

Instruction Manual for Dodge® Sleeveoil® STL and SSL Pillow Blocks Size 14" Plain

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, lock out and tag out 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.

CAUTION: Do not scrape, rebabbitt or otherwise alter this product. Such action adversely affects bearing performance and may result in damage to or destruction of equipment.

INSTALLATION

All instructions in this manual pertain to both standard and short series (SS) pillow blocks with the exception of step 8 following which does not apply to SS style bearings.

1. Check **mounting structure** making sure it is rigid, level and well supported. Inspect shaft to ensure it is smooth (32 micro-inch finish or better) and free of burrs or rough spots. Standard shaft tolerance should be +0.000/0.002" unless otherwise specified on shaft detail.
2. **Disassemble and thoroughly clean all parts of the pillow block.** Housing cap and liner cap are matched to their bases and should not be interchanged. Housing and liner should be interchanged as assemblies only.

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

CAUTION: Liner assembly has critical machined 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.

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 failsafe device must be an integral part of the driven equipment beyond the speed reducer output shaft.

4. Note location of **thermocouple holes in liner base.** Set liner base in housing base so that thermocouple holes in housing align with holes in liner. Thermocouple holes in housing base are on side opposite to oil gauge holes (oil gauge side of housing base is marked "X"). Apply oil to liner bearing surface.
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 settling of the supports.
7. Place **oil rings** around outside of lower liner and over shaft. Tighten the screws and make sure rings rotate freely on shaft. Threadlocker can be used to ensure the screws don't back out.

Oil rings are shipped disassembled with 2 extra screws. **Oil ring halves are match-marked and MUST NOT be interchanged. "T-Section" oil rings should be replaced with upgraded "Trapezoidal Oil Rings". Part numbers are in parts list at end of manual.**

NOTE: If pillow block has been arranged for circulating oil, read section titled "Circulating Oil".

8. **Thrust collars in a fixed non-expansion unit should now be installed.** (Step 8 does not apply to short series (SSL) style pillow blocks, or shafts with integral collars.) 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 1/2-13 NC (Soc). HD clamp screws to recommended torque of 1425 in.-lbs. 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 running clearance of .015-.017, then tighten 7/8-9NC (Soc) set-screws to recommended torque of 4100 in.-lbs. Thrust collars do not apply to short series (SS) style. 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 rings are in their cavities and are free to rotate. Install and tighten cap screws to 2100 in.-lbs.
10. Tighten **housing base** to pedestal. Torque bolts to 15,000 in.-lbs.



11. Thread **dust seal** and **seal retainer** into groove at end of housing base and around shaft. Slide free end of seal retainer through clasp and pull tightly. Hold clasp and tighten as shown in Figure 1. Cut off excess material and break off clasp lip, discarding it so it won't drop in housing bottom. Seal retainer may be disengaged before installation by inserting a straightened paper clip **between the bands** at the clasp and pulling the free end of the retainer out of the clasp.

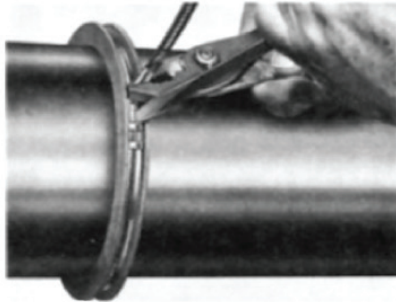


Figure 1 - Seal Retainer Installation

To properly tighten seal retainer, hold clasp stationery with a screwdriver, grasp free end of retainer with pliers and rotate pliers toward screwdriver.

Aluminum seals, when specified for the application, are packaged separately. When using aluminum seals, discard standard seals and seal retainers packaged with the housing. To install aluminum seals, first take O-ring (rubber cord), wrap it around the shaft in the seal area and cut it to fit the shaft. Disassemble one seal and place one half on shaft. Locate O-ring in seal groove and rotate seal half around shaft into housing base groove. Install other half of seal and tighten clamp screws. For most effective sealing, the ends of the O-ring must meet. Cementing ends together is recommended. Install other half of seal and tighten screws. Install second seal in same manner. If using End Closure, neoprene discs should be installed at this time. **Consult construction drawing for type of seal recommended.**

12. We have replaced SLEEVOIL housing gaskets with 515 Gasket Eliminator. Apply Gasket Eliminator to SLEEVOIL housing base along outer contour of joint. **Special care should be taken at grommet area.**

Back off plunger screw completely and locate housing cap on base taking care not to damage dust seals. Tighten housing bolts to 8330 in.-lbs. To reduce chances for leakage, a non-hardening sealant must be used under cap bolts. **The plunger screw must be loose until the housing bolts have been tightened.** Tighten plunger screw to 4800 in.-lbs.

These SLEEVOIL Housing have match-marks permanently stamped on the water pipe grommet pad. These match marks permanently insure that parts stay paired and critical orientation of assemblies is maintained.

Cap Loaded Bearings: If shaft must be held down to install cap, tighten plunger screw to recommended torque of 4800 in.-lbs. 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 of 4800 in.-lbs. and tighten locknut. Tighten housing cap bolts to 8880 in.-lbs.

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

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.
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 recommendation of oil viscosity by equipment manufacturer. Oil viscosity is determined by the equipment manufacturer and normally specified on the construction drawing

**Table 1 - Recommended Oil Viscosity
If not specified by equipment manufacturer**

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

ISO32 - 158 SUS at 100°F; 44 SUS at 210° F

ISO68 - 335 SUS at 100°F; 55 SUS at 210° F

ISO100 - 495 SUS at 100°F; 66 SUS at 210° F

NOTE: The recommended oil temperature at start-up is 70°F MINIMUM.

Low ambient and operating temperatures can be as harmful to the bearing as high temperatures. A heater and thermostat would be required for such applications.

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. 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.

Oil Maintenance Schedule

Maintain oil level above bottom of center circle at all times while unit is in operation. 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 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 180° F. If in doubt consult equipment manufacturer.

Table 2 - Oil Chart

Oil Volume ^① ^②		
Fluid Ounces	Quarts Approx.	Liters Approx.
704	22	20.82

① Volume of oil required to fill pillow block to top of center circle of oil gauge
 ② 32 fluid ounces = 1 quart = .94636 liters.

Options

Thermocouple or RTD. A thermocouple is used to sense the temperature of the pillow block liner in the shaft area, and these should be on every sleeveoil bearing. If a pre-set thermal limit is exceeded it can trigger a warning or, if desired, send a signal to disconnect electrical power to the motor.

Two 1/2-14 N.P.S.F threaded holes on the side opposite the oil gauge holes have been provided as a standard means of thermocouple mounting. Also finished with the pillow block is a 1/2" x 1/8" adapter bushing to allow adaption of thermocouples from several manufacturers. Spring loaded thermocouples are recommended for positive contact.

Install the thermocouple in the location shown on the construction drawing. Make certain the probe extends into the liner thermocouple hole. For non-expansion bearing, the thermocouple should be located in the hole nearest to the end carrying the thrust load. When the direction of the thrust load is not known, two thermocouples are recommended. For expansion bearings, the thermocouple can be located at either end. Depending on thermocouple and bearing size it may be necessary to employ a system of pipe nipples and couplings to achieve proper probe penetration and housing clearance. Use sealant on all threaded connections including thermocouple mounting thread. Apply sealant to the pipe plug furnished and install it in the other hole.

Thermostat and Immersion Heater. An immersion heater is used to maintain a minimum oil temperature in the pillow block. The thermostat, used in conjunction with the heater, monitors oil temperature in the pillow block and regulates the immersion heater.

If the pillow block has been machined for a heater and thermostat the threaded mounting holes are usually located in the end face of the housing base. Install heater and thermostat using sealant on all threaded connections to prevent oil leakage.

NOTE: Before filling and draining oil from pillow block be sure heater is off or it will overheat when not submerged in oil.

WARNING: When installing heater and thermoswitch, follow direction and safety procedures recommended by manufacturer. Install wiring in accordance with national electrical code and local codes.

Circulating Oil. The addition of a circulating oil inlet kit will allow the bearing to be cooled and lubricated by circulating oil. Please consult equipment manufacturer to determine if circulating oil is required. The circulating oil inlet pipes are directed towards the inspection holes in the liner.

Install oil supply lines to the 1/4" NPSF inlets so that each inlet will receive an equal amount of oil. Make sure that the oil flows from the pipes directly into the inspection holes. The drain pipings should be vented and must be of adequate size to remove the oil at the specified flow rate. The housing drain must be directed straight down into a return drain sloping away at 15° or greater angle. The oiling system should have a means of filtering the oil to remove any contaminating particles.

When baffles are installed in oil ring grooves of upper liner, oil rings cannot be used and should be discarded. Bend baffle so that free end rests on lower liner joint. If the housing drain is arranged to maintain the proper oil level and oil rings are specifically requested, then oil rings may be used as a safety measure or back-up oiling system without oil baffles.

End Closure Kits and Auxiliary Seal Kits are available and may be added at any time without any machining to the pillow block. Refer to the instructions packaged with the kits for installation details.

Pillow Block Material Details

Housing:	Class 30 Gray Cast Iron
Liner:	Class 30 Gray Cast Iron
Babbitt:	Lead or Tin Based Babbitt
Oil Rings:	Bronze
Seal:	HNBR with Stainless Steel Retainer
Aux. Seal:	HNBR with Stainless Steel Retainer
Oil Gauge:	Stainless Steel, Polypropylene
Hardware:	Carbon Steel
Plunger Screw:	Carbon Steel
Gasket Eliminator:	LOCTITE 515 Sealant

This Sleeveoil pillow block could contain lead in the bearing Babbitt material, please exercise proper precautions in the use, installation, dismantling and recycling of this unit.

Other Notes:

CAUTION: This product is not to be used for person moving applications.

NOTE: Care has been taken to keep instruction manuals accurate and timely. The most recent version of the instruction manual can be found on our website: www.dodgeindustrial.com

Weights:

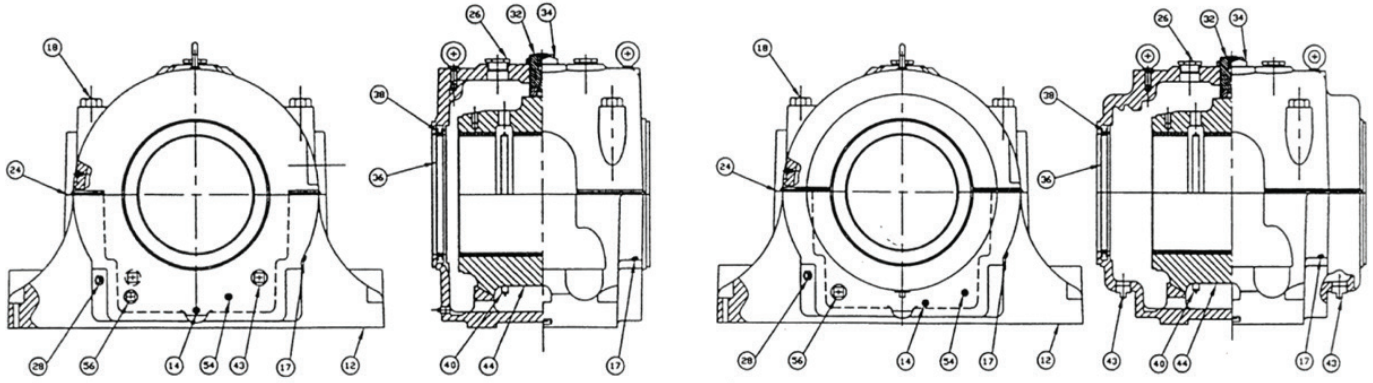
Table 4 - Weights (lbs.)

	Approximate Weights (lbs.)			
	STL Pillow Block	SSL Pillow Block	Collar (2 required)	Replacement Liner
14" Plain	3400	3000	75	1200

Parts for 14" Plain Sleeve Pillow Blocks

These SLEEVOIL Housings and SLEEVOIL Liners have nameplates attached identified by a six-digit part number which fully identifies the housing and/or liner. Liner nameplates are pinned to the SLEEVOIL liner cap near an oil ring inspection hole. Housing nameplates are pinned to the housing foot parallel to the shaft. Refer to these part numbers when ordering replacement parts. It is common for SLEEVOIL bearings to be modified at the factory. These modifications can only be identified by the original bearing part numbers.

NOTE: The two digit numbers are for reference only. Order parts by the six digit numbers in the Parts List. Each six digit number is a complete identification of the part or assembly.



ITEM	DESCRIPTION	NO. REQ'D	PART NUMBERS		ITEM	DESCRIPTION	NO. REQ'D	PART NUMBERS	
			STL	SSL				STL	SSL
	Expansion Pillow Block-Plain ①		431399	430561	34	Plunger Screw Locknut	1	133371	133371
	Modular Housing ②		134239	134243	36	Dust Seal Kit	2	389838	389838
18	Housing Bolt	4	411230	411230	36	②Dust Seal	2	-	-
③	Groove Pin	2	409133	409133	38	②Seal Retainer	4	-	-
24	Gasket Eliminator - 515	2	427359	427359	40	Trapezoidal Oil Ring	2	135736	135736
14	Drain Plug	1	430012	430012	44	Plain Liner Assembly	1	430831	430831
15	Oil Level Plug	2	430014	430014		② Liner Dowel	2	-	-
16	Circulating Oil Drain Plug	2	430018	430018		② Liner Cap Screw	4	-	-
17	Thermocouple Plug	2	430012	430012	52	④ Thrust Collar	2	431389	-
③	Thermocouple Adapter	1	430081	430081		Auxilliary Seal Kit	2	132822	132822
23	Inspection Cover	2	432199	432199		⑤ End Cap Kit	1	132567	132567
28	Oil Gauge	1	430135	430135	54	Thermostat/Accessory Plug	1	430012	430012
32	Plunger Screw Assembly	1	391607	391607		110V 740W Heater Thermostat Combo	1	434729	434729
					56	Heater Plug	1	430017	430017
						220V 740W Heater Thermostat Combo	1	434730	434730

① Expansion Pillow Block includes modular housing, hardware, liner, and oil rings. To turn an Expansion Pillow Block into a Non-Expansion Pillow Block, add two thrust collars. SSL-style bearings can only be used as expansion bearings.

② These parts make up the assemblies under which they are listed.

③ Not shown on drawing.

④ 2 required for non-expansion (fixed) pillow block. Includes all hardware required for mounting. Cannot be used with SSL Pillow Block.

⑤ Neoprene disc for use, when desired on installation where shaft does not extend through housing.

⑥ Liner assemblies include cap and base.

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