Suzuki Samurai 26 Spline Mini Spool Locker (SKU# SAX-MS)

Installation Instructions



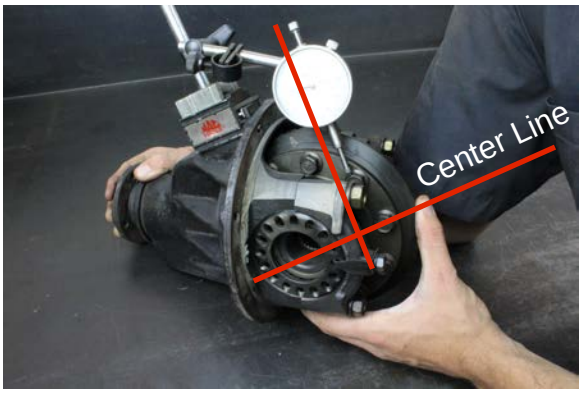
CAUTION: Safety glasses should be worn at all times when working with vehicles and related tools and equipment.



Suggested Tools:

- Dial Indicator
- Torque Wrench, dial or needle type (inch-pound)
- Torque Wrench (foot-pound)
- Sockets, 12,14,17 mm
- Ratchet
- Brass Hammer
- Spanner Wrench

These instructions begin with the third member removed and placed on a work bench. For instructions on third member removal we invite you to go to our web site.



Step 1

Measure backlash by setting up a dial indicator as shown.

Note: Dial indicator pintle should be at a right angle to the ring gear center line.





Step 2

Backlash is the amount of ring gear movement with the drive pinion held steady. Backlash is measured by holding the pinion shaft so it does not move with one hand. Then with the other hand, move the ring gear back and forth and observe the dial indicator. Count the number of spaces the needle sweeps from one extreme to the other. Each space equals .001 inches. Remember to record your reading. It will be needed after reassembly.

Step 3

Check bearing preload with an inch-pound torque wrench and record your readings.

Note: We used a dial type torque wrench but a less expensive needle type (or flexible beam) would do just fine.





Step 4

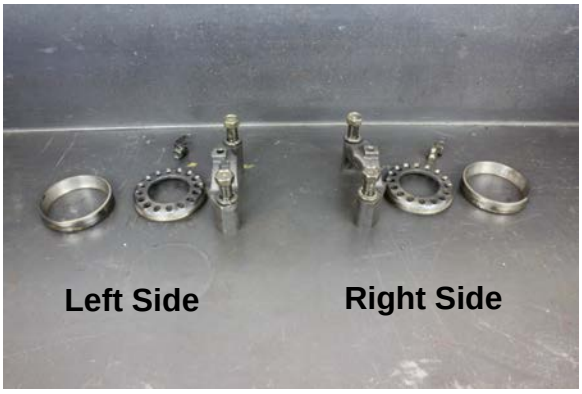
Bearing preload is measuring the effort required to turn the differential pinion shaft. To measure preload, place an inch pound torque wrench on the drive pinion nut and rotate the pinion shaft. (See picture in step 3) While rotating the shaft note the reading on the torque wrench. Be sure to record the reading because you will need to check and adjust the preload near the end of this procedure.

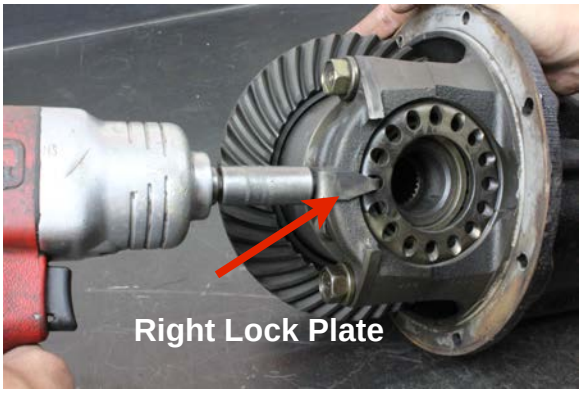


Step 5

Mark the left bearing cap so it can be readily distinguish from the right.

Note: Bearing caps must be reinstalled in their original position. We used yellow paint for marking, but any stamp, file or engraver would work.



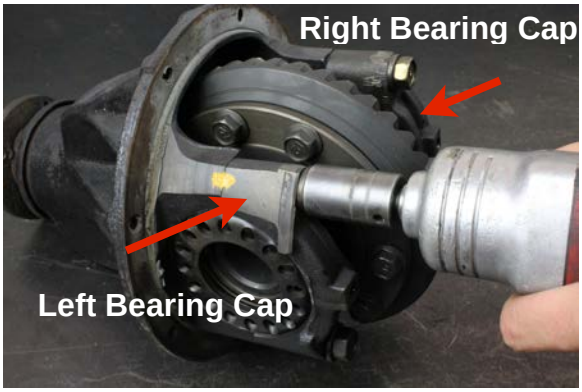


Tech Tip

As mentioned, it is critical that you reassemble the differential carrier parts in the same location from which they were removed. Setting them on the workbench as shown works well.

Step 6

Remove both (left and right) bearing adjuster lock plates by removing (2) 12 mm bolt.



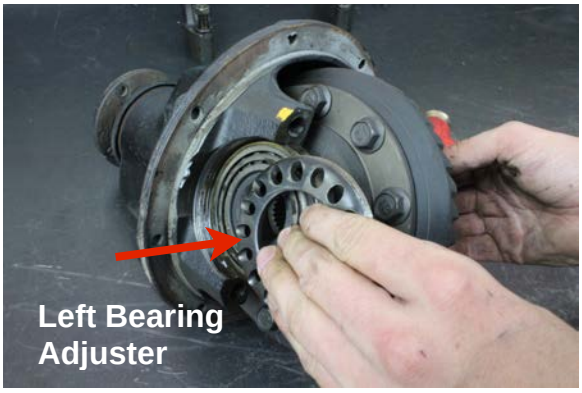
Step 7

Remove both side bearing caps by removing (4) 17 mm bolts.



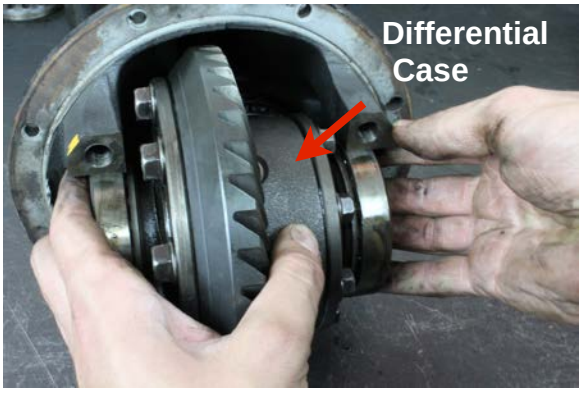
Step 8

It may be necessary to tap on the caps with a brass hammer to assist in removal.



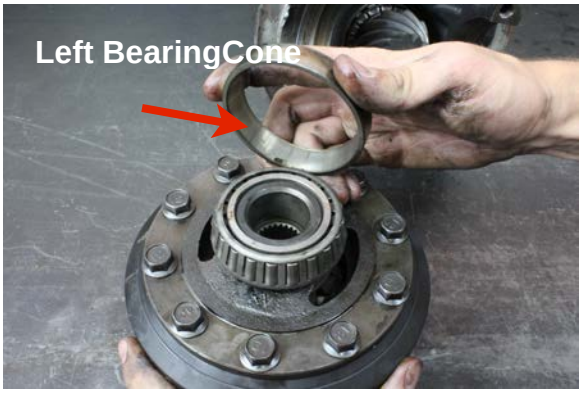
Step 9

Remove both (left and right) bearing adjusters.



Step 10

Remove the differential case.



Step 11

Place the differential case on the bench as shown and remove the left side bearing cone.



Step 12

Remove the (10) 14 mm ring gear bolts releasing the ring gear.

Caution: Be sure to catch the ring gear with your hand and set it on the bench as shown in the next picture.



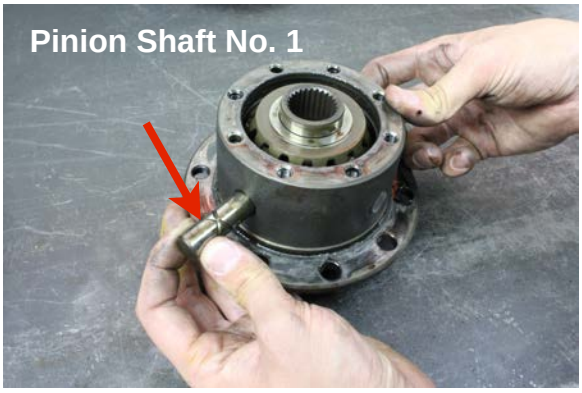
Step 13

Lift the differential case off the ring gear and set the ring gear aside.



Step 14

Turn the case over and remove the right case half by removing (8) 12 mm bolts.



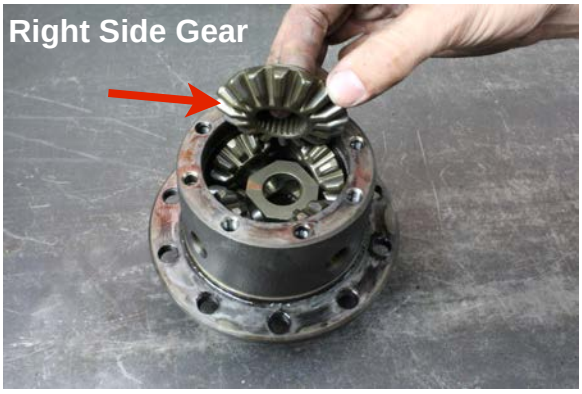
Step 15

Remove pinion shaft No. 1. This is the long shaft that goes all the way through the case.



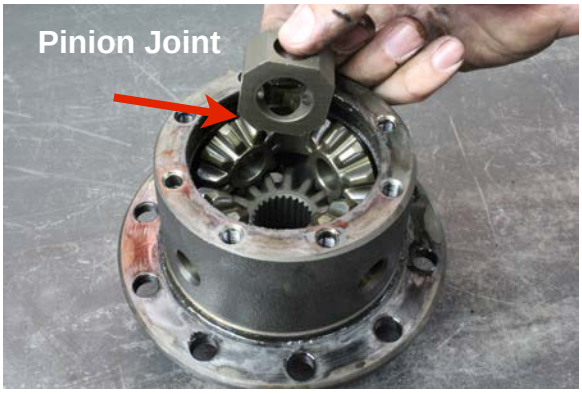
Step 16

Remove (2) pinion shafts No. 2. These are the short ones.



Step 17

Remove the right side gear and thrust washer.



Step 18

Remove the pinion joint.



Step 19

Remove the (4) pinion gears and thrust washers.



Step 20

Remove the left side gear and thrust washer.

Note: Be sure the thrust washer is removed from the case. It will not be reused.

Mini Spool Locker Installation



Step 21

Install the Mini Spool Locker as shown. It does not mater which direction.

Note: None of the old thrust washers , pinion gears, or side gears are re-used with the Mini Spool Locker.



Step 22

Align the holes in the case with the holes in the spool locker and install the pinion shaft No. 1. This is the long shaft.

Note: It does not mater which holes in the spooler and the case you begin with.



Step 23

Install the (2) pinion shafts No. 2.

Note: These are the short shafts.



Step 24

Install the differential right case.



Step 25

Apply Blue Loctite® to the (8) differential case bolts and install.



Step 26

Torque the differential case bolts 27 to 32.5 ft. lbs.



Step 27

Position the ring gear over the differential case.



Step 28

Turn the case over, hold the ring gear in place, apply Red Loctite® to the treads and install the bolts.



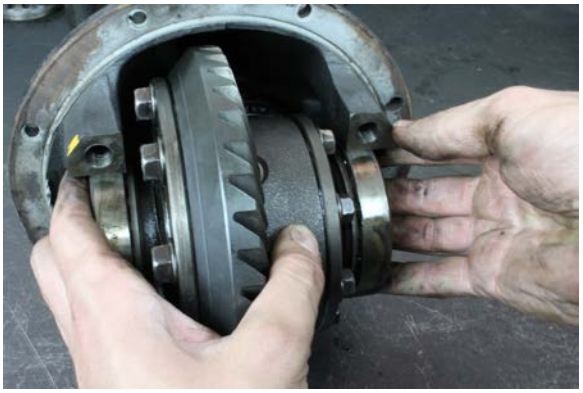
Step 29

Torque the ring gear bolts 58 to 66 ft. lbs.



Step 30

Place the (2) side bearing cups on the side bearings.



Step 31

Place the differential case in the carrier as shown.



Step 32

Install the right side bearing cap and bolts. Then the bolts tighten 7.5 to 14 ft. lbs. Be sure that this is the RIGHT side bearing cap.

Note: We are only snugging these bolts at this point. We will do the final torque later.



Step 33

Install the LEFT side bearing cap and bolts and tighten 7.5 to 14 ft. lbs.

Note: Notice the mark indicating it is the left side bearing cap.



Step 34

Install both left and right bearing adjusters.

Note: Again, be sure the adjusters are placed on the correct sides.

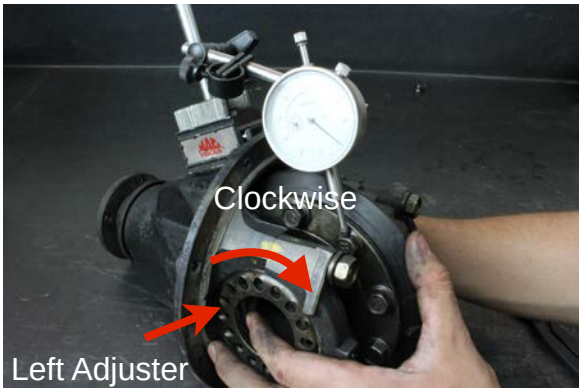


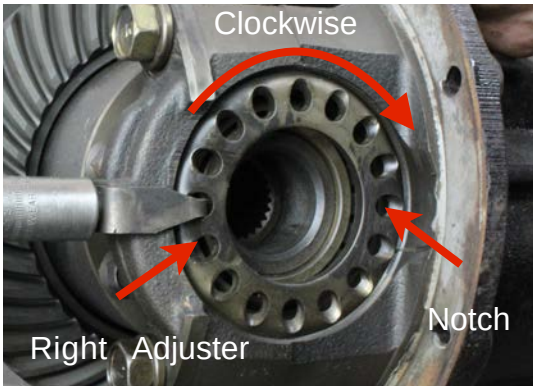
Step 35

Snug the bearing adjusters such that the case spins freely but does not move side to side.

Note: There is no spec for this but you should estimate 15 to 20 ft. lbs.

Backlash Adjustment Procedure





Step 36

Check backlash with a dial indicator as shown. (Click HERE to see Backlash video) Backlash should be set to what it was before disassembly back in Step 1. If you need to increase backlash, turn the left adjuster counter-clockwise and the right adjuster clockwise an equal amount. To decrease backlash, turn the right adjuster counter-clockwise and the left adjuster clockwise and equal amount.

Note: One notch changes the backlash by about .002 in.

Preload Adjustment Procedure



Step 37

Check bearing preload as shown. (Click HERE to see preload video) The preload should be what it was before disassembly. If it is, the preload adjustment is complete. You may skip to Step 39. If preload is not correct continue to the next step.



Step 38

To increase preload, turn the left adjuster clockwise and turn the right adjuster an equal amount clockwise.

To decrease preload, turn the left adjuster counter-clockwise and turn the right adjuster an equal amount counter-clockwise.



Step 39

Recheck preload. If preload is within specification, recheck backlash to insure it is still within specification. If backlash is NOT within specification you will need to repeat the backlash procedure, as well as repeat the preload procedure until both are as close as possible to the original settings.



Step 40

Install the the bearing lock plates and tighten 7 to 10 ft. lbs.

Note: It may be necessary to rotate the adjuster slightly to align the holes in the adjuster with the pin in the lock plate.



Step 41

Finish tightening the (4) bearing cap bolts 51 to 72 ft. lbs.

This marks the end of the Mini Spool Locker installation. For third member installation instructions we invite you to go to our web site. Thanks for letting us help you with this procedure! We hope you enjoy your new locker!

As always, If you experience any difficulty during the installation of this product please contact Low Range Off-Road Technical Support at 801-805-6644 M-F 8am-5pm MST. Thank you for purchasing from Low Range Off-Road.





These instructions are designed as a general installation guide. Installation of many Low Range Off-Road require specialized skills such as metal fabrication, welding and mechanical trouble shooting. If you have any questions or are unsure about how to proceed, please contact our shop at 801-805-6644 or seek help from a competent fabricator. Using fabrication tools such as welders, torches and grinders can cause serious bodily harm and death. Please operate equipment carefully and observe proper safety procedures.

Rock crawling and off-road driving are inherently dangerous activities. Some modifications will adversely affect the on-road handling characteristics of your vehicle. All products sold by Low Range Off-Road are sold for off road use only. Any other use or application is the responsibility of the purchaser and/or user. Some modifications and installation of certain aftermarket parts may under certain circumstances void your original dealer warranty. Modification of your vehicle may create dangerous conditions, which could cause roll-overs resulting in serious bodily injury or death. Buyers and users of these products hereby expressly assume all risks associated with any such modifications and use.

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