anchor points are utilized for TCM harness clipping.
- Verify no sharp bends in TCM harnesses. NOTE: The recommended bend radius of an individual cables is 2.5 times greater than the diameter of the individual cable.
- Verify suitable strain relief at TCM harness connections.
- Verify that any brackets installed on transmission only utilize existing mounting provisions and that no transmission fasteners are removed.

## 11. Grade Sensor calibration

- Verify calibration is completed with vehicle at +/- 0.5% grade (.28degrees) to ground surface.

# INSTALLATION GUIDE

## 12. Functional check

- Verify "service light / service warning" functions correctly.
- Verify gear display functions correctly.
- Verify engine does not crank with shift device in any position other than neutral or park.
- Verify forward and reverse gear selection requires service brake application.
- Verify correct function of shift device in all modes of operation.
- Verify truck operating air pressure supply is between 99 and 130psi. *See TRIG0950 section 6.*
- TCM software version must match transmission MTM version. *See TAIB-1001.*

## 13. VEPS

- Verify correct calibration file is installed.

## 14. Fuse inspection

- Verify a single 10 amp ignition bus fuse.
- Verify dual (2) 15-amp main power fuses.

## 15. Offline / Repair

- Verify repair technicians have access to troubleshooting guides.
- Verify ServiceRanger is updated to latest release.
- Verify process to resolve and clear all fault codes before vehicle is released.
- Air dryer should be changed, and vehicle air system must be free of contamination. *See TAIB-1006.*

\*See Eaton Reference Guide TRIG0950 for full installation instructions.

# TORQUE SPECS

AIR LINES TO RANGE CYLINDER	105 IN/LBS
AIR LINES TO SHIFT CONTROLLER	105 IN/LBS
AIR PRESSURE SENSOR ADAPTER	52 FT/LBS
SUPPLY AIR LINE	40-47 FT/LBS
(3.2.2) AIR PRESSURE FITTINGS	105 IN/LBS
AIR PRESSURE SENSOR	26-29 FT/LBS
C/S SPEED SENSOR BOLT	90 IN/LBS
DRAIN PLUG	44 FT/LBS
PTO BOLTS	37 FT/LBS
PTO AIR SOLENOID BOLTS	21.2-31.8 IN/LBS
PTO AIR CONNECTION FITTING	71-107 IN/LBS
PTO COVER PLATE	18 FT/LBS
PTO POSITION SWITCH	35 FT/LBS
SHIFT CONTROLLER BOLTS	90 IN/LBS
RANGE CYLINDER BOLTS	37 FT/LBS
RANGE POSITION SENSOR	55 IN/LBS
TCM MOUNTING SCREWS	90 IN/LBS
EXHAUST SUPPORT BRACKET ON FLYWHEEL HOUSING	18 FT/LBS
OIL PUMP COVER BOLTS	44 FT/LBS
ATD INLET PIPE ASSEMBLY	9.5-10.5 FT/LBS
ADT INLET PIPE CLAMPS	115-125 IN/LBS
ADT INLET PIPE BRACKET	14-16 FT/LBS
CLUTCH ACTUATOR BOLTS	40 FT/LBS
CLUTCH POSITION SENSOR	44 IN/LBS
C/S BRAKE VALVE AIR LINE W/ RETAINING PLATE	90 IN/LBS
C/S BRAKE VALVE AIR LINE W/ QUICK CONNECT	105 IN/LBS

# TORQUE SPECS

DRIVELINE STRAP BOLTS	115-135 FT/LBS
YOKE (HEAT TO 175 DEG. F)	295-370 FT/LBS
FLYWHEEL HOUSING TO CLUTCH HOUSING BOLTS	45-53 FT/LBS
FLYWHEEL HOUSING TO CLUTCH HOUSING STUDS	35-45 FT/LBS
AIR SUPPLY CONNECTION TO SHIFT CONTROLLER	43-47 FT/LBS
C/S BRAKE MOUNT BOLTS	18 FT/LBS
M/S SPEED SENSOR BOLTS	90 IN/LBS
RANGE HOUSING FLANGE BOLTS	59 FT/LBS
SHIFT FORK DETENT SPRING CAP	74 FT/LBS
HARNESS RACEWAY	90 IN/LBS
CLUTCH BOLTS	44 FT/LBS
OUTPUT RETAINING SCREW	455-509 FT/LBS
FILL PLUG AND LEVEL CHECK PLUG	18-22 FT/LBS

# 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.



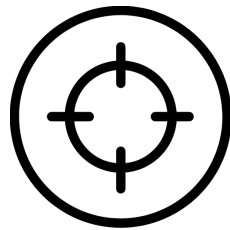
## Quality Control

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

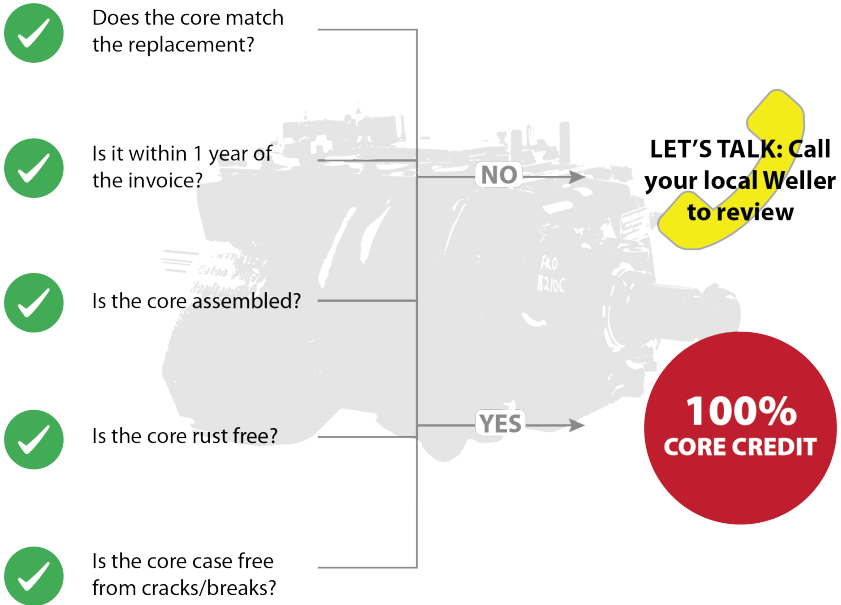
The test allows technicians to fine-tune the transmission's operation, including setting optimal shift points and pressures for improved performance and efficiency.

# 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**

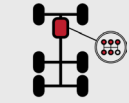
[wellertruck.com/weller-warranty](http://wellertruck.com/weller-warranty)

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

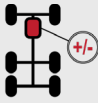
# Max Uptime In Your Drivetrain When You Partner with Weller.

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.

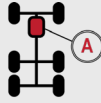
**View Our Complete Drivetrain Offerings at [wellertruck.com](http://wellertruck.com)**



**TRANSMISSIONS  
AND TRANSFER  
CASES**



**AUTOMATED MANUAL  
TRANSMISSIONS**



**AUTOMATIC  
TRANSMISSIONS**



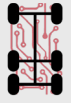
**DIFFERENTIALS**



**DRIVESHAFTS &  
END YOKES**



**STEERING GEAR  
BOXES AND  
PUMPS**



**ELECTRONICS &  
MECHATRONICS**



**Experience  
The Weller Way**



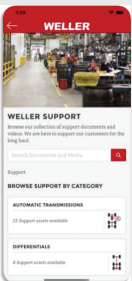
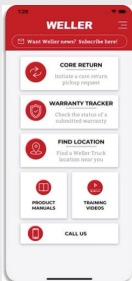
**View the Weller  
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You Partner with the Best!**

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