

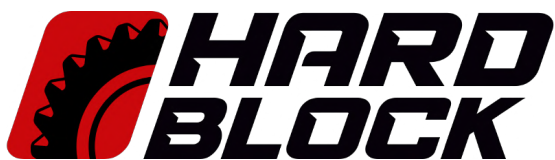


INSTALLATION MANUAL

HBE 111

HBE 121

ADVANCED DIFFERENTIAL LOCKING SYSTEM



*Welcome to the HardBlock® family!
Thank you for choosing our solution to upgrade your
vehicle. We are committed to designing and
manufacturing innovative transmission solutions and
beyond.
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our latest developments.*



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INSTALLATION AND OPERATING INSTRUCTIONS

CAUTION

The Electric Locker must be installed strictly in accordance with this manual. If any difficulties or uncertainties arise, stop the installation procedure and contact our technical support at **hardblockusa.com**. Our specialists will provide further instructions. Any deviation from the specified procedure, or any attempt to resolve installation issues without technical support, may result in damage to the Electric Locker assembly and/or vehicle components.

CAUTION

Removal of the magnet and retaining ring is permitted for installation of the ring gear onto the Electric Locker. Do not remove the rotating locking clutch or loosen the Electric Locker housing bolts. Disassembly may compromise the integrity of the assembly and result in internal components becoming dislodged or lost. If you would like to learn more about the design and operating principle of the Electric Locker, please watch the detailed video on the **@HardBlockLive** YouTube channel.

CAUTION

When installing the Electric Locker, bearings of the same size as those used on the original differential may be used: **Toyota 90366-53004 (53 x 83 x 24 mm)**. Equivalent bearings: **Koyo - STA5383**.

- *Installation of the Electric Locker is recommended to be performed by a qualified service facility.*
- *If the product is installed by the user, ensure that all tools and materials specified in this manual are available before installation. The applicable vehicle service and repair manual must also be available.*
- *Before starting installation, verify that the Electric Locker package is complete. If any parts are missing, contact customer support via **hardblockusa.com** or contact the seller from whom the product was purchased.*
- *Use of the vehicle on public roads with the differential locked is unsafe.*
- *Engagement and disengagement of the Electric Locker while the vehicle is in motion is permissible and does **not** in itself cause damage to the mechanism. However, if the Electric Locker is engaged while one of the wheels is slipping, shock loads may occur in the drivetrain and may result in*

failure of drivetrain components. Engaging the Electric Locker at speed may also result in loss of vehicle control.

- *Use of the Electric Locker in the disengaged state during prolonged one-wheel slip is not recommended. Prolonged slip of one wheel while the opposite wheel remains stationary causes oil starvation inside the mechanism, overheating, accelerated wear, seizure of the spider gears, and damage to internal components. The user assumes all risks associated with such operation. Damage resulting from improper use is not covered by the warranty.*
- *Engage the Electric Locker only when the front axle is engaged (4WD mode). Engaging the Electric Locker while the front axle is disengaged may damage the front differential, front axle, and related drivetrain components.*

PARTS LIST

- *Wire harness*
- *Bracket*
- *Cable rubber seal*
- *Installation manual*
- *Differential side bearing shims*
- *Electric Differential Locking System (Electric Locker)*

REQUIRED TOOLS

- *Standard set of hand tools*
- *Bearing puller*
- *Torque wrench (bolt tightening torque values are specified in the applicable vehicle service and repair manual)*
- *Dial indicator with magnetic base for checking ring and pinion backlash*
- *Drill/driver, 1/2" drill bit*
- *Press and bearing driver set for installing differential bearings*
- *Oil container*
- *Center punch*
- *Paint marker*

INTRODUCTION

- *Hammer with a plastic, rubber, or copper face*
- *Bench vise with soft jaws, or with wood or plastic jaw protectors*
- *Electric oven or electric hot plate (for heating the ring gear to **175–230° F**)*
- *Laser thermometer (for monitoring ring gear temperature)*

REQUIRED MATERIALS

- *RTV silicone sealant (Room Temperature Vulcanizing)*
- *API GL-5 gear oil, SAE 75W-90*
- *Cleaner for removing dirt and oil*
- *Threadlocker*
- *Applicable vehicle service and repair manual*
- *Factory Toyota side plate shims. If the ring and pinion or differential bearings are being replaced, thinner genuine Toyota side plate shims may be required to correctly adjust backlash and bearing preload. Contact a Toyota dealer to obtain the part numbers for the required shim thicknesses.*

1.1 Raise and support the vehicle on a lift. A two-post lift is recommended because it provides convenient access to the differential area while allowing the wheels and axles to rotate freely and be removed easily.

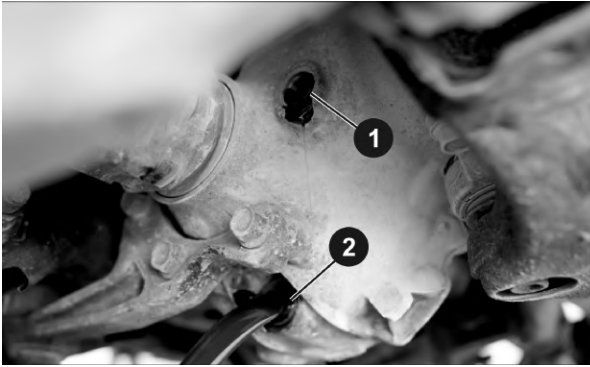


Fig. 1

1.2 Remove the skid plate or oil pan guard in accordance with the procedures outlined in the vehicle service manual.

1.3 Position a suitable drain pan under the differential housing. Remove the fill plug (1) first, then remove the drain plug (2) and allow the differential oil to drain completely. (**Fig. 1**)

1.4 Remove the axle shafts in accordance with the vehicle repair manual.

1.5 Disconnect the drive shaft from the differential flange in accordance with the vehicle repair manual.

MEASURING THE RING AND PINION BACKLASH

It is necessary to verify that the existing ring gear and pinion gear are in good condition and do not require replacement. Depending on the condition of the gears, follow the applicable instructions below.

- *If the original gears are being replaced with new ones, a preliminary backlash measurement is not required. In this case, set the backlash in accordance with the gear manufacturer's specifications (skip Steps 1.6 and 1.8).*
- *If the original ring and pinion gears are not being replaced and will be reused, a preliminary backlash measurement must be performed before disassembly. The measured backlash value must be precisely restored when installing the Electric Locker. Using the backlash specifications from the vehicle manufacturer's service manual is not recommended, as these*

1. REMOVING THE EXISTING DIFFERENTIAL

values are intended for new, unworn gears. During normal operation, the gears undergo a break-in process that establishes a contact pattern and naturally increases the backlash. Failure to restore the previously measured backlash during final axle assembly may result in improper operation and eventual component failure.

CAUTION

Replacing the ring and pinion gears with used components is not recommended. Installing used gears taken from another vehicle may lead to improper axle operation and eventual component failure.



Fig. 2

1.6 Set up a dial indicator. Secure the indicator holder to the outside of the differential housing and position the indicator tip perpendicular to one of the ring gear teeth. (**Fig. 2**)

NOTE: When measuring backlash, the differential carrier must be rotated about its center axis. If available, use the Toyota OTC 09564-32011-01 Preload Adapter. Install the adapter onto the differential cross shaft, then insert a T-handle hex key into the adapter. Rotate the differential carrier by gently turning the T-handle. If this adapter is used, skip Step **1.7** and proceed to Step **1.8**.



Fig. 3

1.7 If the special preload adapter is not available, insert a long flat-blade screwdriver or a pry bar through the axle shaft opening in the differential housing. Position the tool between the differential cross shaft and the housing so that turning the tool rotates the entire differential carrier about its center axis. Ensure that the differential carrier rotates as a complete assembly and not just the side gear. (**Fig. 3**)

1. REMOVING THE EXISTING DIFFERENTIAL



Fig. 4



1.8 While holding the drive pinion flange, rotate the ring gear back and forth until it stops and the indicator needle stabilizes on the dial. (**Fig. 4**) Record the obtained value in the corresponding row of the table (**Value 1**). To improve measurement accuracy, repeat the measurement two more times, rotating the differential approximately 120° each time. After each measurement, mark the gear tooth that was measured with a number. Record the obtained values in the table (**Values 2, 3**). Calculate the arithmetic mean of the three obtained values. This will allow the measurement to be reproduced in exactly the same positions during reassembly.

NOTE: To prevent damage to the dial indicator, move the indicator tip away from the ring gear teeth before rotating the differential.

1. REMOVING THE EXISTING DIFFERENTIAL

RECORD BACKLASH HERE	
Value 1	
Value 2	
Value 3	
Mean	



Fig. 5

1.9 Remove all bolts that secure the smaller half of the differential housing.
(**Fig. 5**)

1. REMOVING THE EXISTING DIFFERENTIAL

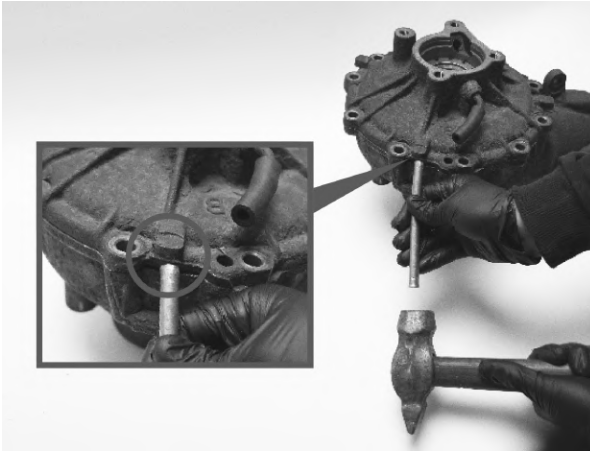


Fig. 6

1.10 Carefully separate the smaller differential housing half from the assembly. To avoid damaging the mating surfaces between the case halves, use the cast-in removal tabs provided on the smaller section. Place a brass drift or punch against one of the tabs and tap it lightly with a hammer. Work around the perimeter, tapping each tab in sequence until the smaller differential housing half separates from the assembly. (**Fig. 6**)



Fig. 7

1.11 Remove the differential with the bearings from the differential housing. (**Fig. 7**)

REMOVING BEARINGS

If the bearings are to be reused, do not press the bearing cups and bearing preload shims out of the differential housing. Leave them in their original positions until the Electric Locker assembly with the bearings and ring gear has been installed and the ring-and-pinion backlash has been checked.

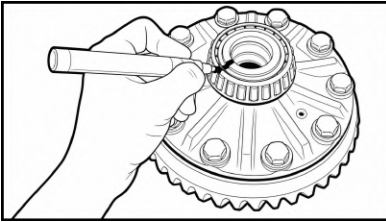


Fig. 8

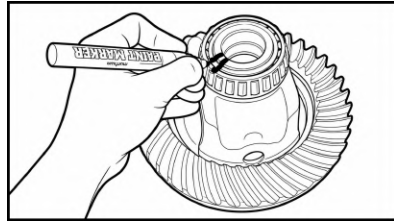


Fig. 9

1.12 Match-mark the bearing cones that will be reused: one mark for the ring gear side and two marks for the opposite side. This ensures that each reused bearing cone is installed on the same side as its original matching bearing cup remaining in the differential housing. (**Fig. 8, Fig. 9**)

1. REMOVING THE EXISTING DIFFERENTIAL

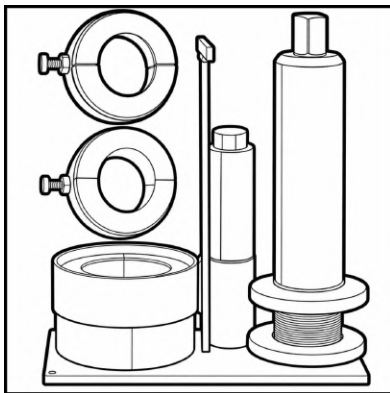


Fig. 10



Fig. 11

CAUTION

Remove the bearing cones only with a clamshell-style puller or separator-style puller that fully supports the bearing and applies force evenly. (Fig. 10) Do not use a puller that applies force at only a few points. Point loading may deform the bearing cone and make it unsuitable for reuse.

1.13 Remove the bearing cones from the differential carrier. (Fig. 11)

If the bearings will not be reused and will be replaced, the bearing cones may be left on the old differential. The bearing cups and bearing preload shims must be removed from the differential housing. To do this, follow the steps below.

1.14 Remove the axle shaft seals from their bores in the differential housing in accordance with the vehicle repair manual.

CAUTION

Do not swap the factory Toyota side plate shims from one side of the differential to the other. The plain shim without holes must be installed on the ring gear side (LH / driver side). The shim with holes must be installed on the opposite side (RH / passenger side), at the side bearing retainer.

1.15 Using a press, remove the bearing preload shims and bearing cups evenly from the outer side of the differential housing. Ensure that the press

1. REMOVING THE EXISTING DIFFERENTIAL

force is distributed evenly around the circumference to avoid deforming or damaging the shims or the differential housing.

2. INSTALLING THE RING GEAR

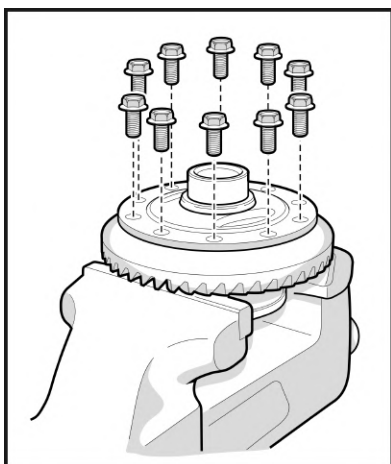


Fig. 12

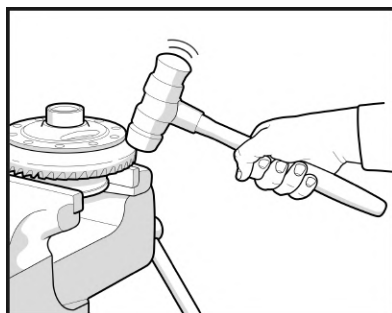


Fig. 13

2.1 Secure the existing differential in a vise. Remove the ring gear mounting bolts. (Fig. 12)

CAUTION

Place a shop rag under the ring and pinion to prevent damage if it falls during removal. Do not use a steel-faced hammer.

2.2 Drive the ring gear off the existing differential case using a plastic-, rubber-, or copper-faced hammer. To prevent binding, work evenly around the circumference. (Fig. 13)

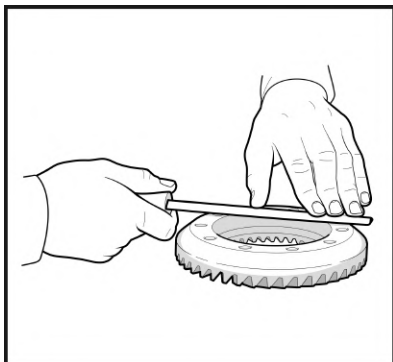


Fig. 14

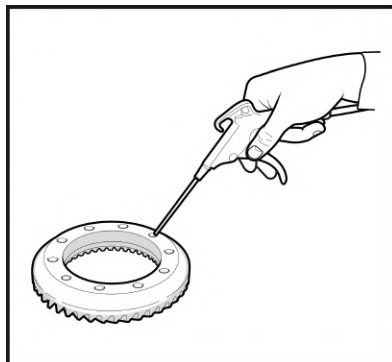


Fig. 15

2.3 Dress the mounting surfaces of the ring gear and the Electric Locker case with a file to remove raised edges and burrs around the holes and threads. (**Fig. 14**)

2.4 Blow the mounting surface and the ring gear threaded holes clean with compressed air. (**Fig. 15**)

2.5 Degrease the ring gear bolt holes and the ring gear bolts using a suitable degreasing agent.

MAGNET REMOVAL

To prevent damage to the magnet wire during installation of the ring gear onto the Electric Locker, the magnet may be removed if necessary. If the wire does not interfere with ring gear installation and is not at risk of being damaged, removal of the magnet is not required. Reinstall the magnet after installing the ring gear.

CAUTION

Perform all magnet removal operations with the Electric Locker in a strictly vertical position, with the magnet facing upward. Do not remove the locking clutch located beneath the magnet. Removing the locking clutch may compromise the integrity of the assembly.

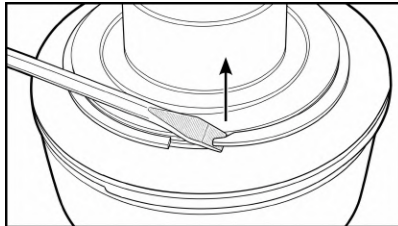


Fig. 16

- Using a flat-blade screwdriver, pry up the edge of the retaining ring and remove it. Then remove the magnet from the Electric Locker. (**Fig. 16**)

2.6 To facilitate assembly, heat the ring gear to **175–230° F** using hot water, an electric hot plate, or an oven.

CAUTION

Do not heat the gear with an open flame. This may damage the hardened surface layer and result in premature wear or gear failure.

2. INSTALLING THE RING GEAR

2.7 If moisture is present, dry the gear and the bolt holes with compressed air.

NOTE: Make sure the mating surfaces of the ring gear and the Electric Locker case are dry, clean, and free of burrs and oil.

CAUTION

Do not use the mounting bolts to draw the ring gear onto the Electric Locker case. This may deform the Electric Locker case or damage the gear threads.

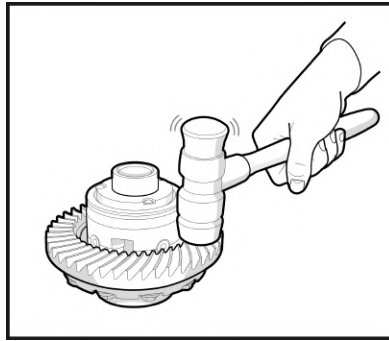


Fig. 17

2.8 Install the ring gear on the Electric Locker case, aligning its threaded holes with the holes in the case. If necessary, use a rubber-, plastic-, or copper-faced hammer to seat the ring gear by applying even blows around its circumference. (**Fig. 17**)

CAUTION

If the magnet was previously removed, reinstall it.

RING GEAR BOLT TIGHTENING

Use threadlocker on the ring gear bolts. Before applying it, make sure the ring gear is fully seated against the Electric Locker case to prevent misalignment caused by threadlocker getting between the mating surfaces.

CAUTION

If the ring gear bolts are in good condition, they may be reused. However, most service manuals recommend replacing the bolts each time they are removed.

To achieve the closest possible fit between the ring gear and the Electric Locker case, we recommend the following tightening procedure.

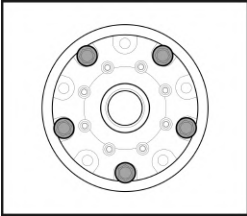


Fig. 18

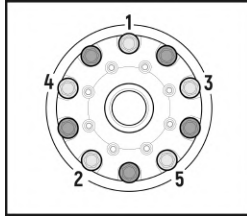


Fig. 19

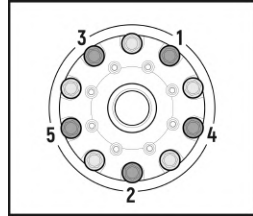


Fig. 20

- Preinstall **five** bolts and tighten them only until the ring gear seats firmly against the Electric Locker case, without threadlocker and without applying final torque. Mark each preinstalled bolt using a paint marker. These bolts will need to be removed in the next step. (**Fig. 18**)
- Apply threadlocker to the remaining **five** threaded holes in the ring gear and to the bolt threads. (**Fig. 21**) Install these **five** bolts and tighten them with a torque wrench to the torque specified in the vehicle service and repair manual. (**Fig. 19**)
- Remove the **five** previously installed bolts. Apply threadlocker to the threaded holes and to the bolt threads, then install and tighten them with a torque wrench to the torque specified in the vehicle service and repair manual. (**Fig. 20**)

2. INSTALLING THE RING GEAR

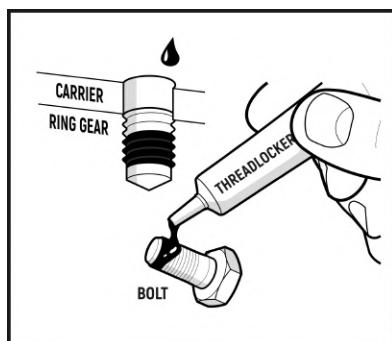


Fig. 21

2.9 Apply threadlocker to the threads of each bolt and to the threaded holes in the ring gear. (**Fig. 21**)

2.10 Install and tighten the ring gear bolts with a torque wrench to the torque specified by the vehicle service and repair manual.

NOTE: Tighten the bolts in a crisscross pattern to ensure the ring gear seats evenly.

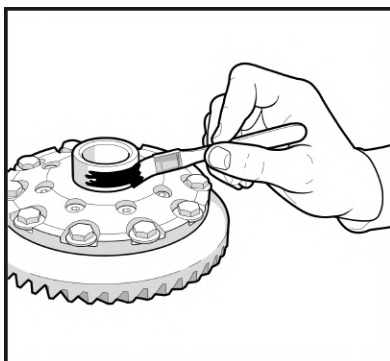


Fig. 22

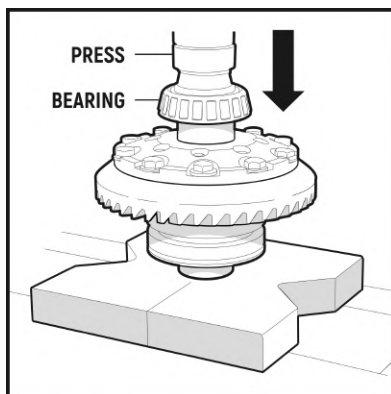


Fig. 23

2.11 Apply grease to the bearing journal surfaces. (**Fig. 22**)

2.12 Press the bearing cones onto the journals. If the bearings are to be reused, install them according to the previously made marks. (**Fig. 23**)

LOCATING AND DRILLING THE HOLE IN THE DIFFERENTIAL HOUSING

To install the Electric Locker, a hole must be drilled in the differential housing to route the electrical wiring. Follow the procedure below to determine the correct drilling location.



Fig. 24

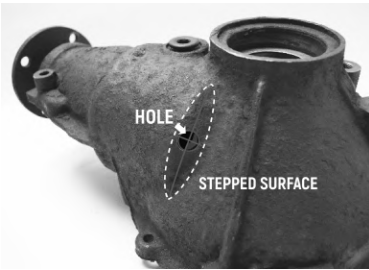


Fig. 25

3.1 Refer to **Figures 24** and **25** to determine the hole location. The hole is positioned at the center of the stepped surface of the differential housing. For reference, the stepped surface is indicated in **Figure 25** with a dashed outline. The center of this surface is defined by the intersection of the two reference axes shown in red. This intersection point specifies the exact drilling location. Once the position is identified:

- *Mark the location using a suitable marker.*
- *Use a center punch to create an indentation at the marked point.*

NOTE: If the differential housing of your vehicle differs from the differential housing shown in (**Fig. 25**), determine the location of the hole yourself. Perform a preliminary installation of the Electric Locker. After that, mark the location of the future hole on the surface of the differential housing, adhering to the following criteria:

- *The hole must be located on the side with the magnet (**Fig. 25**).*
- *The hole must be positioned near the point where the cable exits the magnet (**Fig. 25**).*
- *The cable exiting the hole must not contact the ring and pinion gears or any moving components of the Electric Locker.*
- *The hole must not be located in areas where the housing wall is thickened.*
- *The hole must be located in a position on the outer surface of the differential housing where the surface relief will not interfere with the installation and tightening of the cable rubber seal.*

3. INSTALLING THE ELECTRIC LOCKER

- *If a suitable location cannot be found on the outer surface of the differential housing that allows proper installation of the cable rubber seal, a small portion of the differential housing surface relief may be carefully ground down using a rotary tool until the cable rubber seal fits properly.*
- 3.2** Secure the differential housing firmly in a bench vise using soft jaws (copper, aluminum, or plastic) to prevent damage to the machined surfaces.
- 3.3** Before drilling, cover the pinion gear area with a clean shop towel or rag to prevent metal chips from entering the gear cavity.
- 3.4** Using a small pilot drill bit, drill a pilot hole at the center-punched location.



Fig. 26

- 3.5** Enlarge the hole using a **1/2" (12.7 mm)** drill bit suitable for metal. (**Fig. 26**)
- 3.6** Deburr the drilled hole and remove all sharp edges to prevent damage to the wiring harness. Remove any loose metal chips.
- 3.7** Remove the rag from the pinion gear area. Using a flashlight or inspection light, carefully inspect the interior of the differential housing and the pinion area to ensure that no metal chips or debris remain.
- 3.8** Before installing the Electric Locker, thoroughly clean both halves of the differential housing and the Electric Locker assembly to remove any remaining metal chips or contaminants.

CAUTION

Correct bearing preload adjustment is critical when installing the Electric Locker. Incorrect preload may result in accelerated bearing wear, increased load on the axle assembly, noise, and damage to the ring and pinion set.

If the bearing cups and preload shims have been removed from the differential housing, determine the required total shim pack thickness in accordance with the vehicle repair manual. Thinner genuine Toyota side plate shims may be required for correct adjustment of backlash and bearing preload. Contact a Toyota dealer to obtain the part numbers for the required shim thicknesses.

3.9 Install the factory Toyota side plate shims in their seats in both halves of the differential housing.

NOTE: Ensure that the factory Toyota side plate shims are installed in the correct positions. The plain shim without holes must be installed on the ring gear side (LH / driver side). The shim with holes must be installed on the opposite side (RH / passenger side), at the side bearing retainer.

3.10 Press the bearing cups into their seats. Correct installation is confirmed when each shim is firmly clamped by the bearing cup and has no free play.

If the bearing cups and preload shims were not removed from the differential housing, continue assembly with the following steps.

ELECTRIC LOCKER INSTALLATION

Adjusting bearing preload requires multiple trial installations and removals of the Electric Locker. The Electric Locker is equipped with a magnet assembly with several recesses designed to engage the internal stiffening ribs in the differential housing. Proper engagement of these recesses with the ribs prevents rotation of the magnet assembly during operation. During installation, make sure the magnet recesses are correctly seated on the ribs. The magnet assembly must retain a small amount of rotational free play. This slight movement indicates that the magnet assembly is not binding and that proper clearance is present. Magnet free play will be verified in the following steps.

3. INSTALLING THE ELECTRIC LOCKER



Fig. 27

Step 1. Position the differential housing on its side as shown in **Fig. 27**. Support it securely using a wooden block or suitable support to prevent movement. Place a clean rag near the differential housing flange to protect the sealing surface and to support the Electric Locker during installation.

CAUTION
During the following installation steps, ensure that the magnet cable is not damaged.

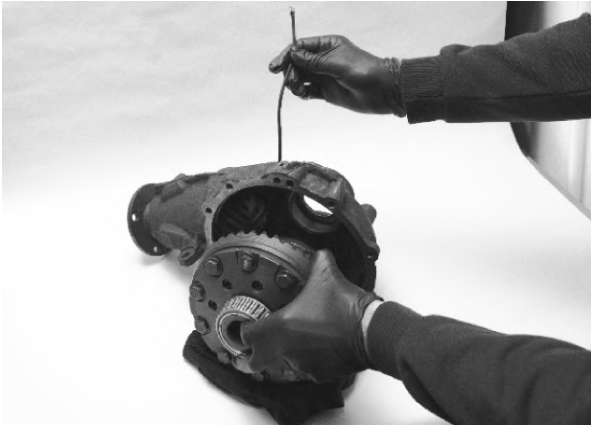


Fig. 28

Step 2. Place the Electric Locker on a clean rag. Insert the magnet cable through the drilled hole in the axle housing and pull the cable through from the outside. (**Fig. 28**)



Fig. 29

In **Fig. 29**, the internal stiffening ribs inside the differential housing are identified as A, B, and C.

3. INSTALLING THE ELECTRIC LOCKER

The magnet recesses on the Electric Locker are identified as 1, 2, 3. The magnet must be positioned as follows:

Recess 1 aligned with rib C

Recess 2 aligned with rib B

Recess 3 aligned with rib A



Fig. 30



Fig. 31

Step 3. Grasp the Electric Locker with both hands as shown in **Fig. 30** and carefully lift it so that it aligns with the axle shaft openings in the differential housing. Have an assistant inspect the interior of the housing using a flashlight. While positioning the locker, rotate the magnet assembly so that recess 1 aligns with rib C, as shown in **Fig. 31**.

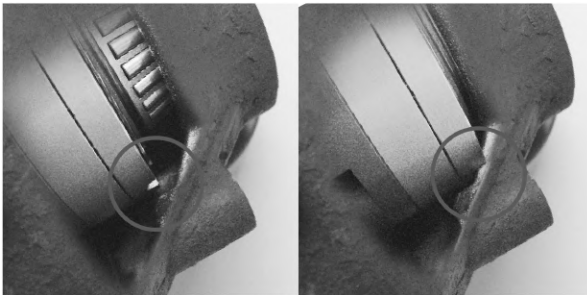


Fig. 32

For clarity, the illustration shows the differential housing as transparent. When the magnet is correctly seated on the ribs, the gap between the inner and outer bearing races will disappear, confirming proper seating. (**Fig. 32**)

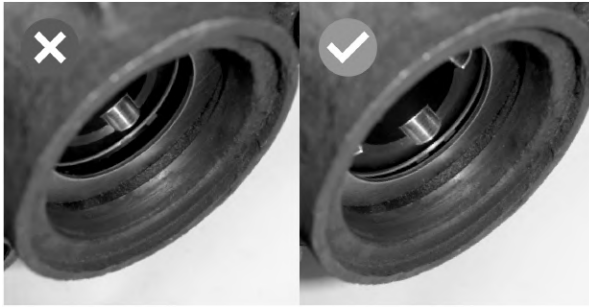


Fig. 33

The **Figure 33** shows that when the magnet is not seated on the ribs, there is a gap between the inner and outer bearing races. When the magnet is properly seated, there is no gap.

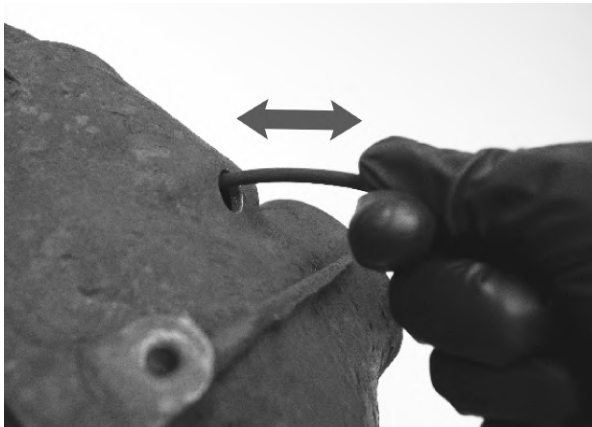


Fig. 34

Step 4. Begin installing the Electric Locker into the differential housing. While inserting the unit, slowly rotate the pinion gear using the pinion flange to allow the ring gear teeth to mesh correctly with the drive pinion. (**Fig. 31**) As the locker is seated, the housing ribs should engage the magnet recesses. Proper engagement can be verified by inspecting the outer bearing race through the drilled hole in the differential housing. If a gap remains visible between the outer and inner bearing races, the magnet has not yet seated on the ribs. (**Fig. 33.**) Next, verify magnet backlash. Gently pull the magnet cable back and forth. A small amount of movement and a faint clicking sound should be felt as the magnet rotates slightly in both directions. (**Fig. 34.**) If the magnet recesses do not engage the ribs, or if the Electric Locker does not

3. INSTALLING THE ELECTRIC LOCKER

fully seat, remove the locker and repeat the alignment procedure described in **Step 3**.

NOTE: In rare cases, the magnet may seat on the ribs without any detectable backlash. To determine which rib is interfering, apply layout dye or marker to the ribs. Reinstall the Electric Locker as described in **Step 3**. Contact marks on the dye will identify the interfering rib. If interference is present, carefully remove a small amount of material from the rib using a fine file or rotary tool until a slight amount of rotational free play is achieved.



Fig. 35

Step 5. Install the smaller differential housing case half and tighten the bolts evenly in a crisscross pattern to ensure proper alignment. After tightening, verify magnet backlash again to confirm that the magnet still rotates slightly. (Fig. 35)

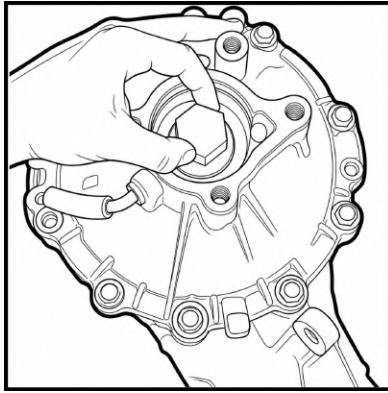


Fig. 36

3.10 To adjust backlash, the Electric Locker must be rotated. Because the unit is equipped with a cross shaft featuring a through-hole, the previously described rotation method cannot be used. A special backlash adjustment adapter is supplied in the kit. Install the adapter on the bearing journal, ensuring that its protrusions fully engage the corresponding notches on the journal. **(Fig. 36)** Fit a **35 mm** socket wrench to the adapter and use it to rotate the unit during backlash measurement.

3. INSTALLING THE ELECTRIC LOCKER

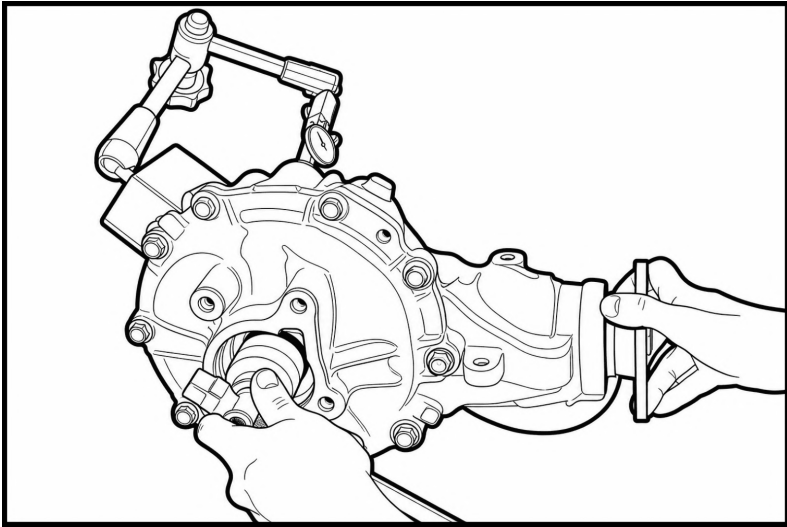


Fig. 37

3.11 Using a dial indicator, adjust the backlash between the ring gear and the pinion gear. Set the backlash to match the value recorded earlier in **step 1.8**. As described in **step 1.8**, take three measurements, rotating the Electric Locker approximately **120°** before each measurement. Perform the measurement on the previously marked gear teeth. Record all three values, calculate the average (mean), and compare it with the value measured in **step 1.8**.

- *If the backlash is greater than specified, rearrange the shim packs so the ring gear moves closer to the pinion gear.*
- *If the backlash is too small, rearrange the shim packs so the ring gear moves farther from the pinion gear.*

To maintain proper bearing preload, do not change the total thickness of the shim pack—only redistribute the shims between sides. After each shim adjustment, tighten the carrier bolts with a torque wrench to the torque specified by the vehicle manufacturer. This ensures accurate backlash readings. (Fig. 37)

CAUTION

If the original ring and pinion gear set has been replaced with new gears, adjust backlash according to the gear manufacturer's specifications for the new gear set.

3.12 After correctly adjusting the final drive gear backlash, ensure that the magnet cable is routed through the drilled hole. Apply a thin, even coat of gasket sealant to the mating surface of the small half of the differential housing. Install it onto the large half and tighten the bolts to the torque specified in the vehicle service manual.

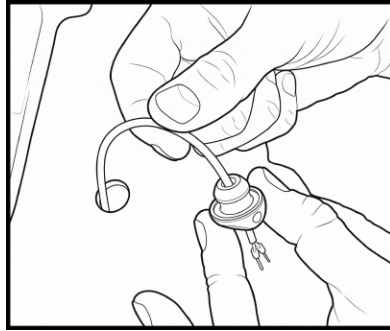


Fig. 38

3.13 Install the rubber seal onto the magnet cable by pressing the cable into the longitudinal slot. (**Fig. 38**)

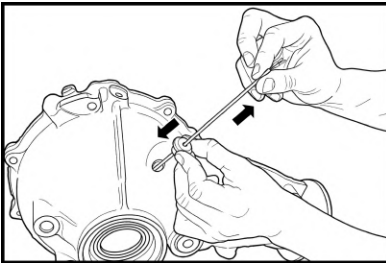


Fig. 39

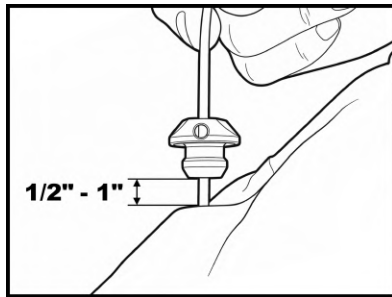


Fig. 40

3.14 While holding the magnet cable, apply slight upward tension to the cable. Slide the rubber seal down the cable until there is approximately $\frac{1}{2}$ " - 1" of clearance between the differential housing and the rubber seal. (**Fig. 39, 40**)

3. INSTALLING THE ELECTRIC LOCKER

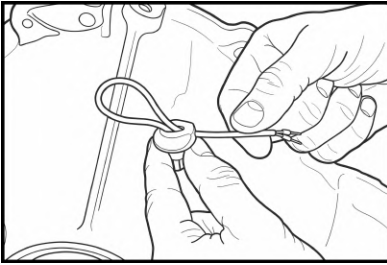


Fig. 41

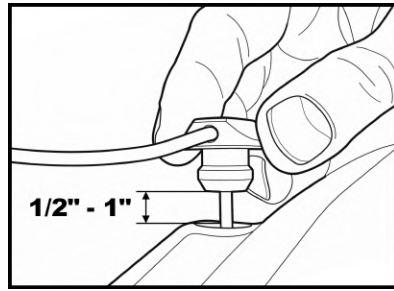


Fig. 42

3.15 Pull the end of the cable through the side opening. This will allow the magnet cable to rotate and lock into position at a 90° angle in the rubber seal. **(Fig. 41)** Before installing, verify that the clearance $1/2''$ between the differential housing and the rubber seal is correctly set. **(Fig. 42)** Apply gasket maker to the narrow section of the rubber seal that will be inserted into the housing hole.

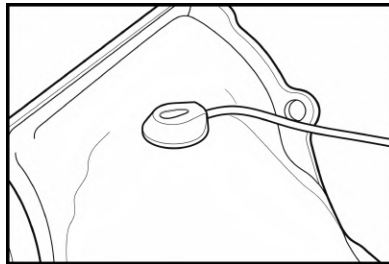


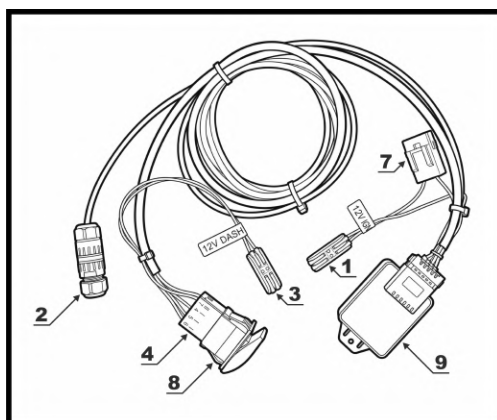
Fig. 43

3.16 Insert the rubber seal into the hole in the differential housing. Remove any excess gasket maker. **(Fig. 43)**

CAUTION

Before final assembly, verify that the Electric Locker is in the unlocked position. Insert one axle shaft and slowly rotate it while holding the pinion flange stationary. The axle shafts should rotate freely and independently of the pinion gear.

3.17 Complete the differential housing assembly according to the procedures outlined in the vehicle manufacturer's service manual.



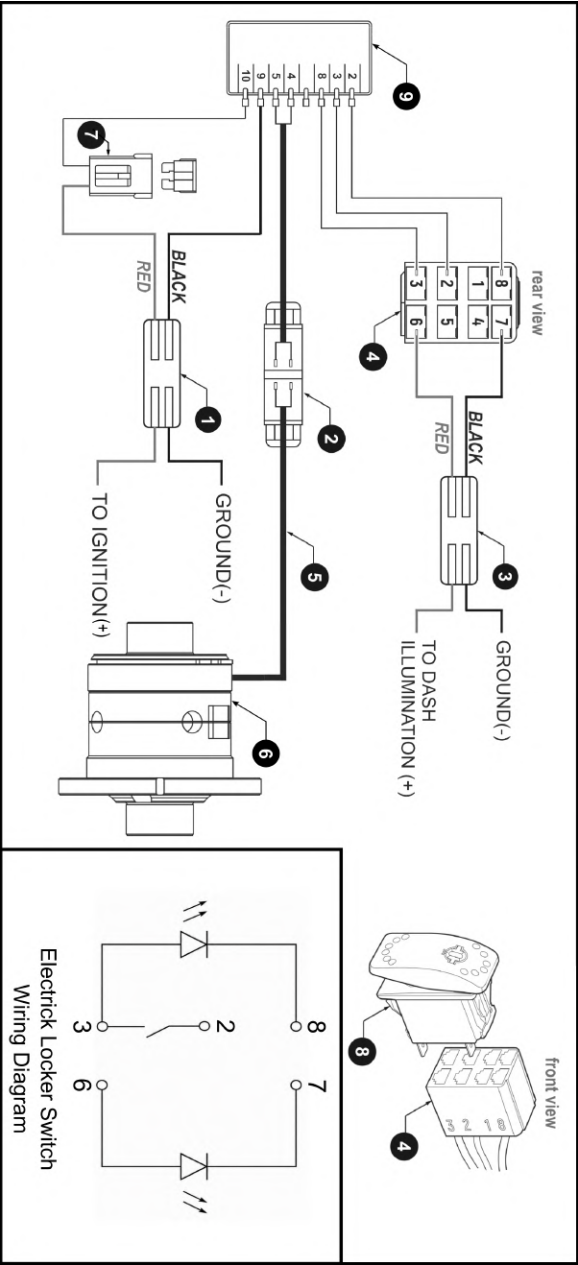
- 1 — Connector (to Ignition)
- 2 — Waterproof Connector
- 3 — Connector (to dash illumination)
- 4 — Button Wire Connector
- 5 — Magnet Cable
- 6 — Electric Locker
- 7 — Fused Power Wire (5 A)
- 8 — Electric Locker Switch
- 9 — Electric Locker Control Unit

NOTES:

- The polarity of the voltage applied to the magnet is not important.
- The Electric Locker Control Unit must receive a constant **+12 V** supply from the **IGNITION (+)** circuit.

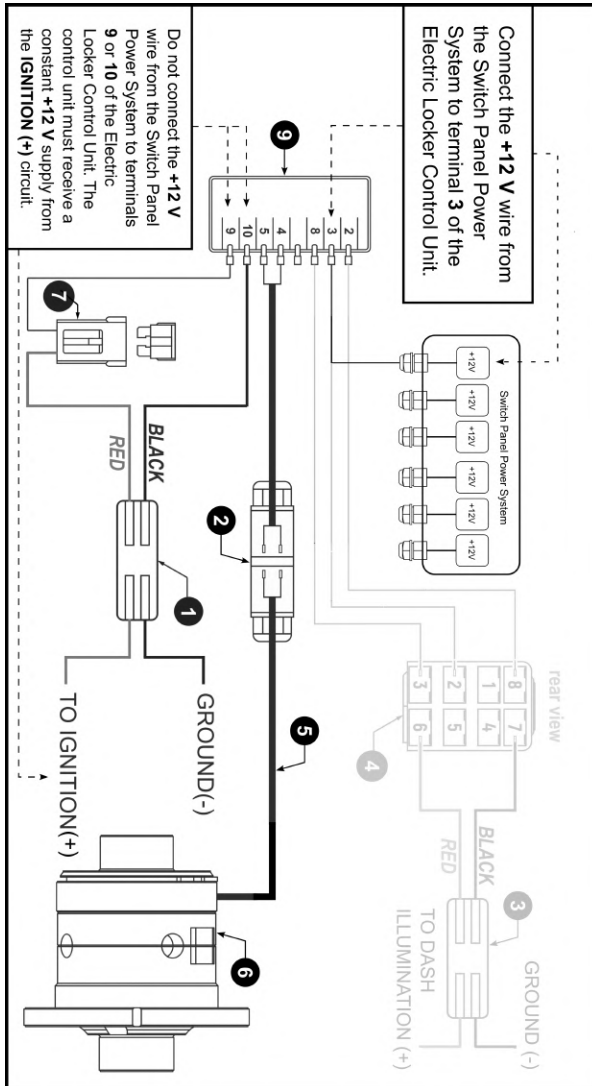
CAUTION

The Electric Locker Control Unit does not provide a high level of protection against moisture. To prevent damage to the Unit, install it inside the vehicle cabin. If installation outside the cabin is required, the unit must be installed in a dedicated sealed waterproof enclosure.



ELECTRICAL CONNECTION DIAGRAM WITH SWITCH PANEL

If the Electric Locker is to be connected using a Switch Panel, refer to the wiring diagram below. Before connecting, completely disconnect the Electric Locker Switch and all wiring components associated with it from the Locker Control Unit; these components are shown in a lighter shade in the diagram.



4. CHECKING THE OPERATION OF THE ELECTRIC LOCKER

PRELIMINARY CHECK OF THE ELECTRIC LOCKER

After connecting the electrical components, verify Electric Locker operation. Perform this check only by rotating the drive pinion flange, not by rotating the axle shafts relative to each other.

4.1 Insert one of the axle shafts into the Electric Locker.

4.2 Set the switch to the **OFF** position.

4.3 Hold the axle shaft and rotate the drive pinion flange. The drive pinion flange must rotate freely and independently of the stationary axle shaft.

4.4 Set the switch to the **ON** position.

4.5 Hold the axle shaft and rotate the drive pinion flange. When the Electric Locker is engaged, the drive pinion flange and the axle shaft must rotate together as a single unit. Rotation of the drive pinion flange independently of the axle shaft is not permitted.

4.6 Repeat the engagement and disengagement procedure several times.

NOTE: If the Electric Locker engagement mechanism does not operate properly, contact customer support via the HardBlock website at **hardblockusa.com**.

4.7 After confirming proper Electric Locker operation, proceed with final axle assembly in accordance with the vehicle service and repair manual.

4.8 After completing final axle assembly, fill the axle with oil and recheck Electric Locker operation as described above.

CAUTION

During the first drive with the Electric Locker installed, perform 5 to 10 engagement and disengagement cycles. Each cycle must last several minutes while driving at low speed and making slight turns without stopping. The Electric Locker must engage consistently and without delay.

ENG

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