INSTRUCTION MANUAL FOR 1-11/16" thru 3-7/16" SLEEVOIL® Plain-Water Cooled Pillow Blocks

These instructions must be read thoroughly before installation or operation.

INSTALLATION:

1. Check **mounting structure** making sure it is rigid, level and well supported. Inspect shaft to insure it is smooth (32 micro-inch finish or better), within commercial tolerances and free of burrs or rough spots.
2. Disassemble and thoroughly clean all parts of the pillow block, Housing caps and liner caps are matched to their bases and should not be interchanged. Housing and liners should be interchanged as assemblies only.

WARNING: Rust preventatives and solvents can be toxic and/or flammable. Follow directions and safety procedures recommended by their manufacturers.

ATTENTION: Liner assembly has critical machines surfaces which are easily damaged. Use care in handling to protect these surfaces. Liner parts should be placed on a soft, CLEAN surface.

3. Position **housing base** on pedestal so that oil gauge is in the position specified on the construction drawing. **Do not tighten housing base to pedestal**. Apply oil to the spherical seats in the housing base.
4. Set liner base in housing base and apply oil to liner bearing surface.

ATTENTION: Care should be taken when reinstalling coolant pipes. Use pipe sealant and tighten securely. Over tightening may result in liner damage.

5. Apply oil to **shaft** in the bearing area and set shaft in place.
6. **Check alignment** of pillow block by noting clearance between housing and shaft at each end of the housing—clearance should be uniform within 1/32". Shim bearing pedestal where possible, otherwise use full length shims under base as required. Alignment of pillow block should be as accurate as possible. The self-alignment feature of the unit is to compensate for normal shaft deflection and possible setting of the supports.
7. Place **oil rings** around outside of lower liner and over shaft. Peen screws to insure that they are secure. Make sure rings rotate freely on shaft.
8. **Thrust Collars**, to be used in a fixed unit, should now be installed. Remove clamp screws from **thrust collars** and clean cracked joint with wire brush. Back off set screws to clear inside of collar. Place one collar half on shaft so shaft flinger groove is next to liner base in the non-expansion (fixed) bearing. Rotate collar half around shaft and place other half in position. Bring halves together at joint, making sure match at joint is perfect and insert clamp screws. There should be no offset at collar face. Tap halves together and tighten (Soc Hex) clamp screws alternately and evenly to torque specified in Table 2. Repeat above operation for opposite end of bearing. **Assemble two collars on one bearing only**. Tap collar up to face of lower liner allowing a total clearance of .006"–.012" on sizes 1–11/16" and 1–15/16", and .008"–.014" on sizes 2–3/16" through 3–7/16", then tighten (Soc Hex) set screw to torque specified in Table 2. Collar should run parallel to end face of liner within .002".
9. Apply oil to bearing surface of **liner cap**. Locate cap in place on lower liner making sure oil ring is free to rotate.

   The Sleevoil liners 1-11/16" thru 3-7/16" have upper halves that are normally reversible on the lower half. By design, they are not doweled together and therefore not match-marked.

   Two modifications which require match-marking of these 'PL-WC' liners, 1-11/16" thru 3-7/16" are:

   - **When using full (Type II) Bronze Thrust Plates**: Since liners are doweled together and machined as an assembly, care must be used to insure match marks are adjacent to each other and identical. The match marks will be on the Bronze Thrust Plate halves for b.t.p. face squareness after machining. Since the liner halves are doweled together, a liner with Type II Bronze Thrust Plates is rigid and does not allow the upper half to self-align to the plunger screw. To compensate for this loss of self-alignment, a special plunger screw washer is required. This special loose washer must be positioned on the upper liner spherical seat and under the plunger screw to insure alignment of liner bore to shaft in operation.
   - **When Liners Have a Cylindrical Bore**: Since the location of the bore centerline to the liner dowels is then rigidly fixed, an upper liner reversed on a lower or interchanged halves from two different liners can severely change the **clearances** between shaft and liner bore.
10. Tighten **housing base** to pedestal. Torque bolts to value given in Table 3. Shaft should rotate freely.
11. Thread **dust seal** and **seal spring** into groove at end of housing base and around shaft. Hook ends of spring together; taking care not to overstress spring when stretching. Permanent set can cause loss of working load and looseness on shaft; resulting in oil leakage during operation. For size **3-7/16"** thread dust seal and seal retainer into groove at end of housing base and around shaft. Slide free end of seal retainer thru clasp and pull tightly. Hold clasp with screwdriver and pull free end of retainer as tightly as possible with pliers. If tightened properly, it will be difficult to move seal sideways. Cut off excess material, and discard it so it won't drop in housing bottom. If unit is furnished with auxiliary seals, install a second seal on each end.

    If using End Closure, neoprene discs should be installed at this time. **Consult construction drawing for type of seal recommended**.
12. Apply Gasket Eliminator to Sleevoil housing base along outer contour of joint. Loosen plunger screw and locate housing cap on base taking care not to damage dust seals or housing gasket. To reduce chances for leakage, a non-hardening sealant may be used under cap bolts. Torque housing bolts to value given in Table 4. **The plunger screw must be loose until the housing bolts have been tightened**.

    These Sleevoil 'PL-WC' housings have match marks permanently stamped on the water grommet pad starting in June 1988. These match marks permanently insure that parts stay paired and critical orientation of assemblies is maintained.

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.

DODGE®

Cap Loaded Bearings: Shaft must be held down to install cap, tighten plunger screw to recommended torque given in Table 4 with shaft held down. Mark position of plunger screw. Loosen plunger screw one complete turn and loosen shaft hold down. Then tighten plunger screw while tightening shaft hold-down until plunger screw is tightened to the mark. Do not over-tighten shaft hold-down as this can misalign the bearing. Remove shaft hold-down and tighten plunger screw locknut.

NOTE: Do not tighten plunger screw on accompanying base loaded bearing until cap loaded bearing has been installed and hold-down removed.

Base Loaded Bearings: Tighten plunger screw to recommended torque given in Table 4 and tighten locknut.

13. The **oil level gauge** may be located any distance from the pillow block by the use of a coupling and pipe of the desired length. The extended pipe must be supported so that it remains straight and perfectly level. Use a spirit level—do not guess. Use pipe sealer on all connections.

    IMPORTANT: Check and re-torque plunger screw to the specified torque after 24 hours of initial start-up and then check and retorque periodically as required.

14. Remove all pipe plugs and flush liner bore and housing thoroughly with solvent or cleaner. Reinstall pipe plugs using pipe sealer. Tighten securely.
15. Each housing base has predrilled holes for doweling bearing to base plate.

LUBRICATION and OPERATION

Since the satisfactory operation of the pillow block depends almost entirely on the oil film being maintained between the shaft and liner bearing surface, it is recommended that a high grade straight mineral oil with rust and oxidation (R & O) inhibitors and anti-foam agents be used. Check equipment specifications for specific recommendations of oil viscosity by equipment manufacturer. Oil viscosity is determined by the equipment manufacturer and normally specified on the construction drawing or in the operating manual. Otherwise, see Table 1. Information regarding qualities and properties of specific oils should be referred to the lubricant manufacturer.

TABLE 1—Recommended Oil Viscosity
If not specified by equipment manufacturer.

Ambient Temp. Fahr. During Start Up	Speed	SAE/ISO Oil Required
Below -10º	All	Consult Equipment Manufacturer
-10º to 32º	All	SAE, 10/ISO32
32º to 70º	Low High Low	SAE 20/ISO68 SAE 10/ISO32 SAE 30/ISO100
Above 70º	High	SAE 10/ISO32 for Light Loads SAE 20/ISO68 for Heavy Loads

Use high grade, high quality, well refined petroleum oils of the straight mineral type, with rust and oxidation inhibitor and anti-foam agent only.

Table 2

SLEEVOIL Size Standard	Oil Cap. Fl.-Oz.	COLLAR			
		CLAMP SCREW		SET SCREW	
		Screw Size (Soc Hex)	Wrench Torque (In.-Lbs.)	Screw Size (Soc Hex)	Wrench Torque (In.-Lbs.)
1-11/16	8	1/4–20NC	160	5/16–18NC	140
1-15/16	8	1/4–20NC	160	5/16–18NC	140
2-3/16	10	5/16–18NC	325	7/16–14NC	350
2-7/16	15	5/16–18NC	325	7/16–14NC	350
2-11/16	18	3/8–16NC	580	1/2–13NC	600
2-15/16	18	3/8–16NC	580	1/2–13NC	600
3-7/16	33	1/2–13NC	1425	5/8–11NC	1200

Approximate viscosity:

SAE 10–183 SUS at 100ºF; 46 SUS at 210ºF
SAE 20–348 SUS at 100ºF; 57 SUS at 210ºF
SAE 30–489 SUS at 100ºF; 65 SUS at 210ºF
ISO32 -158 SUS at 100ºF; 44 SUS at 210ºF
ISO68 -335 SUS at 100ºF; 55 SUS at 210ºF
ISO100–495 SUS at 100ºF; 66 SUS at 210ºF

Fill the pillow block with oil to the top of the center circle in the oil gauge. After placing into operation, remove inspection covers and check to make sure oil rings are bringing up oil. Operation should be checked frequently during the first few days. After some running of base loaded bearings only, loosen plunger screw 1/4 turn, then retighten as specified. This will allow the liner to align with the shaft. For cap loaded bearings, follow installation procedure. If noise develops, check alignment of housing, collar runout, plunger screw and all operating parts. Check all points and make sure all screws and nuts are tightened after several days operation. Maintain oil level above bottom of center circle at all times while unit is in operation.

Oil Maintenance Schedule

Drain, flush, and refill with oil after 2 to 3 weeks of initial break-in operation. Since the satisfactory operation of the bearing depends entirely on an oil film being maintained between the shaft and the bearing liner surface, it is recommended that an oil analysis be performed at these regular intervals.

- Every 3 months for 24 hour/day service
- Every 6 months for 8 hour/day service

Acceptability of oil should be referred to the lubricant manufacturer. If oil quality is acceptable then repeat this procedure in 3 month intervals. Visually check oil for contamination between oil analysis checks. Oil service life depends upon several factors such as ambient conditions, operating temperature and frequency of bearing starts and stops. It is recommended that the oil be changed at least once per year for unfiltered static applications. Removing contaminants through the use of either the OLF (Oil Level and Filtration) Unit or a circulating oil system can extend oil service life. Consult equipment manufacturer for more information.

Oil film temperature in liner during operation should not exceed 180ºF. If in doubt, consult equipment manufacturer.

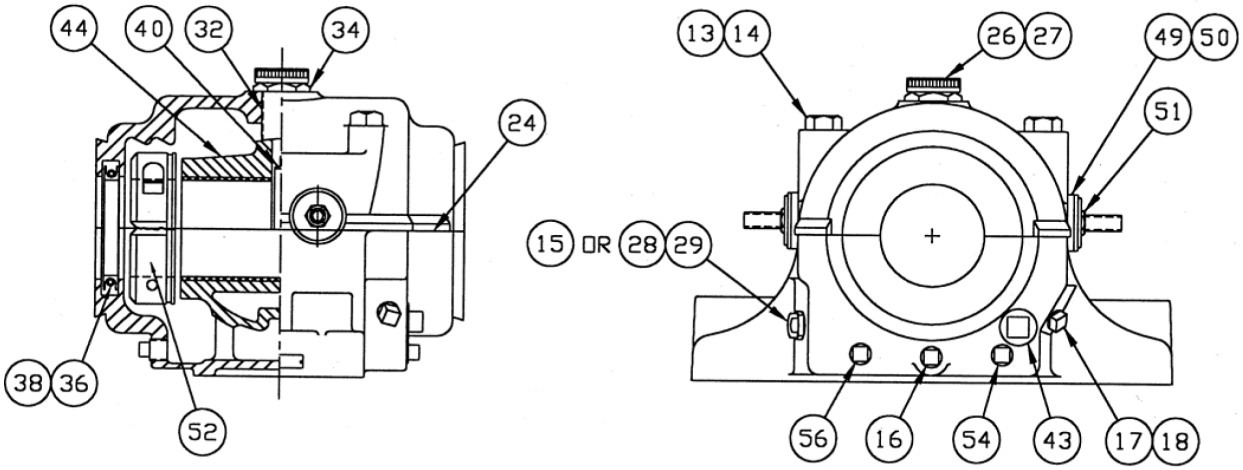
Any question on installation, maintenance, or arrangement of coolant connection inlets and outlets should be referred to the original equipment manufacturer.

Table 3

SLEEVOIL Size Standard	HOUSING/PEDESTAL BOLTS	
	Thread Size	Torque (In-Lbs)
1-11/16 1-15/16	5/8 5/8	1200 1200
2-3/16 2-7/16	3/4 3/4	2100 2100
2-11/16 2-15/16	7/8 7/8	2040 2040
3-7/16	3/4	2100

Table 4

SLEEVOIL Size Standard	PLUNGER SCREW		HOUSING CAP BOLTS	
	Wrench Size (Soc Hex)	Torque (In-Lb)	Thread Size	Torque (In-Lb)
1-11/16 1-15/16	5/8 5/8	300 300	7/16–14 7/16–14	360 360
2-3/16 2-7/16	5/8 5/8	350 400	1/2–13 1/2–13	600 600
2-11/16 2-15/16	5/8 5/8	450 450	5/8–11 5/8–11	1080 1080
3-7/16	5/8	500	3/4–10	1920



Reference	Name of Part	No. Reqd.	Part Numbers						
			1-11/16	1-15/16	2-3/16	2-7/16	2-11/16	2-15/16	3-7/16
	Non. Exp. Pillow Block	1	134215	134216	134217	134218	134219	134220	134221
	Exp. Pillow Block	1	132984	132985	132986	132987	132988	132989	132990
	Modular Housing	1	132941	132942	132943	132944	132993	132994	132996
	Housing Machining①	1	133845	133848	133851	133854	133857	133860	133863
13	③ Housing Bolt	4	411439	411439	411112	411113	411117	411147	411186
14	③ Washer	4	419194	–	–	–	–	–	–
15	Oil Level Plug	2	430012	430012	430012	430012	430012	430012	430012
16	Drain Plug	2	430008	430008	430008	430008	430008	430008	430008
17	Thermcouple Plug	1	–	–	–	–	430012	430012	430012
18	Thermcouple Adapter Bush	1	–	–	–	–	430081	430081	430081
24	③ Gasket Eliminator	1	427359	427359	427359	427359	427359	427359	427359
26	Inspection Cover ⑦	1	405005	405005	405005	405005	405005	405005	405005
27	Nameplate	1	133267	133267	133267	133267	133267	133267	133267
28	Oil Gauge	1	430127	430127	430127	430127	430127	430127	430127
29	Oil Gauge Gasket	1	418110	418110	418110	418110	418110	418110	418110
32	Plunger Screw	1	422393	422393	422394	422395	422397	422397	422398
34	Plunger Screw Nut	1	133368	133368	133368	133368	133368	133368	133368
④	Seal Kit	1	389821	389822	389823	389824	389825	389826	389827
36	③ Dust Seal	2	133601	133602	133603	133604	133605	133606	132810
38	③ Seal Spring	2	133181	133182	133183	133184	133184	133185	133579
40	Oil Ring	1	130044	130045	130047	130049	130050	130051	130054
43	Circ Oil Drain Plug	1	–	–	–	–	–	–	430016
44	Liner Assembly②	1	133583	133584	133585	133586	132959	132950	132951
④	③ Brass Elbow	2	430068	430068	430068	430068	430068	430068	430068
46	③ Water Pipe	2	430158	430158	430162	430162	430162	430162	430162
49	Grommet	2	133021	133021	133021	133021	133021	133021	133021
50	Grommet Washer	2	133025	133025	133025	133025	133025	133025	133025
51	Grommet Nut	2	407254	407254	407254	407254	407254	407254	407254
④	Thermostat	2	–	–	–	–	–	–	133116
④	Heater	2	–	–	–	–	–	–	132835
④	Flex Water Hose Kit	1	133344	133344	133344	133344	133344	133344	133344
④	End Cover⑧	⑧	133981	133982	133983	133984	133985	133986	133987
④	Split End Plate ⑨	⑨	133124	133125	133126	133125	133128	133129	–
④	End Plate Cap Screw ⑥	4	417044	417044	417044	417044	417044	417044	–
④	Aux Dust Seal Kit	2	–	–	–	–	–	–	132811
④	Housing End Cap Kit	1	–	–	–	–	–	–	132542
52	Split Thrust Collar ⑤	2	133250	133255	133260	133260	133270	133275	133280
54	Thermostat Plug	1	–	–	–	–	–	–	430012
56	Heater Plug	1	–	–	–	–	–	–	430012

① Includes housing cap and base, and parts listed immediately below Housing Machining.
② Liner assembly includes liner cap and base, and parts listed immediately below.
③ The parts marked are furnished with the assemblies under which they are listed.
④ Not shown on drawing.
⑤ 2 required for non-expansion pillow blocks only
⑥ 4 required per end plate.
⑦ Nameplate must be ordered separately
⑧ Neoprene disc for use when desired, or installations where shaft does not extend through housing. 1 required, for size 1 7/16" to 2 15/16". 2 required for size 3 7/16".
⑨ Auxillary plate for bolting to one or both ends of housing where conditions are extremely dirty. Requires one additional dust seal and seal spring per end plate. Requires special matching on housing.

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