

DODGE® INSTRUCTION MANUAL

for Type K and DOUBLE-INTERLOCK® Pillow Blocks & S-1 Units

These instructions must be read thoroughly before installation or operation.

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.

FITTING OR REPLACING A UNIT IN A PILLOW BLOCK

- Up to 5" bore, match marks have been stamped on the mating faces of the cap and base of each outer housing. Over 5" bore match mark cap and base of each outer housing before removing cap. When reassembling pillow block make sure match marks on cap and base match.
- Lubricate bearing seat on the cap and on the base of the outer housing with an anti-seize compound.
- Fit each unit to its outer housing before carrying out step 7. Place the unit in the pillow block base and install cap. Tighten cap bolts to specified torque in Table 1.

**Table 1 – Cap Bolt Torque
(Non-Expansion & Expansion)**

Bore Size (In.)	2 Bolt Base		4 Bolt Base	
	Bolt Size	Torque Ft.-Lbs.	Bolt Size	Torque Ft.-Lbs.
1-3/16 – 1-11/16	3/8 – 16	24 – 30	—	—
1-15/16 – 2-3/16	7/16 – 14	40 – 50	—	—
2-7/16 – 2-1/2	1/2 – 13	60 – 75	1/2 – 13	60 – 75
2-15/16 – 3	5/8 – 11	120 – 150	5/8 – 11	120 – 150
3-7/16 – 3-1/2	3/4 – 10	208 – 260	3/4 – 10	208 – 260
3-15/16 – 4	—	—	3/4 – 10	208 – 260
4-7/16 – 4-1/2	—	—	7/8 – 9	344 – 430
4-15/16 – 5	—	—	1 – 8	512 – 640
5-7/16 – 6	—	—	1 – 8	512 – 640
6-7/16 – 7	—	—	1 – 8	512 – 640

- Add or remove shims between cap and base as required to obtain "snug" fit of unit in outer housing with cap bolts tightened to specified torque in Table 1.
- Check fit by prying against lubrication stud in unit through the lubrication hole in housing cap with a screwdriver or small pinch bar depending upon the size of the pillow blocks.
- The "snug" fit becomes a matter of judgment. A "loose or sloppy" fit may allow a unit mount 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.

WARNING: Because of the possible danger to persons(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.

- Install bearings per installation instruction on following pages.

TABLE 2: Set Screw Torque

Size	In.-Lbs.
5/16	165
3/8	290
1/2	620
5/8	1325
3/4	2150
7/8	5130

INSTALLATION INSTRUCTIONS

(Medium Speed, Normal & Heavy Load)*

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.

- Clean shaft and bore of bearing. Lubricate with light oil.
- Slip bearing in position noting step 3.
- Expansion Bearing:** Loosen cap bolts in outer housing a little so inner unit is free to align in outer housing. Outer housing shims provide a proper fit and must not be removed. Bolt outer housing to support. For heavy loads, use grade 8 base bolts.* Expansion type outer housings should be located so inner unit can move freely in either direction.
- Non-Expansion Bearings:** Loosen cap bolts in outer housing a little so inner unit is free to align in outer housing. The hold-down bolts should be loose in the bolt holes. If the bolts are tight in bolt holes, the unit should be moved slightly on the shaft to provide looseness. This will help prevent preloading or inducing an initial thrust on bearings. Tighten nuts on holddown bolts. For heavy loads, use grade 8 base bolts.*
- Tighten set screws to the torque values shown on Table 2.
- Turn shaft several revolutions, or run shaft, if feasible and safe, to allow alignment of inserts in their respective housings. Retighten cap bolts of both the expansion and the non-expansion outer housing to recommended torque in Table 1. Outer housing shims provide a proper fit and must not be removed.
- The effort required to turn the shaft should be the same before and after bolting bearings to the support.

* Defined in the DODGE Engineering Catalog

INSTALLATION INSTRUCTIONS (High Speed and/or Light Load)

Use this procedure for mounting pillow block bearings on horizontal or vertical applications, operating at high speed (above 75% of rated speed) or under light load (less than 2% of Dynamic Capacity).

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.



1. Shaft must be clean, free of burrs and lubricated. File nicks from housing bases.
2. Loosen setscrews (52) in collar (50) and slide bearings on shaft. If force is necessary, tap inner race only with a light drift. For vertical applications, locate adjusting nut (24) on bearing so nut faces upward.
3. Loosen housing cap bolt nuts one (1) turn.
4. Position expansion (floating) pillow block on mounting surface and tighten base hold-down bolts.
5. Position non-expansion (fixed) pillow block in correct relation to shaft and mounting surface. Tighten base holddown bolts, then torque setscrews (52) in collar per Table 2.
6. Mount a dial indicator on the shaft near the nonexpansion (fixed) bearing. Place the indicator probe so that it contacts the machined surface of the S-1 Unit Housing (12) perpendicular to that surface. See sketch below. Only one face of the S-1 Unit is a machined face.

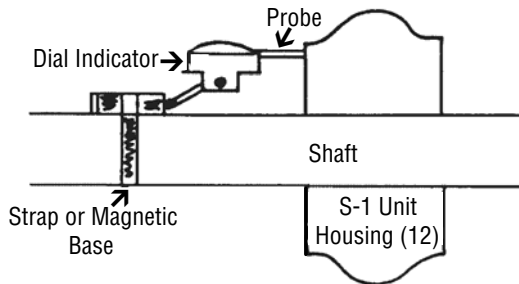


Figure 1

7. Zero the indicator and sweep the machined face 360°, noting the total indicator turnout (TIR).
8. If the TIR is less than or equal to the value shown on Table 3, tighten the housing cap bolts per Table 1.
9. If the TIR is greater than shown on Table 3, gently tap the machined face of the S-1 housing until the TIR is less than or equal to the value shown on Table 3. Then torque the housing cap bolts per Table 1. Sweep machined faces again to verify that the TIR is still less than or equal to the value shown on Table 3.
10. The non-expansion (fixed) bearing is now installed. Move to the expansion (floating) bearing.
11. Locate expansion unit in center of its axial travel or at extreme if maximum expansion is required (do not preload stop pin) and torque collar setscrews (52) per Table 2.
12. Do not install external grease fittings until completion of final steps below.
13. Torque setscrews of expansion unit (Table 2).
14. Repeat Steps 6, 7, 8 and 9 for the expansion bearing.
15. The expansion (floating) bearing is now installed.

Table 3: Total Indicator Run-out (TIR)

Shaft Size (Inches)	TIR (Inches)
1-3/16 – 1-7/16	0.0030
1-1/2 – 1-11/16	0.0035
1-3/4 – 2	0.0040
2-3/16	0.0040
2-1/4 – 2-1/2	0.0045
2-11/16 – 3	0.0055
3-3/16 – 3-1/2	0.0065
3-15/16 – 4	0.0070
4-7/16 – 4-1/2	0.0080
4-15/16 – 5	0.0085

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. During long idle periods, rotate shaft at least once a month.

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” below. 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.

Average Operation — This bearing has been greased at the factory and is ready to run. The following table 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.

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 slight showing of grease at the seals indicate proper lubrication

Table 4: Lubrication Guide
Read Preceding Paragraphs Before
Establishing Lubrication Schedule

Hours Run per Day	Suggested Lubrication Period In Weeks				
	1 to 250 RPM	251 to 500 RPM	501 to 750 RPM	751 to 1000 RPM	1001 to 1500 RPM
8	12	12	10	7	5
16	12	7	5	4	2
24	10	5	3	2	1

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 No. 2 consistency lithium complex-base grease which is suitable for normal operating conditions. Relubricate with lithium complex-base grease or a grease which is compatible with original lubricant and suitable for roller bearing service. In unusual or doubtful cases the recommendation of a reputable grease manufacturer should be secured.

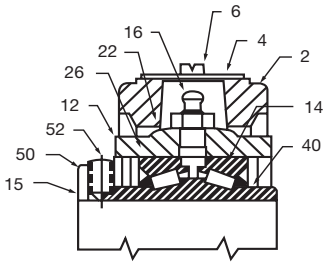
Special Operating Conditions — Refer acid, chemical, extreme or other special operating conditions to Baldor Electric Co.

Table 5: Replacement Parts (Type K and DOUBLE-INTERLOCK) Bearings

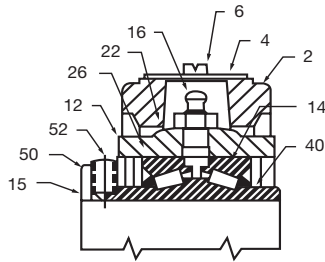
Reference	Name of Part	Req'd for One Assy			Part Numbers for Various Shaft Sizes							
		N.E Pil. Blk.	Exp Pil. Blk.	S-1 Unit	1-3/16 1-1/4	1-3/8 1-7/16	1-1/2 1-5/8 1-11/16	1-3/4 1-7/8 1-15/16, 2	2-3/16	2-1/4 2-7/16 2-1/2	2-11/16 2-3/4 2-15/16, 3	
2	Pillow Block Housing 2 bolt Non-Expansion (K/DI)* 2 bolt Expansion (K/DI) * 4 bolt Non-Expansion (K/DI)* 4 bolt Expansion (K/DI)*	1 - 1 -	- 1 - 1	- - - -	056130 056100 - -	056132 056102 - -	056134 056104 - -	056136 056106 - -	056138 056108 - -	056140 056110 060745 060746	056142 056112 060747 060748	
4	Lubrication Cover/Nameplate K/DI Expansion	- 1	- -	- -	405942	405942	405942	405942	405942	405942	405942	
	K/DI Non- Expansion	2	2	-	405941	405941	405941	405941	405941	405941	405941	
6	Lubrication Cover Screw	2	2	-	405943	405943	405943	405943	405943	405943	405943	
†	Housing Shim .005" Thick .007" Thick	2 2	2 2	- -	427890 427891	427893 427894	427896 427897	427899 427900	427902 427903	427905 427906	427908 427909	
12	S-1 Unit Housing (only)	1	1	1	056120	060430	060431	060432	060433	060434	060435	
14	Cup	2	2	2	390748	390751	390755	403006	390762	390766	390771	
16	Lubrication Fitting	1	1	1	405015	405015	405015	405015	405015	405015	405015	
18	Lubrication Stud	1	1	1	-	405010	405010	405010	405010	405010	405010	
26	Snap Ring	1	1	1	401002	401004	401008	401012	401016	401020	401024	
	Seal, Single Lip	2	2	2	061355	061356	061357	061358	061359	061360	061361	
50	Drive Collar (65° Set Screw Angle) •	+	+	+	060944	040050	040051	040052	040053	040054	040055	
52	Drive Collar Screw ▲	+	+	+	400054	400058	400058	400094	400094	400094	400150	

Reference	BRG Type	Name of Part	Req'd	Part Numbers for Various Shaft Sizes								
				1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-11/16	1-3/4	1-7/8
15	Type K DI	Cone	1 1	389760 389782	389761 389783	389762 389784	389763 389785	389764 389786	389765 389787	389766 389788	389767 389789	- 389790
15	Type K DI	Shaft Size	1-15/16	2	2-3/16	2-1/4	2-7/16	2-1/2	2-11/16	2-3/4	2-15/16	
		Cone	1 1	389768 389791	389769 389792	389770 389793	389771 389794	389772 389775	389773 389796	389774 389797	389775 389798	389776 389799
15	Type K DI	Shaft Size	3	3-3/16	3-1/4	3-7/16	3-1/2	3-15/16	4	4-7/16	4-1/2	
		Cone	1 1	389777 389800	389778 389801	- 389802	389779 389803	389779 389804	389781 389805	- 389806	- 389807	- 389808
15	DI	Shaft Size	4-15/16	5	5-7/16	5-15/16	6	6-7/16	6-1/2	6-15/16	7	
		Cone	1	389809	389810	391826	391826	391826	391828	391828	391828	391828
20	DI	-	-	-	-	059960	059961	059962	059963	059964	059965	059966

1 3/16" & 1 1/4" Type K

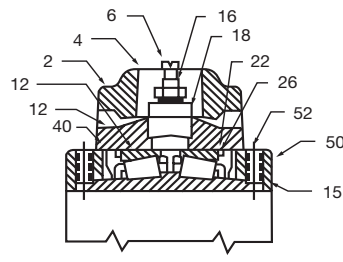


Expansion Type

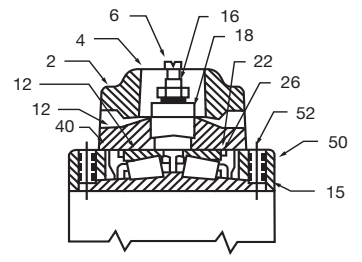


Non-Expansion Type

1 3/16" thru 3" Double-Interlock

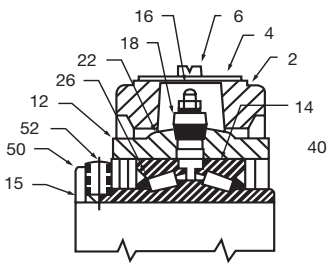


Expansion Type

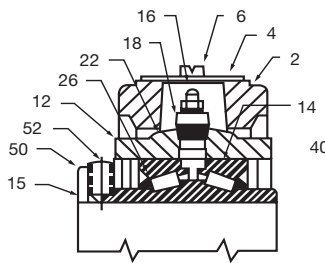


Non-Expansion Type

1 3/8" thru 3" Type K

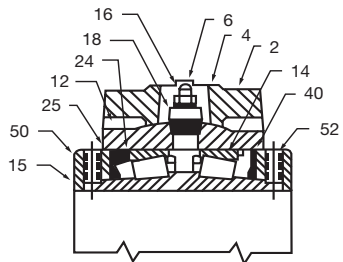


Expansion Type

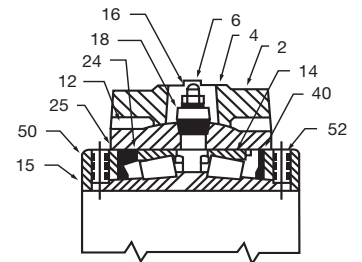


Non-Expansion Type

1 3/16" thru 5" Double-Interlock

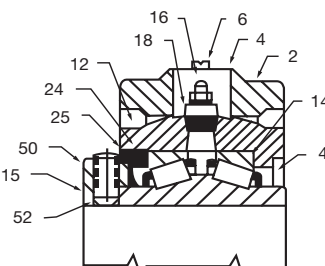
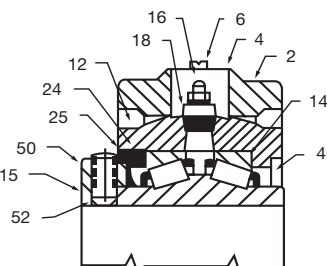


Expansion Type



Non-Expansion Type

1 3/16" thru 3 15/16" Type K



5 7/16" thru 7" Double-Interlock

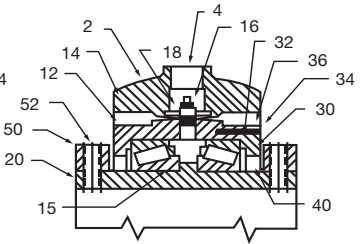
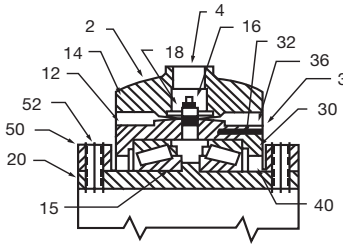


Figure 2: Replacement Parts for (Type K and DOUBLE-INTERLOCK) Bearings



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