



## INSTALLATION MANUAL

**TORQ Locker Subaru Installation Instructions**

**Made in USA By:**







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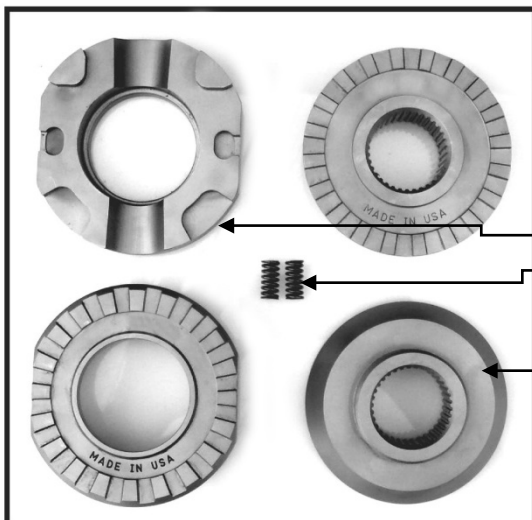
### INTRODUCTION

We suggest that you read these instructions before beginning your installation to familiarize yourself with the installation steps.

Installation of your new locker is accomplished by removing the differential gears from the differential case and installing the TORQ Locker™ components in their place. This type of installation can be made by the weekend mechanic who is familiar with the operation of a differential and who is able to exercise appropriate care during the installation process. Normal installation takes about three hours when these instructions are followed. They also assume that the installer has a shop manual covering the vehicle and that they are familiar with the procedures used in removing wheels, CV axles, etc. Shortcuts should not be attempted unless the installer is very familiar with the shop manual procedures for the vehicle.

Great care has been taken in developing these instructions for the proper installation of the TORQ Locker™; however, the final results are the responsibility of the installer. After the locker is installed, the safe operation of the vehicle is the responsibility of the driver; anyone who drives it should read the Operator's Guide for additional information on how to safely operate your new locker-equipped vehicle.

**NOTE: TORQ Locker™ is for Open Differentials Only**



### TORQ LOCKER™ PARTS LIST

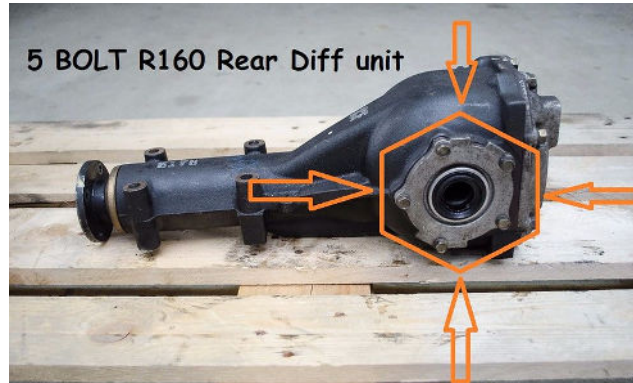
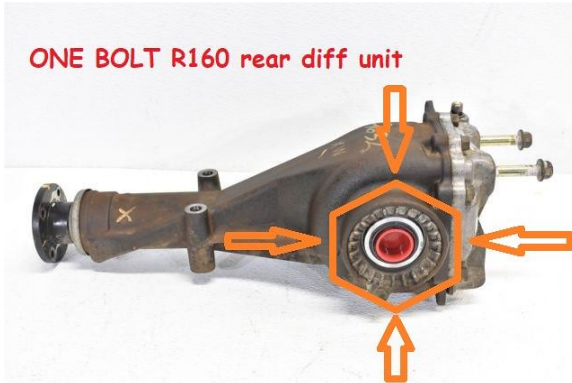
(2) Cam Gears

(2) Springs

(2) Axle Gears

## ADDITIONAL PARTS & RECOMMENDED TOOLS

**This** Installation Manual is specific to open (non-LSD or VLSD) five bolt Subaru R160 rear differentials. Subaru R160 one bolt models have a similar installation except for the bearing retainer removal – which can be very difficult in older applications or vehicles that have corrosion. Subaru sells a specific bearing retainer removal tool or you can modify a 44mm socket. Penetrating oil is highly recommended. Only reuse the stock components if they are in excellent condition. We recommend replacing that the carrier cover and bearing holder plate seals during the installation.



For your installation, you will need:

- **Tools:**
  - 3/8" and 1/2" ratchet
  - 3/8" and 1/2" torque wrenches
  - 12mm box wrench
  - 14mm box wrench
  - 17mm box wrench
  - 12mm socket
  - 14mm socket
  - 17mm socket
  - Dead blow hammer
  - Punch for cross shaft roll pin removal
  - Pry bar
  - Slip-joint and needle nose Pliers
  - Small flat blade screwdriver
  - Recommended:
    - Transmission jack to help remove and install the carrier.
    - 1/2" impact gun
- **Stock or aftermarket side gear Thrust Washers**
- **Stock or aftermarket Cross Pin** – Inspect for wear marks or polish marks, replace if wear is evident. Inspect for metal fatigue, scrape a metal file across the middle of one of the cross shafts. If the file creates a groove, the shaft hardness has fatigued and will need to be replaced. If the file slides and does not cut the metal, the cross shaft should be OK to re-use if it is not scored or discolored due to overheating. For differentials with over 100,000 miles, it is recommended to replace the OEM cross pin.
- **Gear Oil** – Use OEM recommended oils, or to reduce locker audible 'click' use Conventional 85W-140
- **Gasket maker material.**
- **Shop manual for vehicle**
- **Dial caliper or feeler gauge** – for measuring center gap.
- **Paint pen or Sharpie Marker**

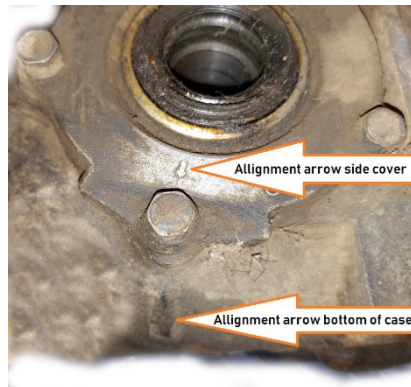
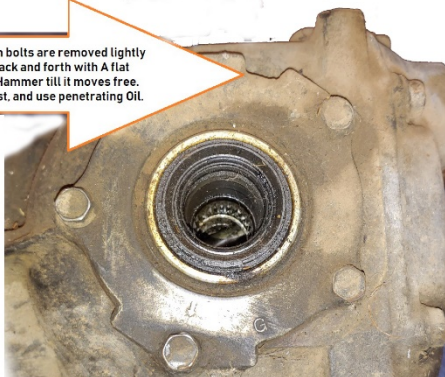
# TORQ LOCKER INSTALLATION

- 1.) Stage vehicle on 4 jack stands. Make sure vehicle is in neutral.

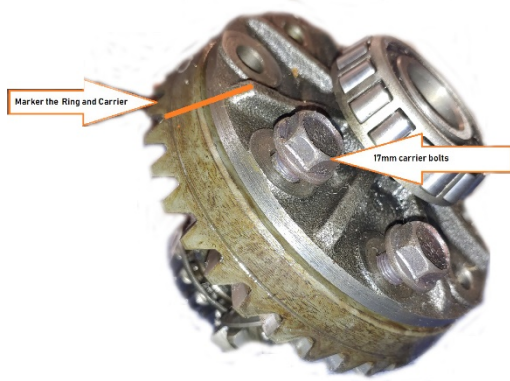


- 2.) Remove the rear differential lower drain plug, pull the plug using ½ drive Ratchet or Bar. Drain the gear oil out. And re-install the plug
- 3.) Remove axle shafts and Drive line from the rear differential per the Vehicle Mechanics manual instructions.
- 4.) Remove the Rear differential unit per Mechanics manual instructions. Use caution removing the Rear Cover studs they can back out with the nut, dropping the weight of the differential.
- 5.) Stage the diff unit in a 5 gal bucket with Driveline end in the bottom so Rear Cover is up. Or place the unit on a Bench for tear down.
- 6.) Remove the breather tube from the rear Cover.
- 7.) Remove all 14mm rear cover bolts. Use rubber Hammer to knock the cover 1-2 times on a side which should pop the cover loose. Set the cover and the steel gasket aside with the bolts. On older units you may encounter a paper gasket, if so, remove it completely and replace it with a new gasket.

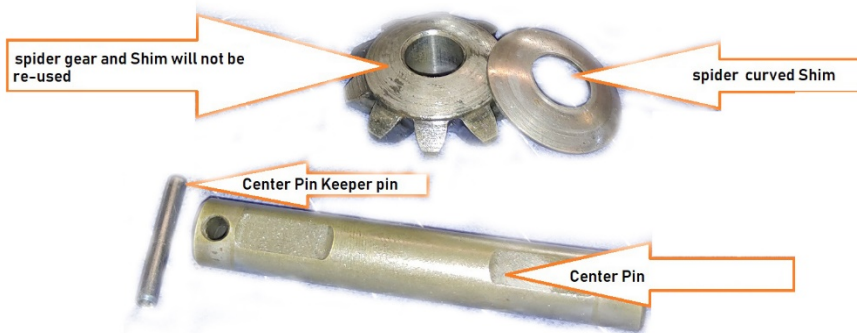
Once all five 12mm bolts are removed lightly smack this area back and forth with A flat blade driver and Hammer till it moves free. Clean the area first, and use penetrating Oil.



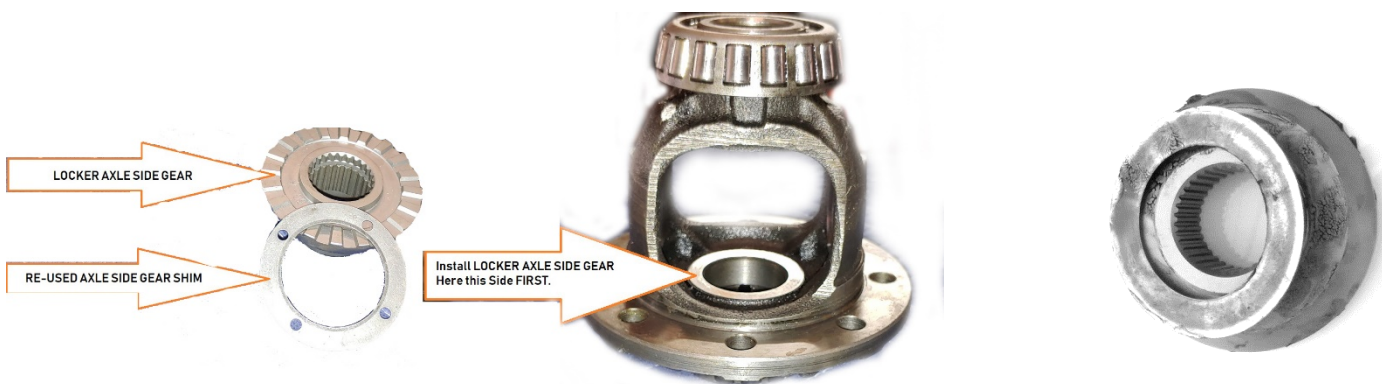
- 8.) Clean side cover bearing retainer areas. Use a paint pen to index and label driver or passenger side cover orientation. Use penetrating oil on the 5 retainer bolts. Remove each side cover plate's five 12mm bolts. Once all 5 bolts are removed you will see a notch in the side cover. Place a Flat blade driver or chisel here and lightly tap each direction to free up the cover. Remove each side cover. Note that there are specific shims on each side to set the backlash of the differential, it's critical that these side covers are reinstalled in the correct side and orientation. \*\*\* One Bolt R160 Differentials have a large bearing retainer castellated cover. Remove this cover using the Subaru specific tool, or make your own tool from a 44mm socket.
- 9.) Remove the carrier unit from the diff. And set it on the bench.



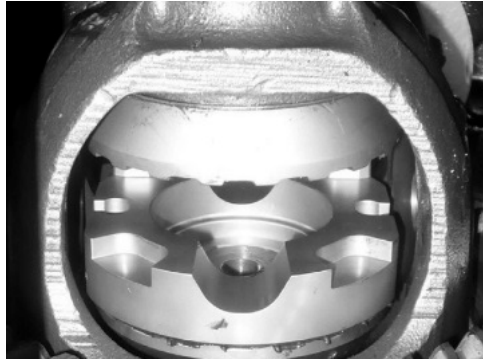
- 10.) Index mark the Carrier and ring gear for orientation for reinstallation later. Use a paint pen or sharpie marker. Remove the Ring gear bolts from the Carrier unit ( 17mm ).
- 11.) Place the Carrier on rags or shop towel. Ring gear Down. Use a rubber dead blow hammer to tap carrier a few times till the ring gear falls off and onto the bench. Set the ring gear aside.



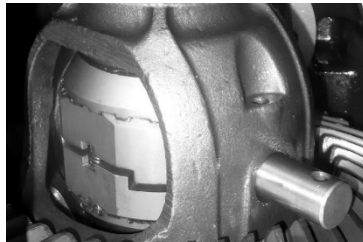
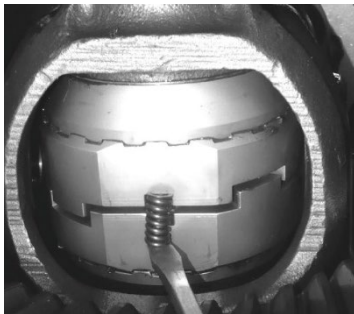
- 12.) Locate the Center pin and the center pin dowel pin retainer. The dowel pin will be located in a very small hole in the side of the case. Remove the dowel pin with a 5/32 punch. Note that the dowel pin can only be removed and installed in one direction. it only comes out one direction and goes in that same direction. Keep the center pin and dowel pin retainer for re-use. Inspect the cross pin for wear marks or polish marks, replace if wear is evident. Inspect for metal fatigue, scrape a metal file across the middle of one of the cross shafts. If the file creates a groove, the shaft hardness has fatigued and will need to be replaced. If the file slides and does not cut the metal, the cross shaft should be OK to re-use if it is not scored or discolored due to overheating. For differentials with over 100,000 miles, it is recommended to replace the OEM cross pin.
- 13.) Remove all of the spider gears by spinning the spider gears slowly. Remove the 2 concave washers behind the spider gears and remove the thrust washers behind the drive spider gears. Retain the flat thrust washers for reuse.
- 14.) **Prep TORQ Locker for Install:** Apply medium grease, in a very thin coating, to the teeth of the gears and to the backs of the axle gears.
- 15.) **Thrust Washers:** Install new or existing thrust washers onto the backs of the axle gears and press them into the grease to help hold them in place.



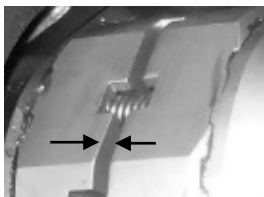
- 16.) **Install Axle 2 Gears:** with Thrust Washers on the backs of the axle gears, driver and passenger side
- 17.) **Install First Cam Gear:** on the Ring Gear side of the case, push it into the grease on the teeth to hold it in position. Rotate the mated cam and axle gear so that the pocket side of the cam gear is facing towards you.



- 18.) **Install Second Cam Gear:** positioning it so that the bosses will slip into the opposing pockets. Slide it in until the two cam gears are flush with each other. Push the right cam gear into the grease to hold it in position.



- 19.) **Install the Two Springs:** rotate the locker assembly and install the two springs into the Spring Pockets. **NOTE:** The springs are Heavy Duty. Try using a flat screwdriver to pry the springs into the pockets. An alternative method is to compress the spring with pliers and insert it about half way into both cam gears, release the pliers, and then tap it into place with a screwdriver handle.
- 20.) **Reinstall the Cross Pin and Roll Pin**



**NOTE:** Center Gap Spacing = Between 0.145" and 0.175"

- 21.) **Check the Center Gap Measurement:** Use your caliper or feeler gauges to measure the gap between the two cam gears with the locker teeth engaged. This is an installation check to see if the thrust washers were installed or to see if the differential case is within average machining tolerances or if it has become worn. If the gap is out of specifications, please contact Customer Support: [Info@TorqMasters.com](mailto:Info@TorqMasters.com)
- 22.) **Re-install the ring gear to the Carrier.** Align your index marks and use a dead blow hammer to seat the ring gear to the carrier until the ring gear nests flat against the case flange. Install the the 17mm bolts per torque specifications listed in Mechanics Manual.
- 23.) Re-install Carrier assembly into the differential case.
- 24.) Re-install side gear covers and Rear differential Cover in reverse order of disassembly.
- 25.) Install differential unit into car per Manual add OEM suggested gear oil after the differential is installed.

#### Notes:

- Remove the OEM axle circlips from the differential side of the axles. New circlips are provided in the TORQ Locker axle gears.
- Wrap each axle stub in a rag and place in a plastic bag to help keep the axle stubs clean.
- Penetrating oil is recommended when removing the 14mm differential cover and 12mm bearing holder plate bolts.
- Refer to your shop manual for vehicle specific torque specifications when installing the R160 back into your vehicle.
- Locate the arrows on the exterior of the bearing holder plates as well as on the carrier near the bearing holder plate opening. The plate and carrier bolt holes will align when the arrows on the carrier and plate are pointing at one another.
- Apply a thin coating of RTV to the threads of the carrier cover drain and fill port plugs to prevent leakage.
- Ensure that the axle stub circlips are installed on the axles before installing the axles into the housing.

**Perform the 'Spin Test':** Place the vehicle in gear or park first to attempt to lock the drive shaft. If the drive shaft continues to spin freely use the following pry bar method. As during disassembly, place a pry bar in the yoke of the drive shaft to carrier connection. Once the drive shaft is locked in some fashion, rotate one tire until it stops and hold it firmly. The tire is now locked to the locker teeth and to the drive shaft (you may need to chock the tire to hold it). Rotate the other tire in the opposite direction. It should release and go "click click click" as it rotates. Repeat for both tires in both directions. The "click" will be less noticeable once the gear oil has an opportunity to circulate through the carrier.

## TEST DRIVE

- 1.) After your installation is complete and you have passed the 'Spin Test' it's time to take your vehicle out for a test drive. Consult the Operator's Guide for detailed information on how to operate your vehicle on and off road.
- 2.) During your initial testing, take it easy the first few miles. Remember that a new rear locker-equipped vehicle will have some different handling characteristics that you will quickly adapt to. Take turns slowly and coast through the turn.
- 3.) Try your locker on a low-traction surface like a gravel parking lot to feel how the added traction feels.
- 4.) Note, there is a break-in period for your locker of about 600 miles after which the 'Click' noise should reduce slightly. The occasional 'Clunk' may be heard with this style of locker and should not be cause for concern.

## NOTES & HELPFUL HINTS

- **Differential case and bearings:** If there are any chips or cracks in the case, and/or the bearings are worn, replace them—but remember that the ring and pinion backlash and bearing pre-load will need to be set up again after replacing.

## WARRANTY

### TORQ Locker™ FOUR YEAR LIMITED WARRANTY

Torq-Masters Industries warrants each new TORQ Locker™ to be free from defects in material and workmanship under normal use and service following the date of purchase of the part for a period of four years. This warranty is limited to the manufacturer's repair or replacement of the defective parts only, providing the product, including all components and parts, is returned to the manufacturer or its authorized representative, together with proof of purchase and all relevant documentation, transportation charges prepaid. This warranty excludes labor or consequential damages or injury. The decision as to whether the defective part is to be repaired or replaced will rest solely with Torq-Masters Industries, Inc.

Any failure of the product as before described must be reported to the manufacturer within fifteen (15) days of failure and an authorization code number obtained for return of the product to manufacturer or its authorized representative. Proper proof of purchase must be furnished in order to obtain an authorization code; and this code number must be included with the relevant paperwork before mentioned. Please contact us to obtain a return authorization code.

**Notes:**

This warranty is in lieu of all other warranties express or implied and all other obligations or liabilities on the part of the manufacturer. The manufacturer neither assumes nor authorizes any other entity or person to assume for it any other liability in connection and sale of TORQ Lockers™

This warranty covers the original purchaser only. This warranty does not cover defects caused by any of the following: modification, alteration, repair or service of the product by anyone other than by the manufacturer or its authorized representative, physical abuse to or misuse of the product, improper diagnosis, installation or operation thereof in a manner contrary to the installation manual accompanying the product, and road, offroad or accident damage. No repair or replacement of any part made under this warranty shall be deemed to alter or extend the term of the warranty in any way.

The manufacturer disclaims any implied warranties of merchantability of the goods or fitness of the goods for any purpose. The manufacturer has no liability for incidental, consequential or special damages including, but not limited to, claims of personal injury or property damage and claims of liabilities by third parties not the original purchaser to the product. While this warranty gives specific legal rights, some States have special laws regarding warranties which regulate limitation and time periods. These rights vary from state to state and purchaser is urged to review laws of his jurisdiction in the event of a warranty question.

If the purchaser disagrees with any of the terms of this warranty, please return the purchased item to Torq-Masters Industries, Inc. within three (5) business days of notification of shipment. Buyer is responsible for all shipping charges for receipt and return of product. A decision by the purchaser to retain the item purchased will be deemed acceptance of the specific terms of this warranty.



TORQ Locker™ is 100% made in the USA.

Please direct any questions to: [info@torqmasters.com](mailto:info@torqmasters.com)

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