XD-45831

Aussie Locker XD-45831 Ford 9” Installation Supplement

Before the install check the following.
1. Must be 31 spline 4-pinion carrier.
2. Must be an open carrier not a limited slip.
3. Refer to Ford or vehicle service manual for removal of third member from housing, torque specs etc.

Removal of carrier from 3rd member.
1. Mark the position of the side gear adjusters to the bearing caps, ring gear to carrier and carrier halves. If possible use paint or engraver to mark locations so during cleaning of the third member reference marks do not wipe off. **(Figure 1)**
2. Take note of the backlash between the crown wheel and pinion gears by holding the pinion flange steady and rocking the crown wheel (ring gear) back and forth. Rotate 90degrees and try again. Repeat 4 times. The amount of movement should be approximately even in all 4 positions and be between 0.008 and 0.016”. Reference figure 2 checking backlash with dial indicator. **(Figure 2)**


Figure 1


Figure 2

3. Loosen the bearing caps and try to remove the carrier from the housing as a unit (with side adjusters and races still attached).
4. Remove side adjusters and races, they should remain inside the bearing cap.
5. Mark relation of the ring gear to carrier in 2 places 90 degrees apart, ensure both carrier half’s are marked. **(Figure 3)**
6. Remove all the ring gear bolts and remove ring gear from carrier. 9” ring gears can be difficult to remove try tapping around the ring gear or use a punch in the ring gear bolt holes alternating in criss-cross pattern. **(Figure 4)**


Figure 3


Figure 4

7. In some cases while removing the ring gear the carrier will split, if not separate 2 halves of the carrier. Remove the side gear from the ring gear side locate the thrust washer (behind the axle gear or in the ring gear side carrier half seen in **(Figure 5).**
8. Locate the 3 roll-pins that retain the cross-shafts in the carrier. Remove them with a punch **figure 6**.


Figure 5


Figure 6

9. Remove the cross-shafts, 4 spider gears and axle gear and thrust block, ensure you locate and secure the thrust washer to be installed on same side of carrier.

Checking Tolerances: The unit must be #1 symmetrical about the cross shafts and #2 within operating tolerance.

10. To Check for Symmetry/Thrust Block to Axle Spacers each side. Lightly grease the base of the axle gear and fit thrust washers. Fit an axle gear and thrust washer into the deep side of the carrier, spin to make sure it has settled. Temporarily fit one spacer, install the thrust block and cross shaft. **Figure 7.**
11. Measure the gap/distance between the spacer and the thrust block. This can be done using vernier calipers, or dial indicator measuring the in/out dimension of the axle gear, **Figure 8.**


Figure 7


Figure 8

The spacer to thrust block measurement can also be made using feeler gauges, the 45 degree, long feeler gauge seem to work best (commonly used for setting valve lash). By sliding the feeler gauge thru the large hole in the carrier install the feeler gauge between the spacer and thrust block. You can also move the thrust block side to side along cross-shaft to aid in inserting feeler gauge. **(Figures 9,10)**

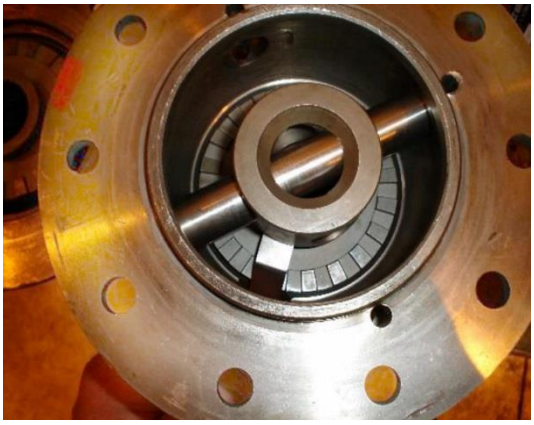

Figure 9

Figure 10

Another method of checking measurement is using a socket or suitable equivalent to sit on top of the side gear and measure in movement and marking socket then outward movement, mark socket then measure difference. **Figure 11**

Figure 11

The above are examples on how to check the spacer to thrust block on the deep side of the carrier. The measurement should fall between .006-020”

Checking the Ring Gear side spacer to cross-shaft/thrust block gap.

Checking the ring gear side for proper tolerances can be done using the same methods as above except for the following.

1. To ease the handling of the carrier while checking tolerances we recommend to buy 4-7/16 fine thread bolts to assemble the 2 halves of the carrier together using the original ring gear bolts, without using the ring gear itself. Install these 4 bolts along with the carrier half (ensure the axle gear, thrust washer and spacer are installed) spaced evenly throughout and tighten in an alternating fashion tightening the carrier halves evenly. Once tight proceed to checking tolerances.

2. If using the Dial indicator, Caliper, or socket method of checking tolerances the procedure is the same as above. If using the feeler gauge method insert the feeler gauge in one of the remaining (2) cross-shaft holes **(Figure 12)**. Then with your finger thru the big (lower carrier) hole you can move the thrust block whichever direction required for installation of the feeler gauge between the spacer and thrust block. **Figure 13** shows feeler gauge installed between spacer and thrust block).

Figure 12

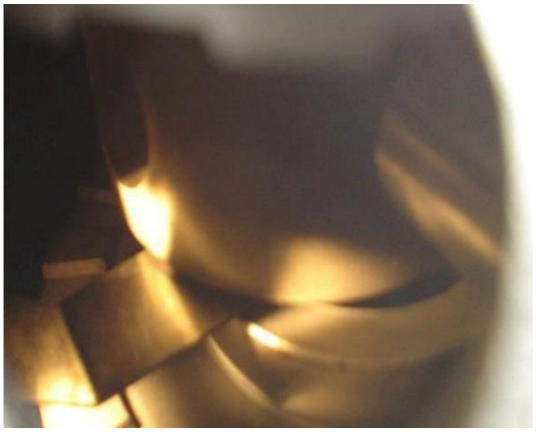

Figure 13

Record and Compare the 2 measurements taken from each side. Remember the operating tolerances are .006-.020" and the maximum variation allowed between the two is .010.The less the variation the better the locker performs. If they are within the variation tolerance then the unit is symmetrical about the cross shaft. If the clearances are not uniform then one or other of the thrust washers may will need to be changed to make it symmetrical. Do not alter the thrust washers yet. (More measurements to be done). The result must be the cam gears are symmetrical about the cross shaft.

Check for Operating Tolerance Clearance/Gap between Cam gears.

1. Disassemble the carrier, split the 2 halves ensure the thrust washers stay with associated axle gears. Lightly grease the axle gear teeth and thrust washer for the deep side of carrier and install.
2. Locate both cam gears, pins, and springs. Lightly grease all of the assemblies, install the Springs into the deep slotted holes of the cam gear (2) each gear, ensure the springs are completely seated to bottom of slot.
3. Install pins (2) per gear in the remaining holes with the step of the pin to engage the spring (step pointing out) ensure they are seated flush in the hole.
4. Install 1 cam gear in the deep side of carrier **(figure 14)** ensure the axle gear to cam gear teeth mesh apply pressure to cam gear to ensure all the grease is disbursed.
5. Install the second cam gear, slowly lower cam gear engaging the pins and springs evenly. With pressure applied to the cam gear **(Figure 15)** rotate the assembly and inspect engagement of the pins and springs through the cross shaft holes.

Figure 14

Figure 15

6. Install the thrust block thru the cam gears.
7. Install the ring gear side Axle gear with thrust washer **(Figure16),** ensure teeth mesh together apply pressure to disburse any grease.
8. Slowly install the ring gear side carrier half and bolt together as before using the set-up bolts. Slowly tighten in an alternating pattern ensure the case halves mate together evenly or pin/spring damage could occur **(Figure 17).**


Figure 16


Figure 17

9. You can now measure the center (cam gear to cam gear) gap. Thru the cross-shaft holes insert a screwdriver lightly pry gears apart to ensure they are seated and a maximum gap measurement can be made. Using a feeler gauge and measure distance of gap **(Figure 18).** The Operating Tolerance of the Cam gear gap is .140 to .170 If the spacing does not meet these specs modification to thrust washers may be needed.

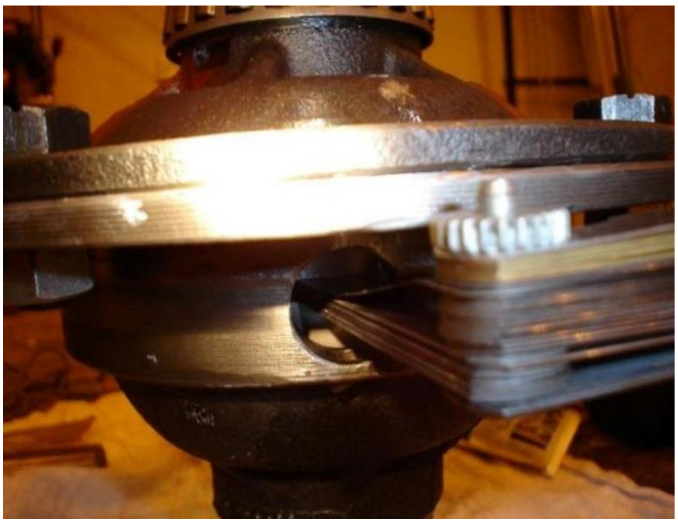
Figure 18


Figure 19

Overview of installation:

Now consider the check for symmetry and overall tolerance. If the unit is not symmetrical then a thrust washer will need to altered and if the tolerance gap is too great or too small then possibly both washers will need to be altered. Alter the thickness of the thrust washers if required. The end result must be that the unit is symmetrical about the cross shaft (the more accurate the better the driving behavior) and certainly within the operating tolerance of 0.150 to 0.170 inches.

Close-Out

1. If everything is within specification you can now install the cross-shafts (3) and roll pins. While installing the cross-shafts gently tap in if needed and keep the hole in cross-shaft aligned with hole in the housing.

2. Remove set up bolts (Carrier should remain together) and install the ring gear in the positions removed using loctite on the bolts.

3. Place the carrier bearing cups and retainers on the carrier bearings and lift carrier assembly into the differential housing. Be sure to reposition to the exact location as prior to disassembly. Locate the retainer bolts into the housing loosely. Tighten in sequence. Check crown wheel to pinion backlash as the bolts are tightened. When tight re-check the backlash it should be the same as before disassembly.

4. Reinstall 3rd member into housing refer to service manual for procedures.

5. Refer to main Aussie-Locker installation manual for testing and break in procedures.

Aussie lockers are 100% made in the USA.
Please direct any questions to: CustomerService@AussieLocker.com