

USAF, USN, & SAF-XT Pillow Block Housing Seals

Instruction Manual

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see dodgeindustrial.com for updated instruction manuals.

WARNING: To ensure the drive is not unexpectedly started, turn off and lock-out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

WARNING: All products over 25 kg (55 lbs) are noted on the shipping package. Proper lifting practices are required for these products.

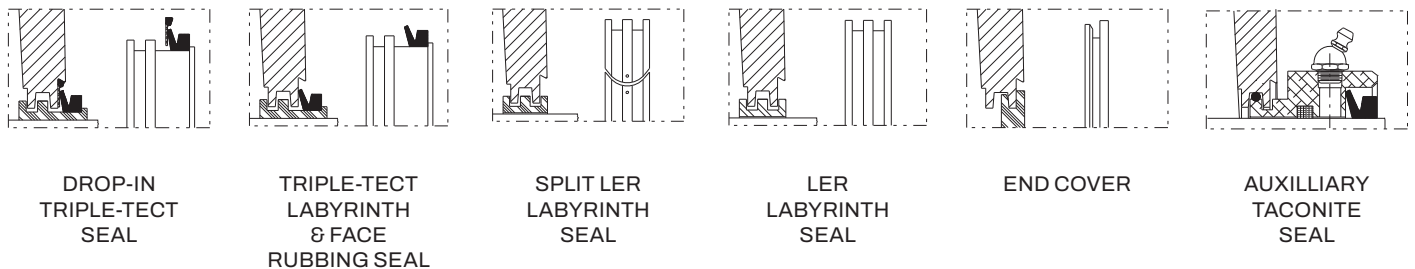


Figure 1 - Housing Seals

INSTALLATION

FOR USE ON USAF, USN, OR SAF-XT PILLOW BLOCKS

NOTE: All instructions assume housings with two open ends are used. For cast-closed housings, disregard all references to the "second seal assembly" or "second seal ring."



Figure 2 - Cast-Closed Housing

WARNING: Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Dodge® nor are the responsibility of Dodge. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

CONVENTIONAL LER LABYRINTH SEAL

1. Slide one of the seal rings onto the shaft.
2. Mount bearing on shaft using appropriate mounting instructions.
3. Slide second seal ring onto the shaft.
4. Thoroughly clean seal grooves and mating surfaces on both housing halves. Mount housing base to frame-work and place shaft with bearing in housing base using appropriate instructions. Guide seal rings into housing grooves. Grease seal ring grooves. Tighten cap base.
5. Assure there is adequate running clearance between seal rings and housing grooves by rotating shafts. If seal ring binds up, realign pillow block.

TRIPLE-TECT™ SEAL

(If no installation tools are available)

1. Slide one of the V-ring seals onto the shaft making sure lip is toward the bearing. Install seal ring onto the shaft with relation to housing as shown.

NOTE: Do not install V-ring seal on seal ring at this time (for direct mount, large V-ring is installed first).
2. Mount bearing on shaft using appropriate mounting instructions.
3. Install second seal ring onto the shaft with relation to housing as shown in Figure 3.

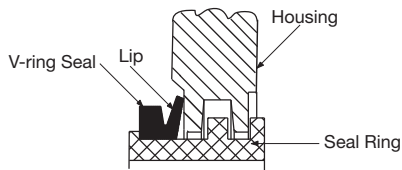
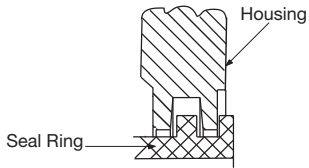


Figure 3 - Seal Ring Installation

- Slide second V-ring seal onto shaft, making sure lip is toward the bearing.

NOTE: Do not install V-ring seal on seal ring at this time (Figure 3a).

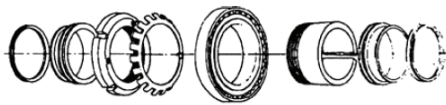


Figure 3a

- Thoroughly clean seal ring grooves and mating surfaces on both housing halves. Mount housing base to framework. Pack seal grooves with grease. Place shaft with bearing in housing base using appropriate instructions. Guide seal rings into housing grooves. Grease cap seal grooves and the seal rings. Tighten cap to base.
- Assure there is adequate running clearance between seal rings and housing groove. Rotate shaft. If there is binding, realign pillow block. Install V-ring seals on seal rings and against housing as shown.

NOTE: V-ring seal lips must not be turned under inside of housing bore. If they are, remove and reinstall.

- Apply a thick coat of grease to any exposed surface of the V-ring seal.

TRIPLE-TECT SEAL

(If installation tools are available)

- Install a V-ring seal on each seal ring with the lip on V-ring facing the large OD of the seal ring (Figure 4).

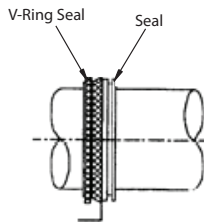


Figure 4

- Slide one of the seal assemblies on the shaft to the proper location for assembly into the housing. The lip of the V-ring seal must face the bearing (Figure 4).
- Mount bearing in its proper position on shaft using appropriate mounting instructions.
- Slide the second seal assembly on shaft to the proper location. The lip of the V-ring seal must face the bearing.
- Place one of the installation tools between the lip of the V-ring seal and the center ring on the seal ring (Figure 4a). Repeat the procedure for the second seal assembly. Rotate the tool(s) to the lower position to facilitate assembly of the bearing and seal(s) into the housing base (Figure 4a).
- Thoroughly clean seal grooves and mating surfaces on both housing halves. Mount housing base to framework. Pack seal grooves with grease.

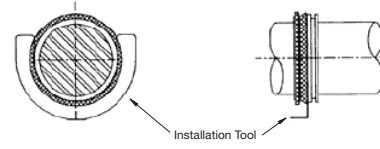


Figure 4a

- Locate the bearing and seal assembly into the housing base (Figure 4b). Make sure the seal assembly turns freely in the base by rotating shaft. See bearing mounting instructions for proper grease fill of bearing insert and housing.

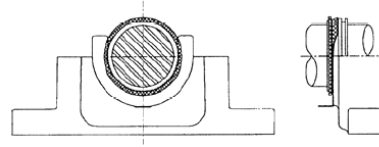


Figure 4b

- Move the installation tool(s) to the top position to facilitate the assembly of the housing cap to the base (Figure 4c).

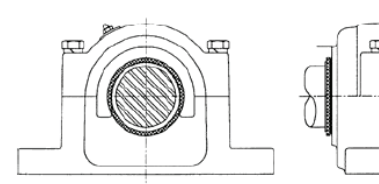


Figure 4c

- Pack the housing cap seal grooves with grease, then install on base. Hand tighten the cap bolts. Rotate the shaft to make sure the seal assembly sits properly in the housing. Remove the installation tool(s) and tighten cap bolts to the proper torque value.
- Apply a thick coat of grease to any exposed surface of the V-ring seals.

TRIPLE-TECT SEAL INSTALLATION TOOL

This tool is to be made by the customer per specs below. Two are required for installation of bearing with two seals. This tool keeps the lip of the seal back so it does not get crimped and damaged between the housing halves.

Table 1 – Triple-Tect Seal Installation Tool					
Shaft Diameter	Housing Size	A & B	C	D	E
1-7/18	509	.82	1.64	1.6	3.5
1-11/16	510	.95	1.90	1.7	3.5
1-15/16	511	1.08	2.16	1.8	3.5
2-3/16	513	1.21	2.42	2.0	3.5
2-7/16, 2-1/2	515	1.34	2.68	2.1	4
2-11/16, 2-3/4	516	1.53	3.06	2.3	4
2-15/16, 3	517	1.65	3.30	2.4	4
3-3/16	518	1.80	3.60	2.6	4.5
3-7/16, 3-1/2	520	1.86	3.72	2.6	4.5
3-15/16, 4	522	2.11	4.22	2.9	4.5
4-3/16	524	2.25	4.50	3.0	5
4-7/16, 4-1/2	526	2.40	4.80	3.2	5
4-15/16, 5	528	2.62	5.24	3.4	5
5-3/16	530	2.82	5.64	3.6	5.5
5-7/16, 5-1/2	532	2.88	5.76	3.6	5.5
5-15/16, 6	534	3.18	6.36	3.9	5.5
6-7/16, 6-1/2	536	3.38	6.76	4.1	6
6-15/16, 7	538	3.67	7.34	4.4	6
7-1/2, 7-15/16, 8	544	3.95	7.90	4.7	6.5
8-7/16, 8-1/2, 8-15/16, 9	048	4.65	9.30	5.4	7
9-7/16, 9-1/2	052	5.00	10.00	5.8	7.5
9-15/16, 10, 10-7/16, 10-1/2	056	5.17	10.34	5.9	7.5

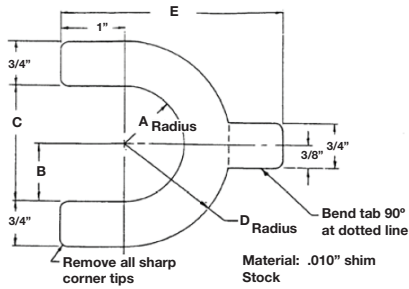


Figure 5

DROP-IN TRIPLE-TECT SEAL

NOTE: For use with USAF & USN products only.

Drop-In Triple-Tect seals are preassembled at the factory. The Drop-In Triple-Tect seal assembly consists of a seal ring, V-ring seal, and metal seal with rubber bead (Figure 6).

1. Slide one of the Drop-In Triple-Tect seal assemblies on shaft to the proper location for assembly into the housing. The lip of the V-ring seal must face the bearing (Figure 6).

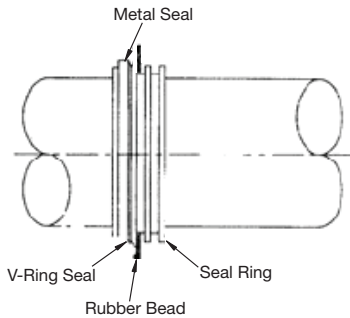


Figure 6

2. Mount bearing in its proper position on shaft following appropriate bearing mounting instructions.
3. Slide the second Drop-In Triple-Tect seal assembly on shaft to the proper location. The lip of the V-ring seal must face the bearing.
4. Thoroughly clean seal grooves and mating surfaces on both housing halves. Mount housing base to framework. Pack seal grooves with grease.
5. Align the center rib of each seal ring with its corresponding center seal groove in the housing base.
6. While lowering the shaft, bearing and seal assembly into the base, guide the metal seals with rubber bead so they line up with the outboard "V"-shaped base grooves (Figure 6a). See bearing mounting instructions for proper grease fill of bearing and housing.

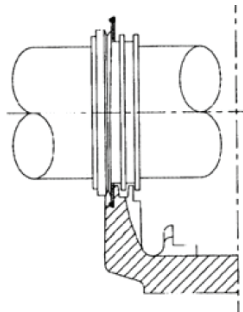


Figure 6a

7. Pack housing cap seal grooves with grease then install on base. While lowering the cap into the base make sure the metal seals with rubber bead line up with the outboard "V"-shaped cap grooves (Figure 6b). Tighten cap bolts to proper torque value. The rubber bead forms a positive seal in the "V"-shaped outer groove of the housing.

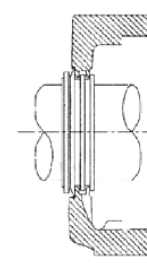


Figure 6b

8. Apply a thick coat of grease to any exposed surface of the V-ring seals.

SPLIT SEAL

Clean seal grooves and mating surfaces on both housing halves. Position split seal into lower housing grooves. Locate split at top of shaft. Thread tie-strap down through relieved hole in notched end of seal and up through small hole in rounded end of seal (Figure 7). With tie head seated in the hole, draw tie across split, through tie head and pull tightly (Figure 8) so seal cannot rotate on shaft. Cut away excess tie. Rotate shaft slowly and position seal so it does not rub against housing grooves. Before assembling cap to base, grease cap seal grooves and the exposed surfaces of the split seals. Tighten cap base.

NOTE: The tie is self-locking and once the seal is pulled tight, the excess tie strap should be cut away.



Figure 7

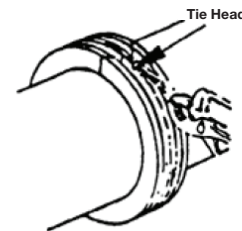


Figure 8

AUXILIARY TACONITE SEAL

1. Insert felt seals in the bore groove of the seal cartridges. Locate "O" rings on the seal cartridge as shown.
2. For bore sizes over 7", slide one collar onto the shaft.
3. Slide one of the V-ring seals onto the shaft making sure lip is toward the housing. Install seal cartridge onto the shaft with relation to housing (Figure 9).
4. Mount bearing in its proper position on shaft following appropriate bearing mounting instructions.
5. Install second seal cartridge onto shaft with relation to housing (Figure 9).
6. Slide second V-ring seal onto shaft making sure lip is toward the housing.
7. For bore sizes over 7", slide second collar onto shaft.
8. Thoroughly clean seal grooves and mating surfaces on both housing halves. Mount housing base to framework and place shaft with bearing in housing base guiding seal cartridge into housing grooves. See bearing mounting instructions for proper grease fill of bearing and housing. Grease cap seal grooves and the seal cartridge. Tighten cap to base.
9. Install V-ring seals against seal cartridge as shown.
10. Apply a thick coat of grease to any exposed surface of the V-ring seal.

11. Locate collar (above 7" bore) at the side of each seal cartridge (Figure 10). Tighten set screw to 120 in-lbs.
12. Using a grease gun, grease cavity of seal cartridge until grease is seen purging at the seal.

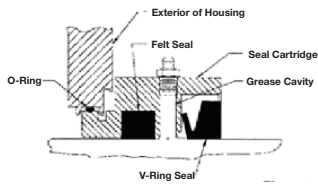


Figure 9

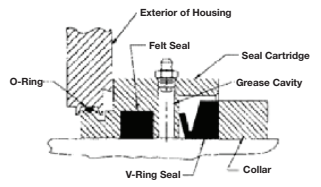


Figure 10

COLD BONDING OF THE V-RING SEALS

In the event a V-ring seal is inadvertently damaged or excessively worn and needs to be replaced, the following procedure may be used without the need to remove bearings or other accessory equipment.

NECESSARY TOOLS

- Heavy Twine
- Masking Tape
- Loctite 415, 416, 405 or Black Max 380
- Emery Cloth
- Methylenechloride (MEK) or alcohol
- 400 - 600 grit emery cloth

PROCEDURE

1. Cut the V-ring seals so the cross section surfaces are even. The cut should be made with a large pair of sharp scissors or a sharp knife (band saw for E profile). Prior to the cutting procedure, clean the cutting blade with MEK (Figure 11).
2. Wind a 2" wide layer of masking tape approximately 4 inches from either end of the cut V-ring seal (Figure 12).
3. Tie pieces of string to the taped portions of the V-ring seal approximately 1 inch from cut (Figure 13).
4. Place the V-ring seal around the shaft and stretch it so the ends overlap slightly. Tie the string together to hold the V-ring seal in this position (Figure 14).
5. Abrade mating surfaces with fine emery cloth for extra strength.
6. When the V-ring seal is in position around the shaft, clean the ends with MEK or alcohol and allow to dry completely (approximately 10 minutes). Apply a thick layer of adhesive to one of the ends, taking care not to touch the surface when applying the adhesive (Figure 15).
7. Bring the two ends together and adjust them to the proper alignment. Hold them in this position for approximately 60 seconds (Figure 16).
8. Finishing of the joint may be started after 15 minutes. Remove excess adhesive from the vicinity of the joint with emery cloth. Insure the joint surfaces of the lip and the surface in contact with the shaft are flush (Figure 17).
9. Remove the string and tape (Figure 18).
10. Test the joint by stretching (Figure 19).



Figure 11

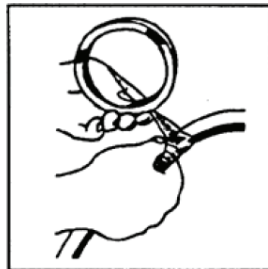


Figure 12

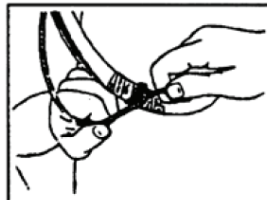


Figure 13

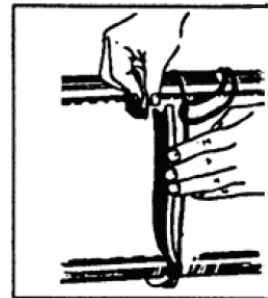


Figure 14

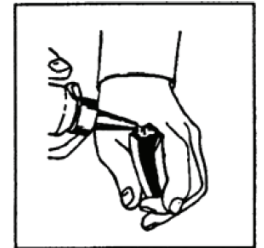


Figure 15



Figure 16



Figure 17



Figure 18



Figure 19

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