

# WELLER

*100% Associate Owned*



## **OWNER'S MANUAL: I-SHIFT 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

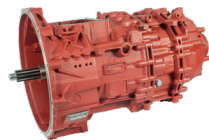
*A complete line of Auxiliaries and Transfer Cases*



## 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.

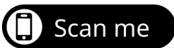
**Quickly Locate a Store:** We are always adding new locations to better serve you.

**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.

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## 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).

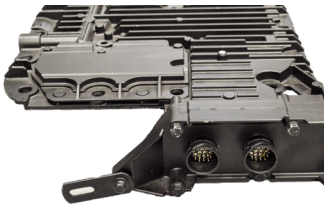




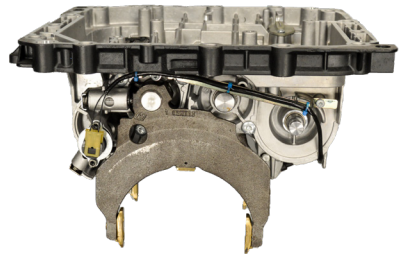
# I-SHIFT/mDRIVE ELECTRONICS

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.



*New TECU*



*Reman Control Housing*

***Quality Parts  
Offered  
Individually by  
Weller***

# INSTALLATION GUIDE

VEHICLE MAKE AND MODEL \_\_\_\_\_ TRANSMISSION ASSEMBLY NO. \_\_\_\_\_

MECHANIC'S NAME \_\_\_\_\_ VEHICLE ID NO. \_\_\_\_\_

**I. This transmission contains NO LUBRICANTS. Use Volvo approved transmission fluid SAE 75W-80 (See Bulletin SB175-61 for approved lubricants).**

**II. TECU Top Cover Removal & Installation Job Aid (See pgs. 7-9)**

**III. 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
- ☐ 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!

**IV. Check driveline for worn or failed components**

- ☐ U-Joints
- ☐ Carrier Bearing
- ☐ Yoke seal surface and splines
- ☐ Ride height
- ☐ Driveline phasing
- ☐ Driveshaft balance
- ☐ Driveline angles (see job aid on pgs 15-18)

**V. PTO (If equipped)**

- ☐ See Volvo PTO installation bulletin PV776-89169795

**VI. Transmission heat exchanger (If equipped)**

- ☐ Clean and flush cooler system
- ☐ Weller recommends pressure testing cooler for leaks

**VII. Air system**

- ☐ Check air dryer
- ☐ Check truck pressure and inspect for leaks

**VIII. After Installation**

- ☐ Perform clutch calibration and gear relearn

# TECU TOP COVER REMOVAL

## CAUTION!

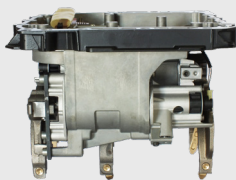
Do not lift the transmission from the control housing (see below for identification). Lifting the transmission from the control housing will cause the rails to slip out of position causing additional down time!

Lift the Transmission using only lift points on Transmission Main Box using the approved Volvo Part# - 9990031 & 9996905 lifting device.

## TRANSMISSIONS CONSISTS OF THREE MAIN COMPONENTS



TECU Top Cover



Control Housing

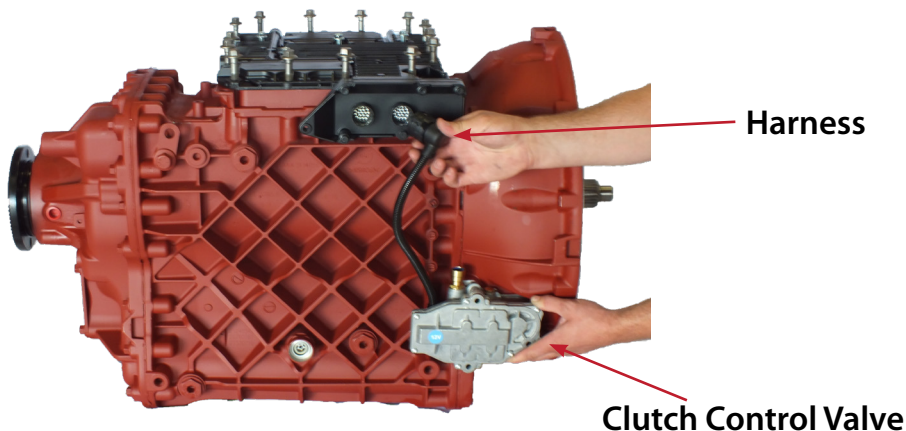


Transmission Main Box

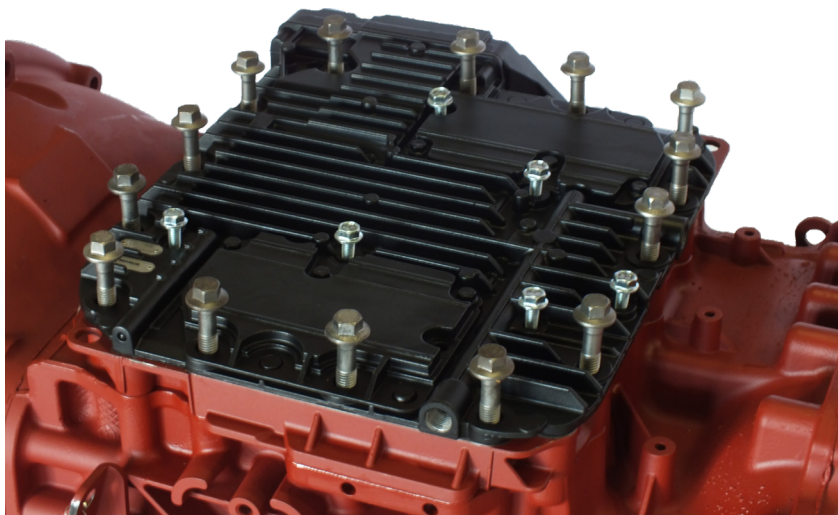
***Call Weller Reman Center 1-800-872-6697 at any time during installation you have any concerns.***

# TECU TOP COVER REMOVAL

1. Disconnect the harness going to the clutch control valve assembly and remove the Clutch Control Valve.



2. Remove 6 bolts with a 13 mm head and Remove 14 bolts with a 15 mm head.



# TECU TOP COVER REMOVAL

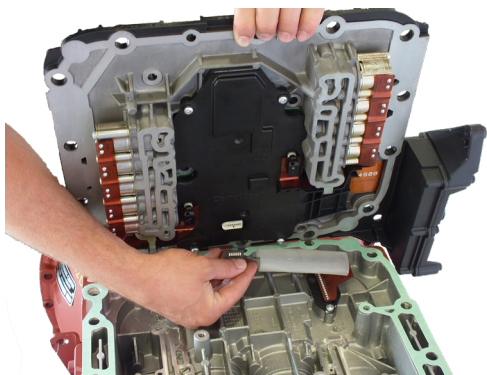
## WARNING!

Damage to the ribbon cable will occur if the TECU Top Cover slides forward or if the TECU Top Cover is lifted too high while disconnecting the ribbon. Assistance for this step may be required.

3. Lift the back of the TECU Top Cover from the Control Housing.



4. Disconnect the ribbon cable from the TECU Top Cover before removing the TECU from the control housing.





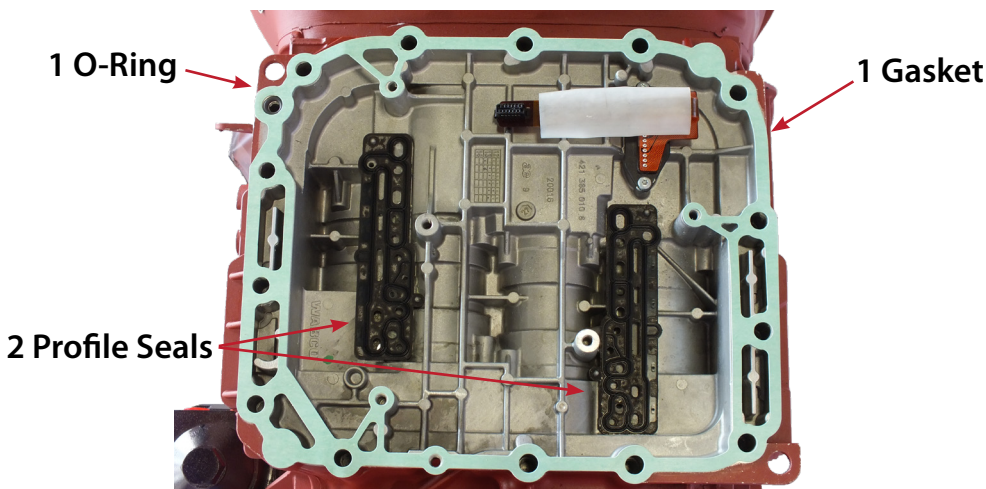
# TECU TOP COVER INSTALLATION

1. Remove protective cover from your Weller Remanufactured replacement transmission.

**WARNING!** Ensure no dirt, debris or foreign items enter the control housing!

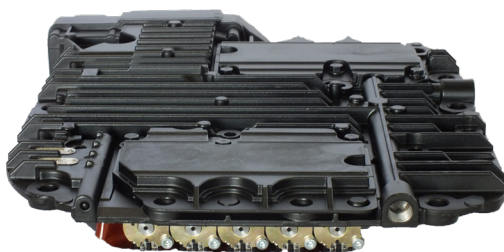


2. **Ensure all old gasket material has been removed from your TECU Top Cover.** Install one o-ring, one gasket and two profile seals on the control housing.



3. Visually inspect your TECU Top Cover, for any damage, cracks, dirt or debris before installation!

**Contact Weller Truck Parts  
1-800-872-6697 if your TECU  
Top Cover is damaged.**



# TECU TOP COVER INSTALLATION

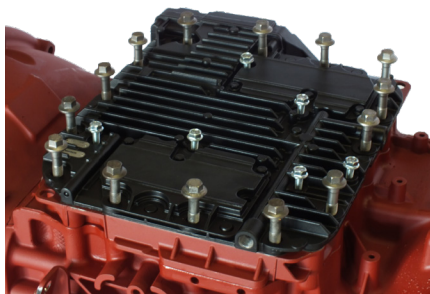
4. Carefully lower your inspected TECU Top Cover on to the control housing while preventing the TECU Top Cover from sliding forward.

**WARNING!** Damage to ribbon cable will occur if TECU Top Cover slides forward while connecting ribbon, assistance for this step may be required.

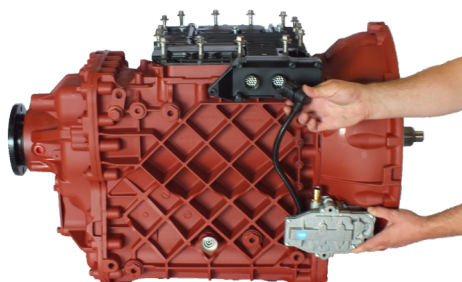


**Gently** reconnect ribbon cable to your TECU Top Cover. Ensure O-ring, gasket and seals remain aligned.

5. Tighten bolts to specs, 6 bolts with 13mm head  $18 \pm 3$  lbs/ft and 14 bolts with a 15mm head  $81 \pm 7$  lbs/ft.



6. Connect harness going to clutch control valve assembly and install the Clutch Control Valve.

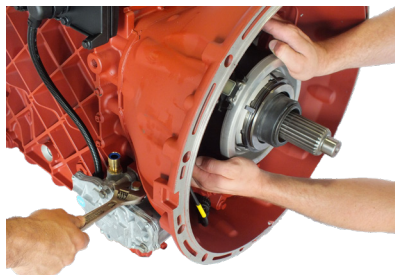


# TECU TOP COVER INSTALLATION

7. Remove the service plug located on the clutch control valve assembly. Compress the clutch actuator. Immediately reinstall the service plug into the clutch control valve and tighten to specs (5ft/lbs.) while the clutch actuator is compressed. The clutch actuator should remain compressed after the plug is installed. If the clutch actuator extends back out, the actuator or control valve may be faulty and require replacement.

## ***Assistance may be required.***

*This step will make it easier to get the bell housing up to the mating surface of the engine flywheel housing during installation.*



**Inspect your clutch for wear.** Replacement clutch and actuators are available at all Weller Truck Parts locations.

*Weller Truck Parts recommends replacing the pilot bearing on all I-Shift Transmissions.*

8. After installation, there are two reset functions that need to be performed. Using Volvo Premium Tech Tool or Jaltest software, perform a clutch calibration and gear relearn. This step resets adaptives in your TECU Top Cover. Failure to do these steps will lead to a high probability of poor shift quality and excessive wear to the gear box.



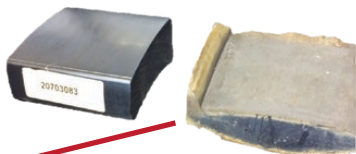
***If you have any issues after installation such as shifting, please call our tech line at 1-800-872-6697.***

# U-JOINT ANGLES

## EXAMPLE: 2007 Volvo Model VNL

Volvo Air Suspension Service Manual PC776-TSP27725

Volvo Service Bulletin Ride Height and Pinion Angle Specification PV766-89216187



Excessively worn suspension wear plates are a common cause of poor working angles

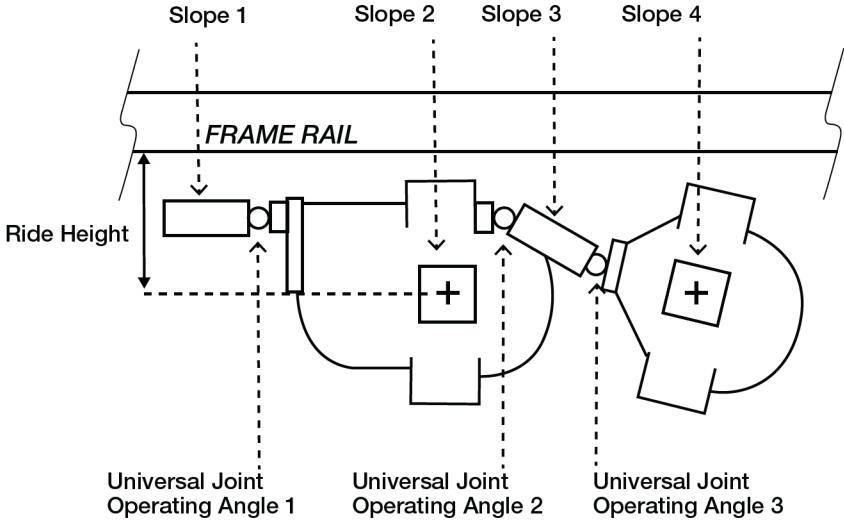
Description	Angle	Initial	Final
<b>Ride Height</b> Bottom of frame to center of front axle tube	NA	7.75"	7.75"
<b>Driveshaft Angle</b>	1	2.4°	1.5°
<b>Front Axle Angle</b>	2	0.7°	2.6°
<b>Interaxle Driveshaft Angle</b>	3	10.3°	7.8°
<b>Rear Axle Angle</b>	4	8.6°	12°
<b>First Working U Joint Angle</b> Difference between 1 and 2	5	1.7°	1.1°
<b>Second Working U Joint Angle</b> Difference between 2 and 3	6	9.6°	5.2°
<b>Third Working U Joint Angle</b> Difference Between 3 and 4	7	1.7°	4.2°

# U-JOINT ANGLES

## EXAMPLE: 2007 Volvo Model VNL

Volvo Air Suspension Service Manual PC776-TSP27725

Volvo Service Bulletin Ride Height and Pinion Angle Specification PV766-89216187



**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.**



# U-JOINT ANGLES

## 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.

A detailed worksheet titled 'Roadranger DAA Worksheet' for measuring driveline angles. It includes a diagram of a vehicle's drivetrain with labels for various components. The worksheet is divided into sections for 'Front Driveline', 'Rear Driveline', and 'Driveline Assembly'. It contains numerous fields for recording data, including vehicle information, measurement dates, and specific angle readings. A table at the bottom is used for recording the final measurements for each component.

Example Roadranger DAA Worksheet

# U-JOINT ANGLES

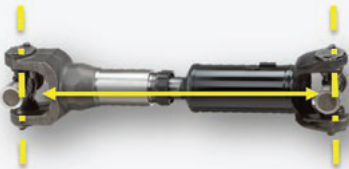
## General U-Joint Angle Rules:

- Should have a minimum angle of  $1^{\circ}$
- Angles on each end of a shaft should ALWAYS be within  $1^{\circ}$  of each other
- U-Joint angles should NOT be larger than  $3^{\circ}$
- Yoke phasing is vehicle specific & set by operating angles

## Inspection:

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

\*Make Corrections as needed\*



Measure Shaft length  
from u-joint cap centers



Yoke Phased  
Yoke caps ARE aligned



$90^{\circ}$  Out of Phase  
Yoke caps NOT aligned

# 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.



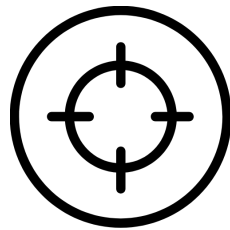
## Quality Control

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

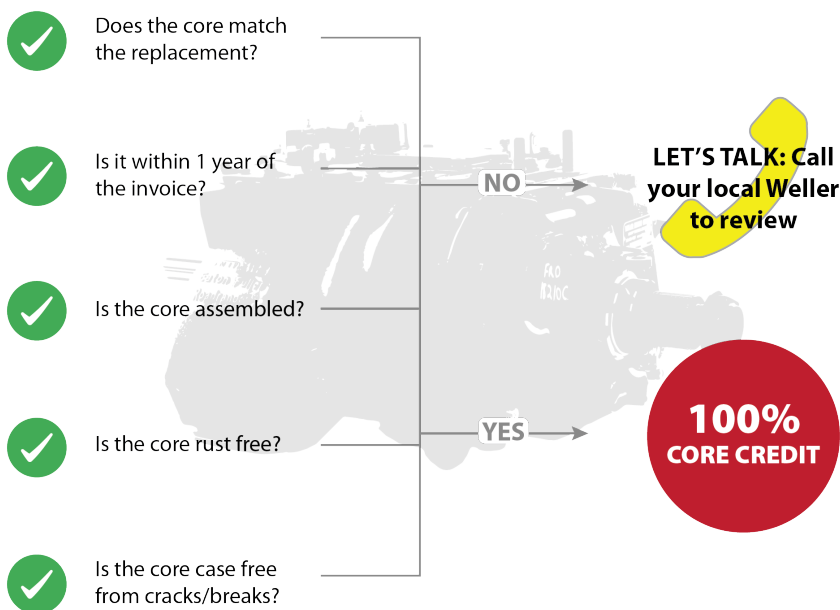
The test allows technicians to fine-tune the transmission's operation, including setting optimal shift points and pressures for improved performance and efficiency.

# 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)

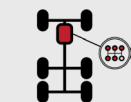
***When You Choose  
Weller, You Stop  
Playing the  
Warranty Game.***



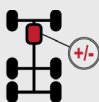
# Max Uptime In Your Drivetrain When You Partner with Weller.

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.

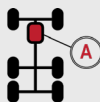
**View Our Complete Drivetrain Offerings at [wellertruck.com](http://wellertruck.com)**



TRANSMISSIONS  
AND TRANSFER  
CASES



AUTOMATED MANUAL  
TRANSMISSIONS



AUTOMATIC  
TRANSMISSIONS



DIFFERENTIALS



DRIVESHAFTS &  
END YOKES



STEERING GEAR  
BOXES AND  
PUMPS



ELECTRONICS &  
MECHATRONICS



**Experience  
The Weller Way**



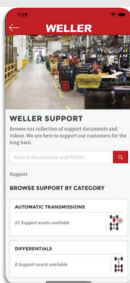
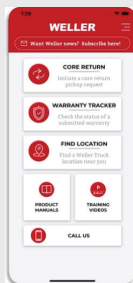
**View the Weller  
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Network**



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Inventory and  
Order Online**



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Tech Support  
and Videos**



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