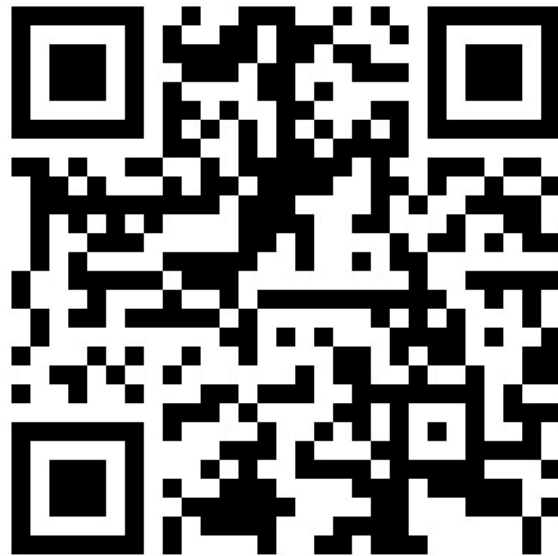




INSTALLATION MANUAL

TORQ Locker for Can-Am SmartLok Differential Installation

TL-SM230 – 30 Spline TORQ Locker



Scan for Installation Video

Made in USA By:





INSTALLATION MANUAL

TORQ Locker Installation Instructions By:



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 two hours when these instructions are followed. They also assume that the installer is familiar with the procedures used in removing wheels, axle shafts, 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 at the end of this manual for additional information on how to safely operate your new TORQ Locker™- equipped vehicle.



TORQ LOCKER™ PARTS LIST

- (2) Cam Gears
- (2) Springs
- (2) Axle Gears
- (1) Cross Pin
- (1) Case
- (2) Shims
- (2) Oil Seals

TORQ Locker™ QUICK INSTALL OUTLINE

- 1.) **Prep vehicle for TORQ Locker installation:** Engage the parking brake, jack up the vehicle. Place 4 jack stands under your vehicle because the tires will need to be rotated for testing. Put the Vehicle in 4WD to secure the driveshaft.
- 2.) **Disassemble components to access the front differential:** Your vehicle may require more suspension components to be removed to access the front differential, this procedure varies by model and by aftermarket modifications.
 - a. **Remove Tires:**
 - b. **Remove Skid Plate:**
 - c. **Drain differential gear oil:**
 - d. **Pull the lower ball joint bolts :** This will allow for the knuckle to be pulled outward then the CV shafts can then be pulled out of the differential
 - e. **Remove the Shock Lower Bolts:** Use a ratchet strap to pull the shock out of the way
 - f. **Pull front Axle Shafts:** With the knuckle pulled out of the way, the axle shafts should come out with a hard tug. Be mindful of the snap rings on the ends of the axle plunging joints. Don't lose the snap rings. You can use a pry bar to ease the axle shafts out of the differential housing, at the housing
 - g. **Remove the Brake Calipers & Axle Shafts**
 - h. **Disconnect electrical components from the Drivers side Differential Side Cover:**
 - i. **Remove Differential breather tube:** Vice grips or by hand
 - j. **Remove the Differential** place on a clean work surface
- 3.) **Disassemble the Differential:**
 - a. **Remove the actuator:** (4) T-30 bolts, 3 on the side, one on the top
 - b. **Remove the Drivers side differential cover:** 12 mm bolts, use 2 pry bars to lift evenly. Don't damage the o-ring
 - c. **Remove the Differential Case from the differential or side cover:** Tap on the side gear from the oil seal side of the side cover. Place case on a clean work surface.
- 4.) **Install the TORQ Locker:**
 - a. **Make Note of any shims found inside the housing:** Remove the shims and keep them clean for reinstallation
 - b. **Remove the Tone Ring and Bearing from the Ring Gear side of the case:** Use a bearing puller or gently use 2 flat head screwdrivers. Be careful with the Tone Ring, it can easily deform.
 - c. **Remove the OEM Ring Gear:** Clean the ring gear bolt holes with brake clean to remove any thread locker
 - d. **Clean the OEM ring gear bolts:** use brake clean and a wire brush or wire wheel to remove any thread locker
 - e. **Install the TORQ Locker Springs:** Lift off the upper axle gear and cam gear and install the 2 TORQ Locker springs into opposing cam gear, facing up. Place the upper cam gear on the springs so the springs go in the holes. Place the axle gear on the cam gear.
 - f. **Bolt the Ring Gear to the TORQ Locker Case & use Red Thread Locker 272:** Align the dowel pins and tap the ring gear onto the case using a dead blow. Torque ring gear bolts to Owner's/Shop manual specifications
 - g. **Remove the OEM Oil Seal from the Drivers Side Differential Cover & Replace with Supplied Oil Seals:** Start the new seal in by hand then use a dead blow to gently seat the seal nice and flush.
 - h. **Remove the Passenger Side Differential Cover:** This side is a bit harder to remove as it has silicone and not an o-ring. Unbolt the cover and use a dead blow to tap the cover off at the cast tabs. Then use large flat head screw drivers to pry the cover off.
 - i. **Remove the clutch pack, roller bearing:** Make note of the shim location, remove and reinstall later. The actuator may fall out, or it may remain in the side cover. If it falls out set aside for reassembly.
 - j. **Remove the center splined insert in the clutch pack:** To do that, first remove the thin circlip that retains the clutches. Then carefully remove the center splined insert. Reinstall the circlip.
 - k. **Remove the side cover oil seal and install the new larger ID oil seal included in your kit:** Start the new seal in by hand then use a dead blow to gently seat the seal nice and flush.
 - l. **Reinstall the shim, clutch pack and roller bearing**
 - m. **Reinstall the Passenger Differential Side Cover:** Clean up the 2 mating surfaces of the differential housing and side cover, remove all OEM silicone. Reinstall the roller balls and actuator to the side cover (if they fell

out). Apply silicone to the mating surfaces and reinstall the side cover. Torque side cover bolts to Owner's/Shop manual specifications

- n. **Reassemble the Differential – Reinstall any and all shims from the OEM case, Reinstall the bearing and tone ring, place the Locker inside the housing, making sure to mesh with the pinion gear:** The clutch pack on the passenger side of the differential needs to be aligned so the TORQ Locker can fit through the clutches and through the oil seal in the side cover. Make sure the ring gear is fully meshed with the pinion gear.
- o. **Install the Drivers Side Differential Side Cover:** Inspect and clean o-ring. Torque side cover bolts to Owner's/Shop manual specifications
- p. **Fill the Differential with OEM specified gear oil**

5.) **Clearance the Steering Front Knuckle for Axle CV Joint**

- a. **Use a Grinder or Dremel to Remove Excess Casting in the 2 front steering Knuckles:** The OEM steering knuckles have a casting hump on the lower side near the lower ball joint that needs to be cleared and ground down. The intention is to have the CV side of the knuckle to be as cylindrical as possible. Use a grinder or Dremel to grind down the casting hump. Test fit with an axle, tighten the axle nut, and rotate the CV to see if there are any clearance issues. If there are clearance issues, remove more material. If not, install one shim from the kit on the CV side of the plunging joint and reinstall the axles. Repeat for the other side of the vehicle.
- b. **Fill the Differential with OEM specified gear oil**
- c. **Reinstall the Axle Shafts, Shocks, Ball Joints, Wheels and Tires**

6.) **Perform the Wheel Spin Test:** See detailed instructions later in this guide.

7.) **Complete Installation:** Leave the vehicle in gear, apply the emergency brake, remove the jack stands and lower the vehicle to the ground.

TORQ Locker™ INSTALLATION PHOTOS

- 1.) **Prep vehicle for TORQ Locker installation:** Engage the parking brake, jack up the vehicle. Place 4 jack stands under your vehicle because the tires will need to be rotated for testing. Put the Vehicle in 4WD to secure the driveshaft.
- 2.) **Disassemble components to access the front differential:** Your vehicle may require more suspension components to be removed to access the front differential, this procedure varies by model and by aftermarket modifications.
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 - b. **Remove Skid Plate:**
 - c. **Drain differential gear oil:**
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 - g. **Remove the Brake Calipers & Axle Shafts**



- h. **Disconnect electrical components from the Differential:**
- i. **Remove Differential breather tube:** Vice grips or by hand
- j. **Remove the Differential** place on a clean work surface

3.) **Disassemble the Differential:**

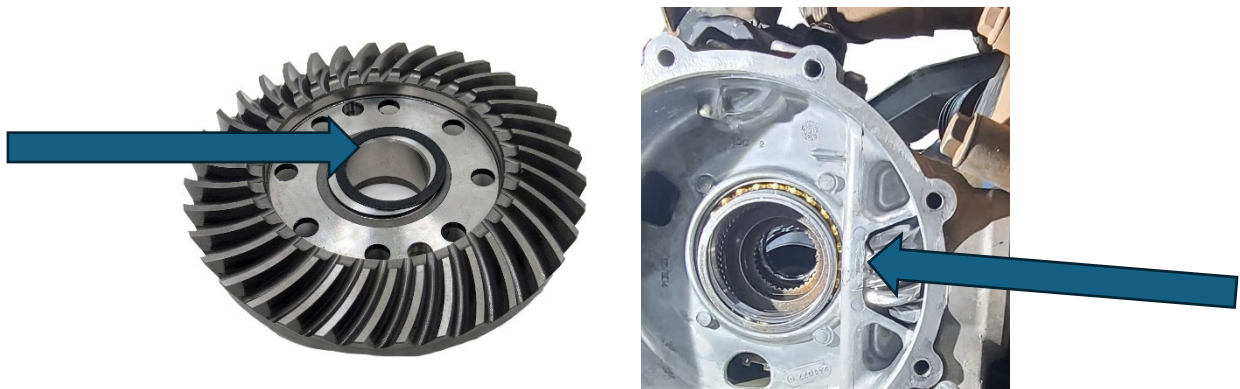


- a. **Remove the actuator:** (4) T-30 bolts, three on the side, one on the top. Be mindful of the splines.

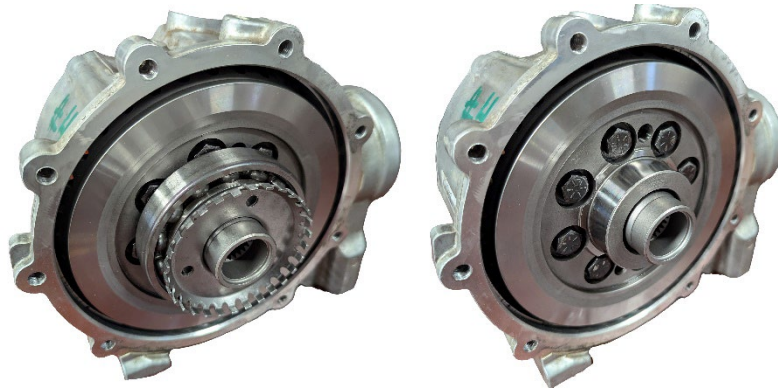


- b. **Remove the Drivers side differential cover:** 12 mm bolts, use 2 pry bars to lift evenly. Pry on the 2 cast tabs on the cover. Be mindful of the o-ring between the cover and housing.
- c. **Remove the Differential Case from the differential or side cover:** You may need to tap on the side gear from the oil seal side of the side cover. Place case on a clean work surface.

4.) **Install the TORQ Locker:**



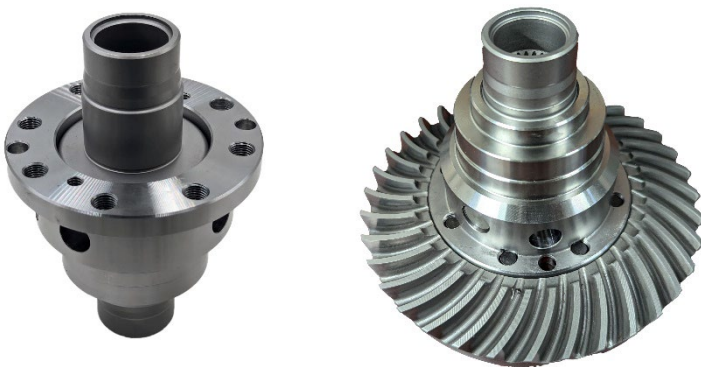
- a. **Make note of any shims found inside the housing:** Remove the shims and keep them clean for reinstallation



- b. **Remove the Tone Ring and Bearing from the Ring Gear side of the case:** Use a bearing puller or gently use 2 large flat head screwdrivers. Be careful with the Tone Ring, it can easily deform.
- c. **Remove the OEM Ring Gear:** Clean the ring gear bolts and bolt holes with brake clean to remove any thread locker
- d. **Clean the OEM ring gear bolts:** use brake clean and a wire brush or wire wheel



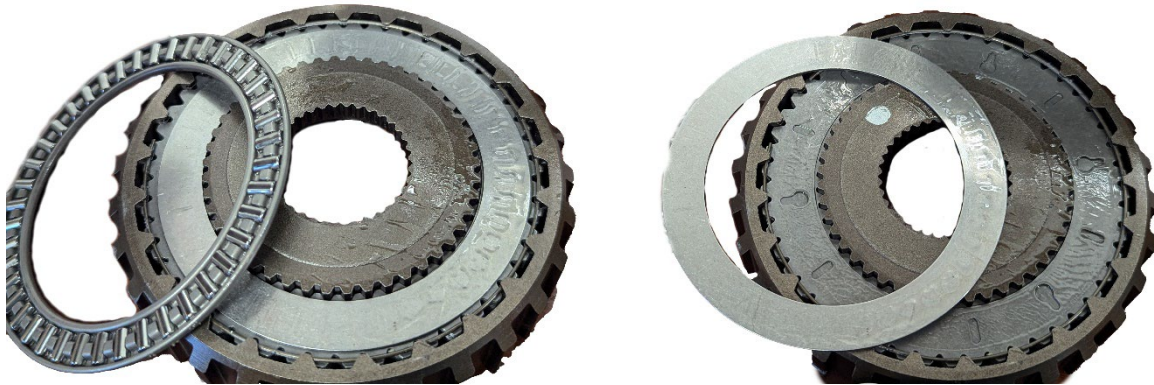
- e. **Install the TORQ Locker Springs:** Lift off the upper axle gear and cam gear and install the 2 TORQ Locker springs into opposing cam gear, facing up. Place the upper cam gear on the springs so the springs go in the holes. Place the axle gear on the cam gear.



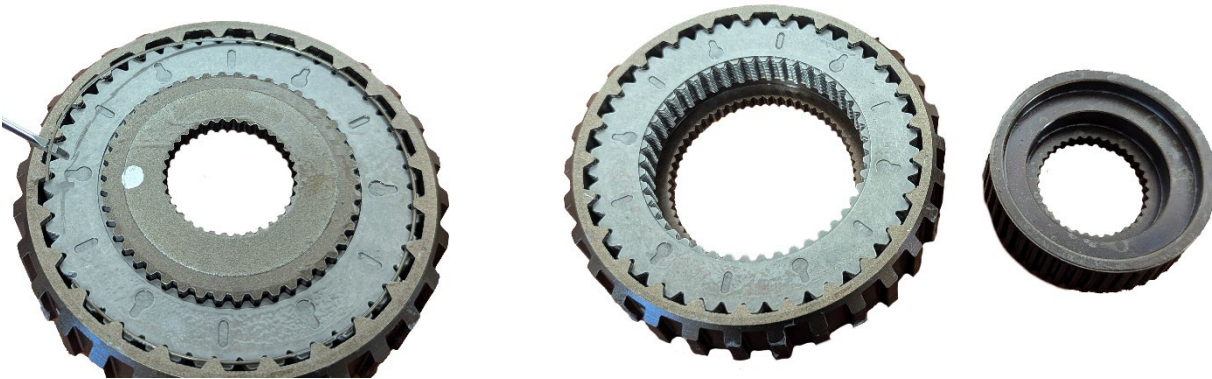
- f. **Bolt the Ring Gear to the TORQ Locker Case & use Red Thread Locker 272:** Align the dowel pins and tap the ring gear onto the case using a dead blow. Torque ring gear bolts to Owner's/Shop manual specifications
- g. **Remove the OEM Oil Seal from the Drivers Side Differential Cover & Replace with Supplied Oil Seals:** Start the new seal in by hand then use a dead blow to gently seat the seal nice and flush.



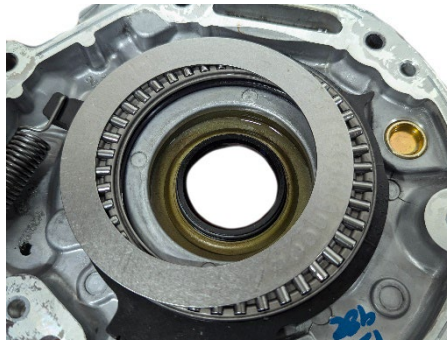
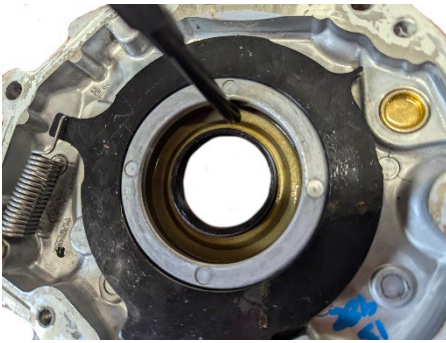
- h. Remove the Passenger Side Differential Cover:** This side is a bit harder to remove as it has silicone and not an o-ring. Unbolt the cover and use a dead blow to tap the cover off at the cast tabs. Then use large flat head screw drivers to pry the cover off.



- i. Remove the clutch pack, roller bearing:** Make note of the shim location, remove and reinstall later. The actuator may fall out, or it may remain in the side cover. If it falls out set aside for reassembly.

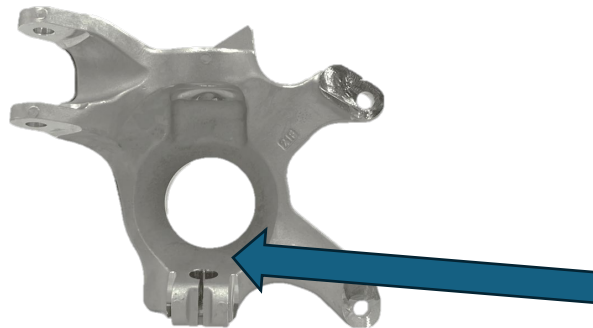


- j. Remove the center splined insert in the clutch pack:** To do that, first remove the thin circlip that retains the clutches. Then carefully remove the center splined insert. Reinstall the circlip



- k. **Remove the side cover oil seal and install the new larger ID oil seal included in your kit:** Start the new seal in by hand then use a dead blow to gently seat the seal nice and flush.
- l. **Reinstall the shim, clutch pack and roller bearing**
- m. **Reinstall the Passenger Differential Side Cover:** Clean up the 2 mating surfaces of the differential housing and side cover, remove all OEM silicone. Reinstall the roller balls and actuator to the side cover (if they fell out). Apply silicone to the mating surfaces and reinstall the side cover. Torque side cover bolts to Owner's/Shop manual specifications
- n. **Reassemble the Differential – Reinstall any and all shims from the OEM case, Reinstall the bearing and tone ring, place the Locker inside the housing, making sure to mesh with the pinion gear:** The clutch pack on the passenger side of the differential needs to be aligned so the TORQ Locker can fit through the clutches and through the oil seal in the side cover. Make sure the ring gear is fully meshed with the pinion gear.
- o. **Install the Drivers Side Differential Side Cover:** Inspect and clean o-ring. Torque side cover bolts to Owner's/Shop manual specifications
- p. **Fill the Differential with OEM specified gear oil**

5.) **Clearance the Steering Front Knuckle for Axle CV Joint**



- a. **Use a Grinder or Dremel to Remove Excess Casting in the 2 front steering Knuckles:** The OEM steering knuckles have a casting hump on the lower side near the lower ball joint that needs to be cleared and ground down. The intention is to have the CV side of the knuckle to be as cylindrical as possible. Use a grinder or Dremel to grind down the casting hump. Test fit with an axle, tighten the axle nut, and rotate the CV to see if there are any clearance issues. If there are clearance issues, remove more material. If not, install one shim from the kit on the CV side of the plunging joint and reinstall the axles. Repeat for the other side of the vehicle.
 - b. **Reinstall the Axle Shafts, Shocks, Ball Joints, Wheels and Tires**
- 6.) **Perform the Wheel Spin Test:** See detailed instructions later in this guide.
- 7.) **Complete Installation:** Leave the vehicle in gear, apply the emergency brake, remove the jack stands and lower the vehicle to the ground.

Perform the Wheel Spin Test

- 1.) Jack the front or rear of the vehicle up and place on jack stands so tires are off the ground. Ensure the vehicle is stable.
- 2.) Place the vehicle in gear, in 4wd to lock the pinion.
- 3.) Tires must be installed to complete this test.
- 4.) Rotate the Drivers side tire forward until it stops against the locked drive shaft. Hold it in position and maintain moderate pressure.
- 5.) Rotate the Passenger side tire backwards. It should ratchet smoothly, with the locker clicking as the tire rotates.
- 6.) Next rotate the Drivers side tire backwards until it stops against the locked drive shaft. Hold it in position and maintain moderate pressure.
- 7.) Then, rotate the Passenger side tire forwards. It should ratchet smoothly, with the locker clicking as the tire rotates.
- 8.) Repeat steps 4-7 this time starting with the Passenger side tire
- 9.) If your locker ratchets smoothly, then you have passed the “wheel spin” test and you are ready to finish up.
- 10.) Any questions? Shoot us an email or give us a call. Info@torqmasters.com

Spin Test video

<https://www.youtube.com/watch?v=EDMEGM2nKdU>

TEST DRIVE

- 1.) After your installation is complete 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 front rear locker-equipped vehicle will have some different handling characteristics that you will quickly adapt to. Front locker applications should see no change in handling characteristics while in 2WD. It is not recommended to test a front locker in 4WD on dry pavement.
- 3.) Try your locker on a low-traction surface like a gravel parking lot to feel how the added traction feels.
- 4.) Try adjusting your DPS to minimum and working up from there until you feel your preferred steering and handling in 4WD at various speeds and terrain.
- 5.) We find that DPS to minimum works well at slow speeds and DPS to medium or maximum works well for higher speeds.
- 6.) Note, there is a break-in period for your locker of about 100 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

- **Axle Seals:** Inspect while you are in the differential, now would be a good time to replace if needed
- **Differential case and bearings:** If there are any chips or cracks in the case, and/or the bearings are worn, replace them.
- **Check with your local Can-Am Dealer:** for any recalls prior to installing the TORQ Locker. If there is any front differential work to be performed under Can-Am Warranty, your dealer may be able to install your TORQ Locker at a discounted labor rate.

TORQ Locker™ is 100% made in the USA.

Please direct any questions to: info@torqmasters.com

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Operators Guide

Your TORQ Locker™ is designed to provide you with dramatic improvements in traction performance. However, the safe operation of your vehicle is the responsibility of the driver, and it is suggested that all drivers carefully read this TORQ Locker™ guide.

- Do not engage 4WD, with a front TORQ Locker™, when driving on dry pavement – this will put unnecessary strain on your front axle shafts and axle joints.
- Advise anyone working on your vehicle that the vehicle is locker-equipped.
- Having the proper tire air pressure is not only essential for proper locker operation but also for driving safety. Large diameter tires are especially susceptible to creating locker problems when the tire diameters are significantly different or when tires are inflated to different pressures. Tires should always be inflated to manufacturer's specifications.
- Depending on many factors you may hear a clicking sound when you are making a turn. This is normal for automatic lockers and is a positive indication that your locker is working properly.
- Additional backlash is the nature of locker design. Due to the additional backlash you may hear a "clink" or "clunk" sound from time to time. This sound is part of normal locker operation.
- Your new TORQ Locker™ provides you with dramatic increases in traction performance. You can travel further, faster and with more traction than before. With this improved capability comes new responsibilities. You can get deeper in the woods and further up the hills than before. In case of emergencies or vehicle breakdowns it is a good practice to always travel with other off roaders for safety.