

INSTALL INSTRUCTIONS



DOUBLE-ENDED RAM SEAL KIT

303786-KIT (FOR ROCK ASSAULT 2.25" BORE X 1.125" ROD RAMS WITH 6", 8", OR 10" STROKE)

KIT CONTENTS



304137-INS

RECOMMENDED TOOLS

Vise	Length of 1-3/4" OD PVC Pipe (Approx. 14"-18")
3/16" Pin Adjustable Spanner Wrench	Rod Seal Installation Tool
Small Flat Head Screwdriver	Rubber Mallet
Set of Seal Removal Picks	Clean Shop Towel
Plastic Flat Tip Picks	Power Steering Fluid
Large Drift Punch	Safety Glasses
Grease (compatible with power steering fluid)	Jack Stands
Piston Seal Installation Tool	Jeweler's Files

CAUTION

1. Read all instructions completely and carefully before you begin. If anything is not clear, please call our tech support line at 1.877.4X4.TOYS or 559.252.4950 before proceeding.
2. Check to make sure the kit is complete and that no parts are missing (refer to the Kit Contents Section on the first page of these instructions). If anything is missing, please contact Trail-Gear at 1.877.4X4.TOYS or 559.252.4950.
3. Park vehicle on a clean, dry, flat, level surface and block the tires so the vehicle cannot roll in either direction.
4. This product is for off-road use only. It is recommended that the installation steps below be performed by a competent mechanic. Buyers and users of this product hereby expressly assume all risks associated with the installation and use of this product.

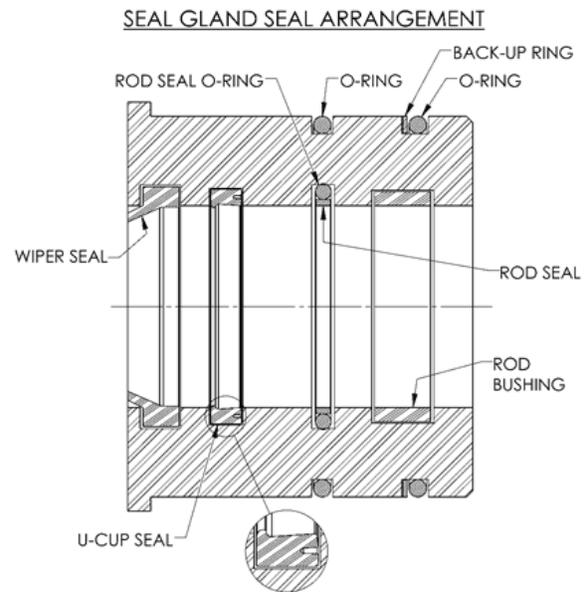
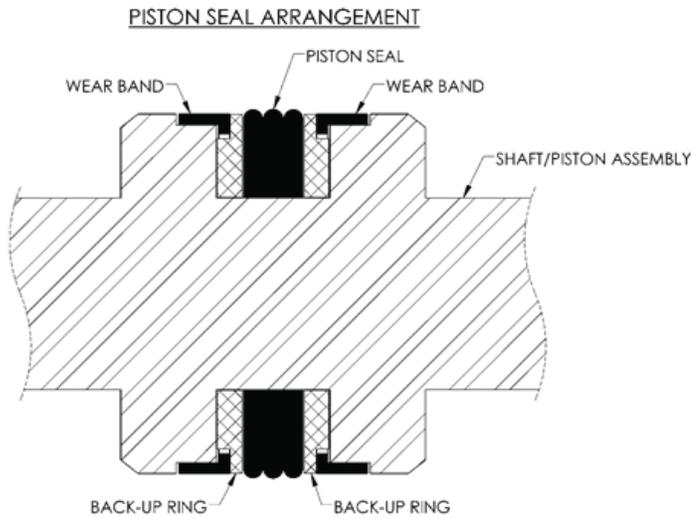


INSTALL INSTRUCTIONS (CONT'D.)



INSTALLATION NOTES

Refer to the following diagrams when installing the seals to make sure the seals are installed in the proper orientation:



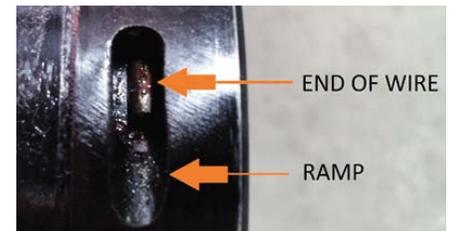
STEP 1

Remove the steering ram from the vehicle and drain the oil from the ram. Place the ram securely in a vise as shown. Use shop rags to prevent marring the finish on the ram cylinder.



STEP 2

Using an adjustable pin spanner, rotate the end of one of the cylinder glands until there is a gap between the end of the retaining wire and the ramped end of the wire loading slot.



STEP 3

Using a small flat head screw driver, gently pry the end of the retaining wire up so that there is a small gap between the retaining wire and the seal gland.



STEP 4

Using an adjustable pin spanner, slowly rotate the seal gland so that the retaining wire travels up the loading ramp. Immediately stop when you see the bent end of the retaining wire. Use care not to over-rotate the seal gland, as this will shear the bent end off of the retaining wire.



INSTALL INSTRUCTIONS (CONT'D.)

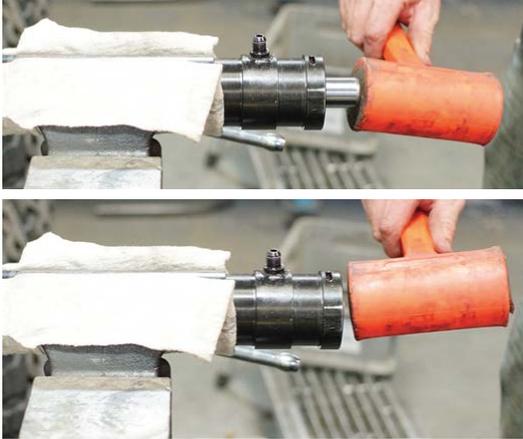


STEP 5

Gently remove the retaining wire from the cylinder. Save the retaining wire for reinstallation.

STEP 7

Using a rubber mallet, gently tap on one end of the shaft until it is flush with the seal gland.



STEP 6

Repeat Steps 2 through 5 for the seal gland on the other end of the ram.

STEP 8

Insert a large drift punch into the end of the shaft. Gently tap the drift punch and drive the shaft out until it shaft comes out of the gland on the hammered end. Use care not to damage the shaft threads or the seal gland.



STEP 9

Remove the shaft and seal gland from the other end of the cylinder and place the assembly on a clean, dry shop towel.



STEP 10

Remove the seal gland from the shaft and set aside for later use.



STEP 11

Carefully remove the (2) wear bands, (2) back-up rings, and the piston seal from the piston. Use caution not to scratch, gouge, or otherwise damage the piston or the shaft. Carefully remove dirt and debris from the piston and shaft. Discard the (2) wear bands, (2) back-up rings, and the piston seal.



STEP 12

Carefully remove the tape from piston seal set and separate into individual components.



INSTALL INSTRUCTIONS (CONT'D.)



STEP 13

Carefully install the new piston seal onto the center of the ram. The seal can be safely stretched over the outer edge of the piston. We recommend using a hydraulic piston seal installation tool or flat-tipped plastic picks to stretch the seal over the piston. Use care not to damage the seal or the piston.



STEP 14

Carefully install the red back-up rings onto the piston, then install the black wear bands onto the piston. Set the entire assembly aside for later reinstallation.



STEP 15

Carefully remove the (2) O-rings and back-up ring from the OD of the seal gland. Use care not to damage the seal gland. Discard the (2) O-rings and back-up ring.



STEP 16

Carefully remove the wiper seal from the ID of the seal gland. Use care not to damage the seal gland. Discard the wiper seal.



STEP 17

Carefully remove the U-cup seal from the ID of the seal gland. Use care not to damage the seal gland. Discard the U-cup seal.

STEP 18

Carefully remove the rod seal and the rod seal O-Ring from the ID of the seal gland. Use care not to damage the seal gland. Discard the rod seal and the rod seal O-Ring.

INSTALL INSTRUCTIONS (CONT'D.)



STEP 19

DO NOT remove the rod bushing from the bottom of the gland. It does not need to be replaced. Carefully remove dirt and debris from the seal gland before moving to the next step.

DO NOT REMOVE
ROD BUSHING



STEP 20

Carefully remove the rod seal and rod seal O-ring from the plastic bag. Separate the rod seal and rod seal O-ring into individual components.



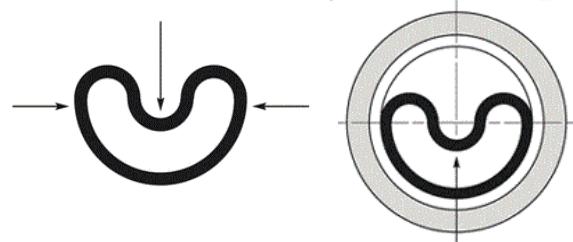
STEP 21

Install the rod seal O-ring into the rod seal groove. Next, using a rod seal installation tool, install the brown rod seal into the same groove that you installed the rod seal O-Ring into. Using your finger, make sure that the rod seal has returned to a circular shape.



STEP 21 CONTINUED

Alternate method: If you do not have a rod seal installation tool, carefully bend the rod seal into a kidney shape. Make sure that the bends are not sharp. Install the rod seal into the groove. Next, manually reshape the rod seal into a circle. Make sure that the rod seal is fully seated into the groove.



STEP 22

Using a rod seal installation tool, install the white U-cup seal into the seal gland. The opening of the "U" should be pointed towards the inside of the cylinder. If you do not have a rod seal installation tool, you may manually shape the seal into a kidney shape and install the U-cup seal in a manner similar to Step 21.

STEP 23

Install the wiper seal into the seal gland.



INSTALL INSTRUCTIONS (CONT'D.)



STEP 24

Install the back-up ring and O-rings onto the OD of the seal gland. Put the newly rebuilt seal gland aside.



STEP 25

Using a section of 1-3/4" PVC pipe, gently tap out the other seal gland from the cylinder. Carefully clean and inspect the ID of the cylinder to make sure there are no scratches or gouges. If any are present, smooth the edges down with jeweler's files.

STEP 26

Repeat Steps 15 through 24 for the other seal gland.

STEP 27

Apply grease to OD of the piston seals. Carefully and slowly insert the shaft & piston assembly back into the cylinder. Keep the shaft parallel with the cylinder at all times. Note: Make sure the grease that you use is compatible with power steering fluid. DO NOT reinstall the piston into the cylinder without lubricating the seals, as this will damage the seals and cause premature seal failure.



INSTALL INSTRUCTIONS (CONT'D.)



STEP 28

Apply grease to the ID & OD of the seals on one of the seal glands. Carefully slide the seal gland onto the shaft and reinsert the gland into the cylinder. Keep the seal gland parallel with the cylinder at all times. Note: Make sure the grease that you use is compatible with power steering fluid. DO NOT reinstall the seal gland into the cylinder without lubricating the seals, as this will damage the seals and cause premature seal failure.



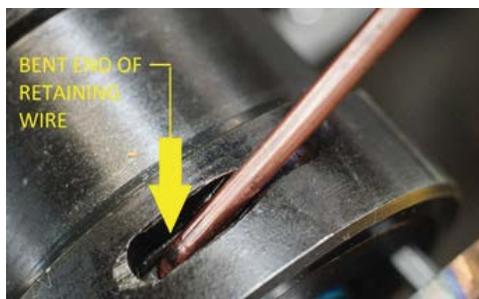
STEP 29

Repeat Step 28 for the other seal gland. Note: Make sure the grease that you use is compatible with power steering fluid. DO NOT reinstall the seal gland into the cylinder without lubricating the seals, as this will damage the seals and cause premature seal failure.



STEP 30

Slowly rotate the seal gland until the retention wire hole is visible in the retention wire loading slot. Insert the bent end of the retention wire into the seal gland. Slowly rotate the seal gland until the retention wire is completely taken up into the cylinder.



STEP 31

Repeat Step 30 for the other seal gland.

STEP 32

Completely drain the hydraulic steering system on your vehicle and change the steering system filter. Reinstall the steering ram and fill your power steering reservoir with fresh power steering fluid.

STEP 33

With the vehicle on jack stands and tires completely off the ground and engine off, turn the steering wheel from lock to lock several times and then refill the power steering reservoir with fluid. This is done so that the power steering pump does not get started dry, which can cause damage to the pump.

STEP 34

Start the engine and turn the steering wheel from lock to lock. We recommend that you run the motor for about 5 minutes at a time while bleeding the steering system. Allow the oil to set until all the bubbles have separated out of the oil, then run the motor again for 5 minutes. Repeat this procedure until the oil runs without foam or bubbles.

INSTALL INSTRUCTIONS (CONT'D.)



REPLACEMENT PARTS

This product is sold as a complete seal kit only. Seals are not available individually.