

## Special Duty Bearings

### Instruction Manual

### 1-3/8" to 3-1/2" Bore

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see [dodgeindustrial.com](http://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.

## INSTALLATION

1. Shaft should be within commercial tolerances, straight, smooth and clean. Apply a coating of light oil to the shaft in the bearing area.
2. Apply a bead of silicone sealant (RTV) to the split in the adaptor prior to sliding bearing on shaft.
3. If necessary to expand adapter, loosen adapter nut and tap on end of this nut.
4. Slide bearing to desired position on the shaft.
5. **DO NOT BOLT OUTER HOUSING TO SUPPORT UNTIL BEARING IS TIGHTENED ON SHAFT.**
6. Block up shaft to remove weight from bearing.
7. To keep adapter from turning on shaft tap on large end (opposite adapter nut). If large end of adapter is inaccessible, insert point of Flathead screwdriver between housing and adapter nut and twist screwdriver (see Figure 2).
8. Tighten (turn clockwise) adapter nut with spanner wrench or barring rod.
9. When considerable effort is required to turn adapter nut use hammer and brass bar on end of nut while simultaneously turning with wrench or barring rod (see Figure 3). When adapter seems to be tight, also use a hammer on the wrench while hammering simultaneously on end of adapter.

The adapter nut is nearly tight when a solid sound or ring, such as made by hitting directly on the end of a solid shaft, develops in the adapter nut. If possible, tighten more by hitting on the barring rod or spanner wrench and the brass bar simultaneously.

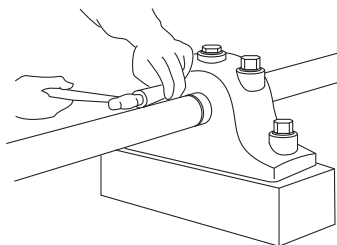


Figure 1

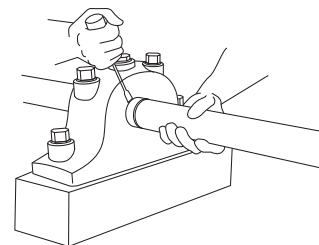


Figure 2

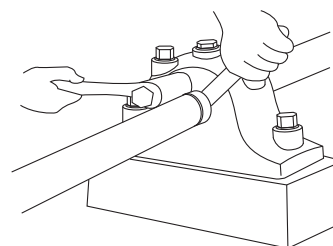


Figure 3

**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.

10. Lock adapter nut by bending one prong of lock washer into corresponding notch in back of the nut. If one prong does not align with notch, then tighten, not loosen, the locknut to meet a prong with slot.
11. Check hold-down bolts in outer housing to see that they are loose and free. (If too tight, an excessive thrust load could be imposed on bearing.) If bolts are very tight, it may be advisable to loosen adapter to move slightly on shaft.
12. Tighten hold-down bolts to secure outer housing to support. Mount a dial indicator on the shaft near the non-expansion (fixed) bearing. Place the indicator probe so that it contacts the face of the inner unit housing on the closed end (end with mount nut). See Figure 4.
13. Zero the indicator and sweep the entire face, noting the total indicator runout (TIR).
14. If the TIR is greater than the value shown in Table 2, gently tap the face of the inner unit housing to correct the runout.

Repeat steps 3 and 4 until the TIR is less than the value shown in Table 2.

15. If the TIR is less than or equal to the value in Table 2, tighten the cap bolts per values in Table 1.
16. The non-expansion bearing is now installed. Repeat steps 1-16 for the expansion bearing.
17. The expansion bearing is now installed.

**EXPANSION BEARING:** Inner unit should be located in center of outer housing. For maximum expansion, shift inner unit to the side of the outer housing closest to the non-expansion bearing.

18. After a short run, make sure the adapter is tight: loosen hold-down bolts: perform steps 6, 8, 9 and 10. Tighten hold-down bolts.

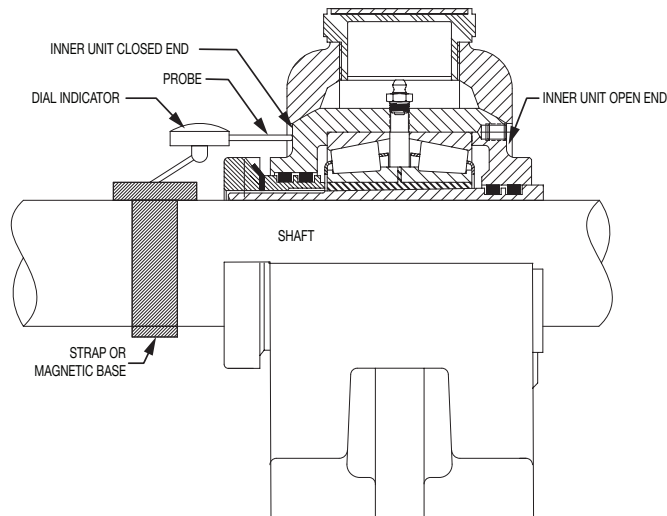


Figure 4

Table 1 - Recommended Tightening Torques

Pillow Block Size	Hold-Down Bolts	Cap Bolts		
		Quantity	Size	Torque (ft-lbs)
1-3/8 – 1-3/4 NE	2	2	1/2–13	50
1-3/8 – 1-3/4 Exp.	2	4	3/8–16	20
1-7/8 – 2-1/4 NE	2	2	5/8–11	55
1-7/8 – 2-1/4 Exp.	2	4	1/2–13	50
2-3/8 – 3 NE	2	2	3/4–10	100
2-3/8 – 3 Exp.	2	4	5/8–11	55
2-3/8 – 3 NE & Exp.	4	2	3/4–10	100
3-3/16 – 3-1/2 NE	2	2	7/8–9	175
3-3/16 – 3-1/2 Exp.	2	4	3/4–10	100
3-3/16 – 3-1/2 NE & Exp.	4	2	7/8–9	175

Flange Size	Cap Bolts		
	Quantity	Size	Torque (ft-lbs)
1-3/8 – 1-3/4	2	1/2–13	50
1-7/8 – 2-1/4	2	5/8–11	100
2-3/8 – 3	2	3/4–10	175
3-3/16 – 3-1/2	2	7/8–9	175

Table 2- Total Indicator Runout (TIR)

Shaft Size (in.)	TIR (in.)
1-3/8 through 1-1/2	0.0035
1-9/16 through 1-3/4	0.0040
1-7/8 through 2	0.0045
2-1/8 through 2-1/4	0.0040
2-3/8 through 2-1/2	0.0055
2-5/8 through 3	0.0060
3-3/16 through 3-1/2	0.0075

## REMOVAL INSTRUCTIONS

1. Unlock adapter nut by bending out prong of adapter nut lock washer.
2. Loosen hold-down bolts. Block up shaft if possible to remove weight from bearing.
3. Loosen adapter nut about one turn, and hammer on end of nut to drive adapter through bore of inner ring. Repeat until adapter has expanded enough so bearing can be removed from shaft. Use a soft hammer or block to prevent denting.

## UNIT REPLACEMENT INSTRUCTIONS

1. Remove bearing from shaft per removal instructions.
2. Match mark cap and base of each outer housing before removing cap.
3. Fit each unit to its outer housing before putting on shaft.
4. Add or remove shims between cap and base as required to obtain "snug" fit of unit in outer housing with cap bolts drawn down securely. See Table 1 for tightening torques.
5. Check fit by prying against lubrication stud in unit through the lubrication hole in housing cap with a screw driver or small pinch bar depending upon the size of the pillow block.
6. The "snug" fit becomes a matter of judgment. A "loose or sloppy" fit may allow a unit to move in its outer housing thus wearing the mating surfaces. Too "tight" a fit will not allow the unit to move and compensate for misalignment and for shaft deflection caused by belt pull and dead weight.
7. When reassembling pillow blocks, make sure match marks (step 2) on caps and bases match.
8. Install bearing on shaft per instructions.

## LUBRICATION INSTRUCTIONS

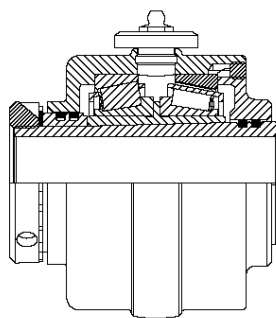
**Storage or Special Shutdown**—If exposed to wet or dusty conditions or to corrosive vapors, extra protection is necessary: Add grease until it shows at the seals; rotate the bearing to distribute grease; cover the bearing. After storage or idle period, add a little fresh grease before running.

**High Speed Operation**—In the higher speed ranges too much grease will cause overheating. The amount of grease that the bearing will take for a particular high speed application can only be determined by experience — see "Operating Temperature." If excess grease in the bearing causes overheating, it will be necessary to remove grease fitting (also drain plug when furnished) to permit excess grease to escape. The bearing has been greased at the factory and is ready to run. When establishing a relubrication schedule note that a small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals.

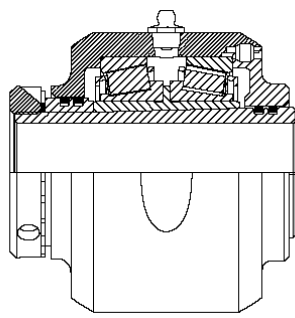
**Operation in Presence of Dust, Water, or Corrosive Vapors—**

Under these conditions the bearing should contain as much grease as speed will permit, since a full bearing with consequent slight leakage is the best protection against entrance of foreign material. In the higher speed ranges too much grease will cause overheating— see “High Speed Operation” above. In the lower speed ranges it is advisable to add extra grease to a new bearing before putting into operation. Bearings should be greased as often as necessary (daily if required) to maintain a slight leakage at the seals.

**Normal Operation—**This bearing has been greased at the factory and is ready to run. Table 2 is a general guide for relubrication. However, certain conditions may require a change of lubricating periods as dictated by experience. See “High Speed Operation” and “Operation in Presence of Dust, Water or Corrosive Vapors” above.



**Figure 5 -  
Expansion Type**



**Figure 6 -  
Non-Expansion Type**

**Table 3 - Suggested Lubrication in Weeks**

Hours Run per Day	1 to 250 RPM	251 to 500 RPM	501 to 750 RPM	751 to 1000 RPM	1001 to 1500 RPM	1501 to 2000 RPM	2001 to 2500 RPM	2501 to 3000 RPM
8	12	12	10	7	5	4	3	2
16	12	7	5	4	2	2	2	1
24	10	5	3	2	1	1	1	1

**Operating Temperature—**Abnormal bearing temperature may indicate faulty lubrication. Normal temperature may range from “cool to warm to the touch” up to a point “too hot to touch for more than a few seconds,” depending on bearing size and speed, and surrounding conditions. Unusually high temperature accompanied by excessive leakage of grease indicates too much grease. High temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. Normal temperature and a slight showing of grease at the seals indicate proper lubrication.

**Kind of Grease—**Many ordinary cup greases will disintegrate at speeds far below those at which Dodge bearings will operate successfully if proper grease is used. Dodge bearings have been lubricated at the factory with an NLGI #2 lithium complex base grease. Relubricate with lithium or lithium complex base grease, or a grease which is compatible with the original lubricant and suitable for roller bearing service. In unusual or doubtful cases the recommendation of a reputable grease manufacturer should be secured.

**Special Operating Conditions—**Refer acid, chemical extreme or other special operating conditions to Dodge Bearing Engineering, Greenville, South Carolina at 864-284-5700.

Successful operation is dependent upon adequate lubrication. Precaution should be taken during handling and recycling grease, oil or water glycol mixtures.

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