

INSTALLATION OF SEALS IN DODGE® USAF, USN & SAF-XT PILLOW BLOCK HOUSINGS

DODGE Sealing Systems Installation Instructions

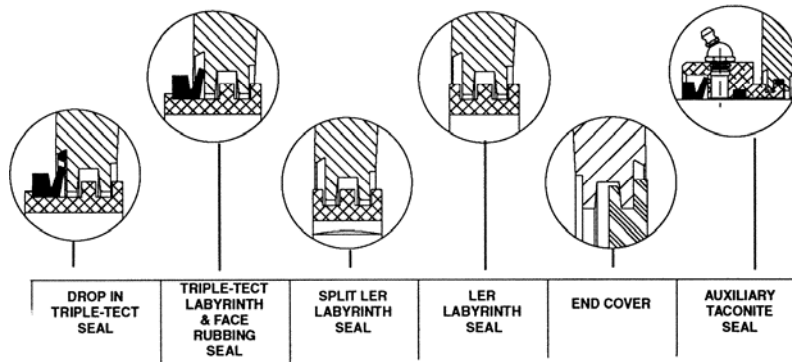
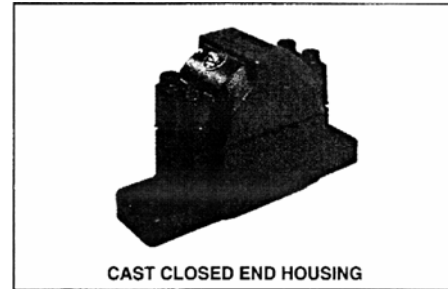
For use on USAF, USN, or SAF-XT Pillow Blocks

GENERAL INFORMATION

DODGE offers a variety of sealing systems for SAF type pillow blocks. Keeping your bearings properly sealed is critical in getting the most life from your new DODGE USAF, USN, or SAF-XT pillow block. By now you have selected one of the following seals for your application:

NOTE:

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



WARNING

To ensure that 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.

CONVENTIONAL LER LABYRINTH SEAL:

1. Slide one of the seal rings onto the shaft.
2. Mount bearing on shaft using appropriate bearing 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. Before assembling cap to base, grease entire 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 pillowblock.

TRIPLE-TECT™ SEAL:

(If no Installation tools available, see tool drawing page 5)

1. Slide one of the V-ring seals onto the shaft making sure lip is toward the housing. 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 bearing mounting instructions.
3. Install second seal ring onto the shaft with relation to housing as shown on Figure 1.
4. Slide second V-ring seal onto the shaft again making sure lip is toward the housing. **NOTE: Do Not Install** V-ring seal on seal at this time (see Figure 1A).
5. Thoroughly clean seal ring grooves and mating surfaces on both housing halves. Mount housing base to framework. Pack seal grooves with grease.

TRIPLE-TECT™ SEAL:

(If installation tools available)

1. Install a V-ring seal on each seal ring with the lip on V-ring facing the large OD of the seal ring (see Figure 2a).
2. 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 (see Figure 2a).
3. Mount bearing in its proper position on shaft using appropriate mounting instructions.
4. Slide the second seal assembly, if required, on the shaft to the proper location. The lip of the V-ring seal must face the bearing.

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 Baldor Electric Company nor are the responsibility of Baldor Electric Company. 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.

Place shaft with bearing in housing base using appropriate instructions. Guide seal rings into housing grooves. Before assembling cap to base, 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 pillowblock. 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.

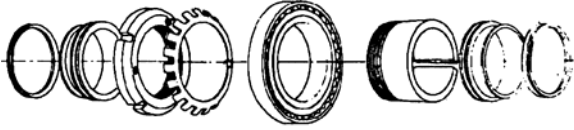


Figure 1a

TRIPLE-TECT™ SEAL:
(If installation tools available, Cont'd.)

- Place one of the installation tools between the lip of the V-ring seal and the center ring on the seal ring (Figure 2b). 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 2b).
- Thoroughly clean seal grooves and mating surfaces on both housing halves. Mount housing base to framework. Pack seal grooves with grease.
- Locate the bearing and seal assembly(ies) into the housing base (Figure 2c). Make sure the seal assembly(ies) turns freely in the base by rotating shaft. See bearing mounting instructions for proper grease fill of bearing insert and housing.
- Move the installation tool(s) to the top position to facilitate the assembly of the housing cap to the base (Figure 2d).
- 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(ies) seat properly in the housing. Remove the installation tool(s) and tighten cap bolts to the proper torque value (Figure. 2d).
- Apply a thick coat of grease to any exposed surface of the V-ring seals.

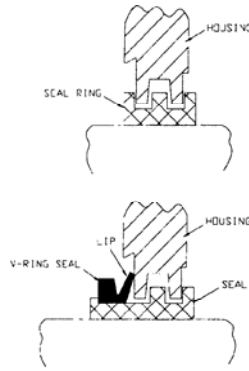


Figure 1

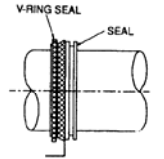


Figure 2a

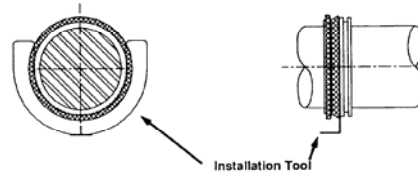


Figure 2b

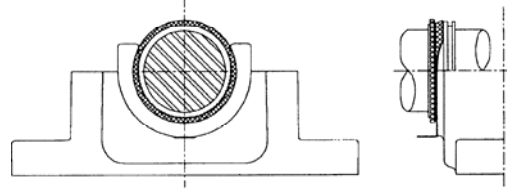


Figure 2c

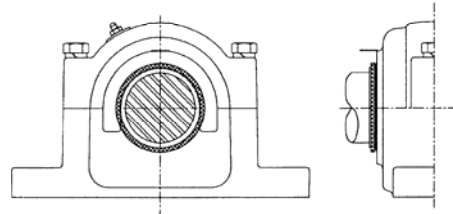
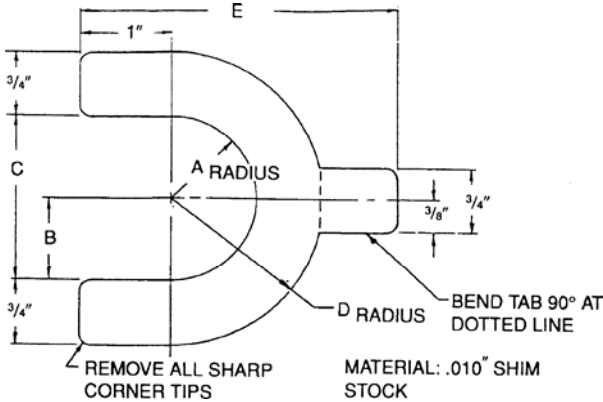


Figure 2d

TABLE 1 – TRIPLE-TECT SEAL INSTALLATION TOOL – to be made by 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.



Shaft Diameter	Housing Size	A & B	C	D	E
1 ⁷ / ₁₆	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 , 2½	515	1.34	2.68	2.1	4
2 ¹¹ / ₁₆ , 2¾	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 , 3½	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 , 4½	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 , 5½	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 , 6½	536	3.38	6.76	4.1	6
6 ¹⁵ / ₁₆ , 7	538	3.67	7.34	4.4	6
7½, 7 ¹⁵ / ₁₆ , 8	544	3.95	7.90	4.7	6.5
8 ⁷ / ₁₆ , 8½, 8 ¹⁵ / ₁₆ , 9	048	4.65	9.30	5.4	7
9 ⁷ / ₁₆ , 9½	052	5.00	10.00	5.8	7.5
9 ¹⁵ / ₁₆ , 10, 10 ⁷ / ₁₆ , 10½	056	5.17	10.34	5.9	7.5

DROP-IN TRIPLE-TECT™ SEAL:*

(NOTE: For use only with USAF & USN products.)

DROP-IN TRIPLE TECT seals are pre-assembled at the factory. The DROP-IN TRIPLE TECT seal assembly consists of a seal ring, a V-ring seal, and a metal seal with rubber bead (see Figure 3a).

Installation

1. Slide one of the DROP-IN TRIPLE TECT 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 3a).
2. Mount bearing in its proper position on shaft following appropriate bearing mounting instructions.
3. Slide the second DROP-IN TRIPLE TECT seal assembly, if required, on the 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. Make sure that the central circular rib of each seal ring aligns with each central circular groove in the base.
6. While lowering the shaft bearing and seal assembly(ies) into the base, guide the metal seals with rubber bead so they line up with the outboard "V"-shaped base grooves (Figure 3b). See bearing mounting instructions for proper grease fill of bearing insert and housing.
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 3c). Tighten cap bolts to the proper torque value. The rubber bead forms a positive seal in the "V"-shaped outer groove of the housing.
8. Apply a thick coat of grease to any exposed surface of the V-ring seals.

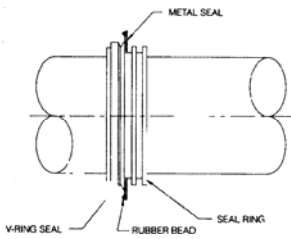


Figure 3a

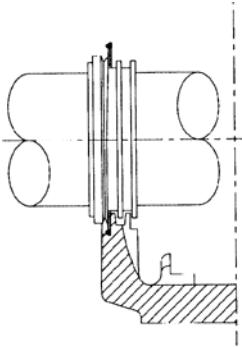


Figure 3b

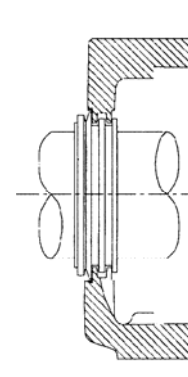


Figure 3c

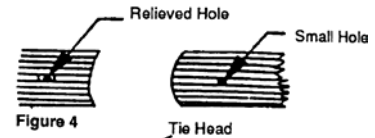


Figure 4

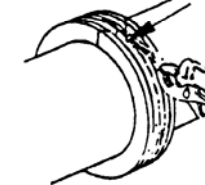


Figure 5

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 4). With tie head seated in the hole, draw tie across split, through tie head and pull tightly (Figure 5) 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.

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 as shown on Figure 6.

4. Mount bearing on shaft using appropriate bearing mounting instructions.
5. Install second seal cartridges onto the shaft with relation to housing as shown on Figure 6.
6. Slide second V-ring seal onto the shaft again making sure lip is toward the housing.
7. For bore sizes over 7", slide 2nd collar onto the 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 insert and housing. Before assembling cap to base, 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 as shown on Figure 7. 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.

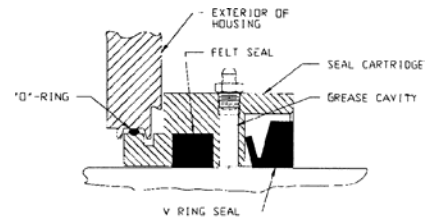


Figure 6

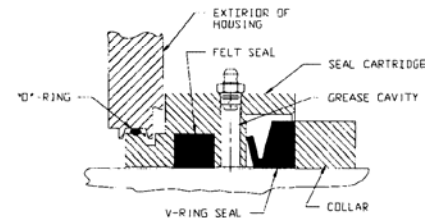


Figure 7

COLD BONDING OF THE V-RING SEALS

In the event a V-ring seal is inadvertently damaged or excessively worn and needs replacing, 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
Methylethylketon
(MEK) or alcohol
400 - 600 grit emery
cloth

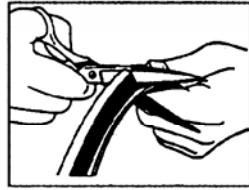


Figure 8

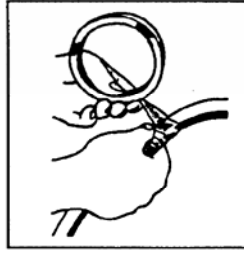


Figure 9

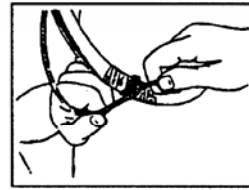


Figure 10

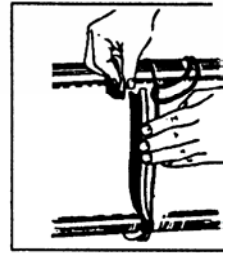


Figure 11

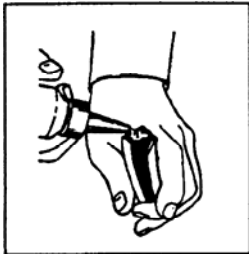


Figure 12



Figure 13



Figure 14



Figure 15

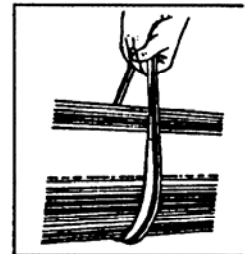


Figure 16

PROCEDURE:

1. Cut the V-ring seals so that 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 8).
2. Wind a 2-inch-wide layer of masking tape approximately 4 inches from either end of the cut V-ring seal (Figure 9).
3. Tie pieces of string to the taped portions of the V-ring seal approximately 1 inch from cut (Figure 10).
4. Place the V-ring seal around the shaft and stretch it so that the ends overlap slightly. Tie the string together to hold the V-ring seal in this position (Figure 11).
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 12).
7. Bring the two ends together and adjust them to the proper alignment. Hold them in this position for approximately 60 seconds (Figure 13).
8. Finishing of the joint may be started after 15 minutes. Remove excess adhesive from the vicinity of the joint with emery cloth. Ensure that the joint surfaces of the lip and the surface in contact with the shaft are flush (Figure 14).
9. Remove the string and tape (Figure 15).
10. Test the joint by stretching (Figure 16).

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This material is not intended to provide operational instructions. Appropriate instruction manuals and precautions should be studied prior to installation, operation or maintenance of equipment.