

INSTALLING TROSTEL SEALS

GENERAL

Extreme care should be taken when installing oil seals. Although Trostel seals are ruggedly constructed, improper handling during installation can damage the sealing lip or distort the steel shell and thus prevent the seal from functioning effectively. Surveys show that seal failures almost invariably result from improper installation.

PROPER SIZING

Make sure the oil seal selected is of the correct shaft size for the application. If the seal is oversize, leakage may occur, or if undersize, excessive drag and wear to the sealing surface may result.

LUBRICATION BEFORE ASSEMBLY

LEATHER

The leather sealing element of Trostel seals is impregnated with a silicone compound which seals and lubricates the leather. Consequently, they need not be lubricated prior to installation. However, if leather seals have been on the shelf for a long time, it is possible for the leather sealing element to dry out. In such cases it is a good idea to examine the seal at the time of installation, and if necessary, immerse it in oil (preferably neetsfoot oil).

SYNTHETIC

Before installing a synthetic rubber seal, dip (but do not soak) the seal in oil or apply a coat of lubricant to the inside diameter of the sealing member using a finger. This precautionary step will minimize the possibility of the seal running dry (without lubrication) for the few minutes of operation. When installing dual lip synthetic seals be sure to pack the cavity between sealing members with a stiff lubricant.

BORE SEALANT

Before installation, it is sound practice to apply a coat of bore sealant to the outside diameter of the seal and to the interior of the bore. Use gasket cement, shellac, white lead or red lead. The sealant will fill in any small scratches or imperfections in the seal bore and prevent leakage.

DIRECTION OF MOUNTING OIL SEALS

Although there are many exceptions because of specialized applications, in general, the sealing lip or wiping lip should be directed toward the oil or media being sealed.

Where there is little danger of media leakage, and it is important to exclude dirt or foreign matter, the sealing lip may be pointed away from the fluid.

If retention of media and exclusion of dirt and foreign material are of equal importance, select a seal with dual sealing lips or one having an auxiliary wiper element.

MOUNTING ON PLAIN SHAFTS

Most Trostel seals operate on the principle of an interference fit between the inside diameter of the seal and the shaft. Because the inside diameter of the seal is smaller than the shaft, great care must be taken to avoid damaging the sealing lip(s) when installing the seal over the end of the shaft. Where possible, the shaft should be tapered to make assembly easier. The table below shows recommended shaft tapers.

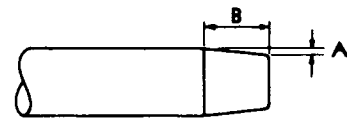


FIGURE 9

SHAFT SIZE	TAPER	
	A	B
1/4" to 7/8"	1/16"	1/4"
7/8" to 3"	3/32"	1/4"
3" to 6"	1/8"	3/8"
Over 6"	5/32"	1/2"

SEAL BORE

In order to facilitate assembly and to minimize the possibility of scratching or scoring the outside diameter of the seal during installation, a smooth bore with chamfered lead-in is recommended. Small scratches in the seal bore or on the outside diameter of the seal can cause leakage to occur.

INSTALLING TROSTEL SEALS

INSTALLATION

CASED LEATHER OR RUBBER SEALS

Perform the following steps:

1. Remove all burrs and sharp edges from shaft and bore. Shaft should be chamfered a minimum of 1/16" by 1/4" as indicated in table on previous page.
2. Mounting Tool - To assemble the seal to the shaft, a cone shaped thimble, sleeve or ferrule should be used to expand the sealing element to the size of the shaft. The outside diameter of the large end of the tool should be the same as the shaft. Note: If the seal is mounted with the sealing lip facing out, a special tool is not required.

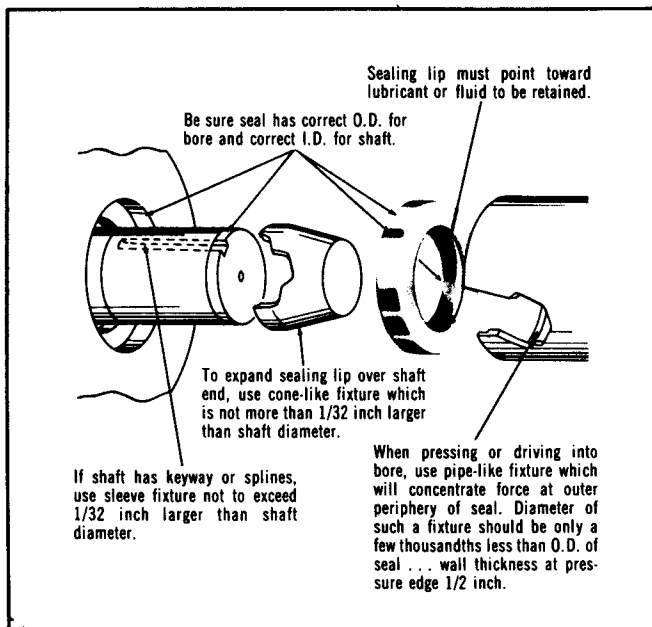


FIGURE 10

3. Lubricate the outer surface of the tool and slide seal over tool using a twisting motion.
4. Position the large end of the tool at the end of the shaft, aligning the tool with the shaft, and push seal onto shaft.
5. If an arbor press is available, press the seal into the seal bore with a flat ram or pressing tool. The outside diameter of the tool should be .010" smaller than the outside diameter of the seal. If a pressing tool or ram of the correct size is not available, use a wooden block cut to approximately the same size as the seal. Pressure should only be applied at the

extreme outer edges of the seal. Applying pressure towards the center will distort the steel shell.

6. If an arbor press is not available, the seal can be installed by lightly tapping with a wooden block and mallet. Take care to position the seal parallel with the bore surface and at right angles to the shaft. Cocking the seal in the bore may cause distortion of the case during installation. When pressing seal into an elongated tube or deep housing bore, the bore should be relieved up to the seating position. The seal should never be pressed through more than three times its width.

UNDER NO CIRCUMSTANCES SHOULD THE SEAL BE HIT DIRECTLY WITH A HAMMER

BONDED RUBBER SEALS

The installation procedure for installing bonded rubber seals is very similar to that used for leather and assembled rubber seals except that the pressing tool or ram should be larger than the outside diameter of the seal. This controls or limits the depth to which the seal is installed by providing a positive stop. Always make sure that the seal is recessed beyond the depth of the taper or radius. To prevent the possible collapse of the outer case on bonded rubber seals, apply pressure squarely to the outer edge of the seal as shown below.

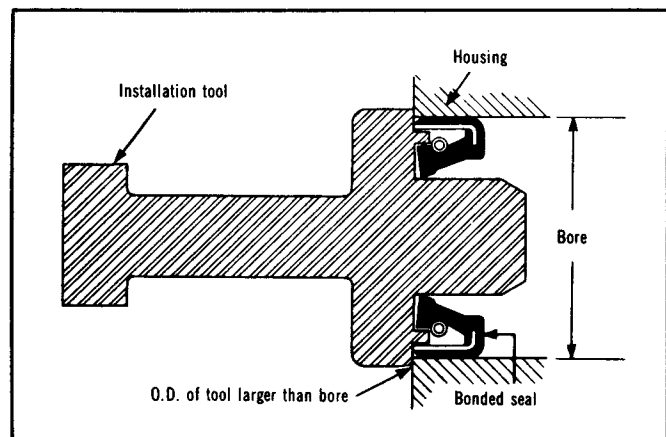


FIGURE 11 SEAL INSTALLATION TOOL

Bonded rubber oil seals must be assembled to the shaft using a metal sleeve or thimble as discussed above. The tool will expand the seal from the inside and should prevent the garter spring from popping out during assembly.

INSTALLING TROSTEL SEALS

MOUNTING ON SHAFTS HAVING KEYWAYS

Special precautions must be taken when mounting oil seals on shafts with keyways, holes or splines. The sharp edges on these types of shafts can easily damage or cut the sealing flanges. Install seals as follows:

1. Use a thimble, removable sleeve or ferrule similar in construction to the tool described above over the end of the shaft. The sidewalls of the tool should be as thin as possible to keep the outside diameter at a minimum.
2. Lubricate the outside surface of the shaft and the outside diameter of the tool.
3. Slide the seal over the sleeve, thimble or ferrule using a twisting motion.
4. Push seal all the way onto the shaft and against seal bore. Remove tool.
5. Press seal into seal bore with an arbor press or mallet as described above.

As an alternate method, the keyway or hole(s) can be plugged with a smooth wooden dowel protruding slightly above any sharp edges. In an emergency, stiff Kraft paper can be wrapped around the shaft to protect the sealing flanges during installation of the seal.

MOUNTING LARGE SEALS ON LARGE SHAFTS

On large seals where special tools are not available, take necessary precautions to prevent damage to the sealing element, outside diameter of the seal and/or seal case. All burrs and sharp edges should be removed from the shaft before sliding the seal into position. A bore sealant should be used. The seal should be started square to the bore and gently tapped into position using a wooden block and mallet. Tap equally around entire circumference of the seal until it seats squarely into the bore.

INSTALLING TYPE "W" SEALS

Illustrated below is a special bullet and thimble method for installing Trostel Type "W" seals. The bullet is used to install the seal on the thimble which in turn is used to install the seal on the shaft. When using this method, be sure to follow all other precautionary measures described in previous instructions.

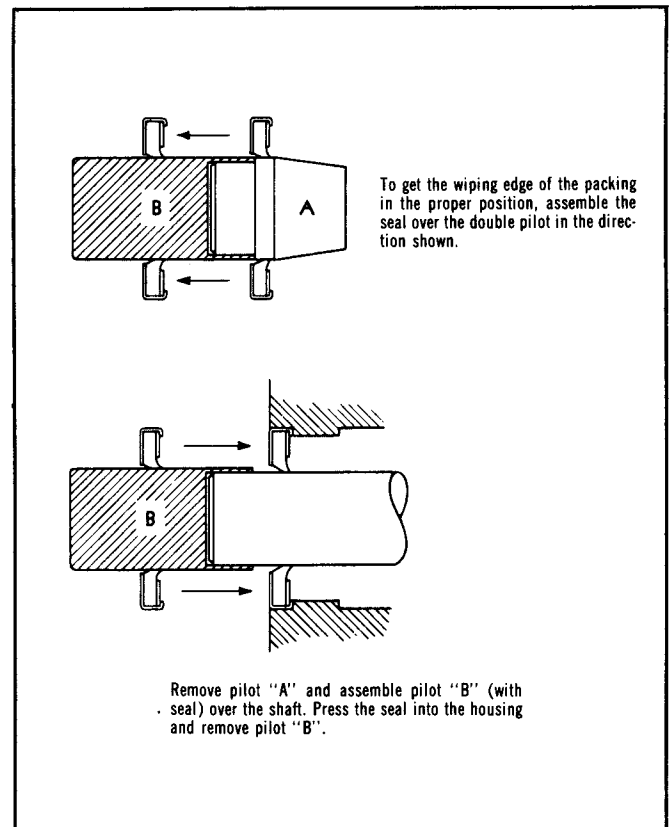


FIGURE 12 INSTALLING TYPE "W" SEALS