DODGE® SPLIT-SPHER™
Roller Bearings and Pillow Blocks

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see www.dodge-pt.com for updated instruction manuals.

WARNING: All products over 25kg (55 lbs) are noted on the shipping package. Proper lifting practices are required for those products.

The DODGE split spherical roller bearing is a unique precision product. In order to function correctly, it must be properly clamped on a clean, uniform shaft that is within the specified limits and adequately lubricated.

Preparation for Mounting

Leave bearing in protective wrapping until ready to assemble it on the shaft. Do not wash off the preservative coating; it protects the bearing and is compatible with standard lubricants.

NOTE: Inner and outer ring halves and roller assemblies are not interchangeable with other bearings. Notice markings on rings.

1. **Remove top half of housing.** Scribe mark the cap and base before removing cap to insure proper positioning when remounting.
2. **Raise shaft.** Either raise the shaft uniformly at least 1/32" or lower the bottom half of the housing by removing shims. **NOTE: Shaft must be firmly supported on each end.**
3. **Remove old bearing**
4. **Clean shaft and housing.** Shaft surface must be clean and dry. Remove any raised material or corrosion from the shaft. Clean housing bearing seat, housing mating surfaces, and if necessary, the seal grooves. If it is a fixed bearing, check condition of stabilizing ring.
5. **Inspect seals.** Carefully inspect each seal for wear. If necessary, remove old seals. Install new split seals after completion of Step 11.
6. **Measure shaft diameter.** See Table 1 for correct size, roundness and taper. If the shaft is not within the specified limits, it must be reworked.

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 nor are the responsibility of Baldor Electric. 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.

Table 1 - Recommended Tolerance Range for Shaft Diameters (S1)

Nominal Shaft Diameter (Inches)		Diameter Tolerance (Inches)	Roundness and Taper (Inches)
Over	Including		
2	4	+0-0.004	0.0007
4	6	+0-0.005	0.0008
6	10	+0-0.006	0.0011
10	14	+0-0.006	0.0011

7. **Unpack and disassemble bearing.** Unpack bearing and disassemble it by removing two shoulder screws from outer ring and four screws (two shoulder and two clamping) from inner ring.

   NOTE: Be sure to remember which side the shoulder screws came from. They must be replaced in their original positions.

8. **Assemble inner ring halves onto shaft.** Position the inner ring half with the threaded holes on the underside of the shaft. Prop it up against the shaft by hand (small bearings), by wooden wedges, or by nylon sling (large bearings). Position upper inner ring half so that both halves show the etched number on the same side. Apply light coating of Loc-Tite to the shoulder and clamping screws and reinsert into their original positions. Lightly hand tighten both inner ring halves on the shaft using a metric socket screw key provided with the bearings. See Figure 2. Using a rubber or rawhide mallet, tap down the inner ring all around the outside diameter to ensure complete seating of the ring halves on the shaft.

   NOTE: Do not torque up screws at this time.

9. **Insert outer ring half with threaded holes and reposition inner ring**. Place the outer ring half having threaded holes in the bottom of the housing. **For a floating bearing,** center the outer ring between the housing shoulders. **For a fixed bearing**, with one stabilizing ring, the outer ring half should be positioned tightly against the housing shoulder. Tap the inner ring halves along the shaft until they are centered over the positioned outer ring. Carefully insert the lower cage and roller halves between the raceways. If the cage assembly does not easily fit between the lower ring halves, then tap the inner ring axially to the proper position. Swivel out the cage assembly, hand pack full of grease, and reinsert.

BALDOR • DODGE®

Table 2 - Recommended Clamping Screw Tightening Torque						
Bearing Bore (Inches)	Torque (ft-lbs)		Socket Size (mm)		Screw Size (mm)	
	Inner Ring	Outer Ring	Inner Ring	Outer Ring	Inner Ring	Outer Ring
2-3/16	6	1.1	4	2.5	M5	M3
2-7/16 – 2-11/16	6	3	4	3	M5	M4
2-15/16 – 3-3/16	10	6	5	4	M6	M5
3-7/16	10	10	5	5	M6	M6
3-15/16 – 4-15/16	26	10	6	5	M8	M6
5-3/16 – 7-3/16	51	26	8	6	M10	M8
7-½ – 8	88	51	10	8	M12	M10
8-½ – 9	88	26	10	6	M12	M8
9-½	88	51	10	8	M12	M10
10	88	26	10	6	M12	M8
11 – 13	88	51	10	8	M12	M10
14	212	51	14	8	M16	M10

10. **Seat inner ring halves and tighten screws**. Using a rubber or rawhide mallet, tap inner ring halves all around to insure proper seating as in Step 8. Starting with one shoulder screw, apply half the recommended torque value shown in Table 2 to all four screws in the exact sequence shown below:

    1. Shoulder screw.
    2. Clamping screw, opposite side.
    3. Shoulder screw, diagonally opposite side.
    4. Clamping screw, opposite side.

    NOTE: This sequence forms a "z" pattern. See Figure 1.

    Again tap down the inner ring evenly on the circumference and tighten all four screws to the full torque, starting with screw No. 3 and going to No. 4, No. 1 and No. 2. See Figure 1.

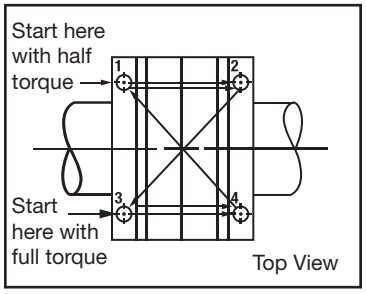

Figure 1

A tight fit of the inner ring on the shaft is necessary for satisfactory operation of bearing. There must be a gap on at least one side of the split joints. The best practice is to have an approximately equal gap on both sides of the split joints. See Figure 2.

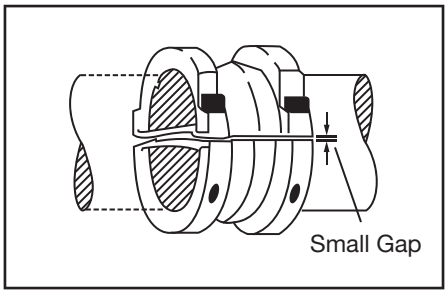

Figure 2

11. **Assemble remaining parts**. Place the remaining greased retainer half on top half of the inner ring. Put on upper half of outer ring. Be sure the matching numbers and notches line up.

    Position the upper half of the outer ring and tighten the two shoulder screws by hand. Make sure the outer ring is not binding on the rollers. Tighten screws with torque wrench to the values specified in Table 2.

    There must be **no** gap at the split joints of the outer ring.

    Again check to be sure the outer ring is not binding on the rollers. If this is a fixed bearing, snake the stabilizing ring into the pillow block.

    If old seals are acceptable, skip to Step 13

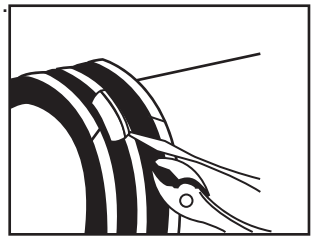

Figure 3

12. **Installation of split seal**. Position split seal into lower housing grooves. Position split at top of shaft. Thread tie-strap down thru large hole at one end of seal and up thru small hole on other half. With tie-head seated in the hole, draw tie across split, thru tie-head and pull tightly (Figure 3) so seal cannot rotate on shaft. Small gap should be present at split line once tight. Gap can be fixed with sealant to prevent leakage. Cut excess tie. If possible, rotate shaft slowly and position seal so it does not rub against housing grooves. At the same time apply grease to seal grooves.
13. **Complete lubrication.** Complete greasing of the bearing and housing as follows: Pack the bearing 100% full. Pack the lower half of the housing one-half full.
14. **Load bearing.**

    NOTE: Before loading the bearing, rotate the outer ring split line so that it is 90° away from the load zone. Load the bearing either by lowering the shaft and bearing assembly (remove jacks) or by raising the bottom half of the housing (add shims).

15. **Clean and assemble housing cap.** Clean the top half of the housing bore and seal grooves and apply a thin coat of oil at the split joint. Grease seal grooves. Make sure that seals are in place on the shaft and place the top half (cap) of the housing onto the bottom half. Align the scribe marks. The two dowel pins will align the cap with the base. Caps and bases of pillow blocks are not interchangeable; each cap and base must be assembled with its mating part. Insert cap bolts and tighten cap to base to torque values in Table 3.

    NOTE: For special operating conditions, consult DODGE engineering.

Table 3 - Recommended Torque Values for Cap and Base Bolts (ft-lbs.)			
Size	Grade 2 	Grade 5 	Stainless Steel
3/8 -16	16-20	24-30	12-15
7/16 -14	28-32	40-50	21-24
1/2 -13	40-50	60-75	30-38
5/8 -11	80-100	120-150	60-75
3/4 -10	140-175	208-260	105-131
7/8-9	135-170	344-450	101-128
1-8	200-250	512-640	150-188
1-1/8 - 7	280-350	632-790	--
1-1/4 - 7	400-500	896-1120	--

Lubrication

WARNING: Subsequent steps require rotating parts to be exposed. Stay clear if unit must be running or disconnect and lockout or tag power source if contact must be made. Failure to observe these precautions could result in sever bodily injury.

In order to properly protect bearings after installation, slowly purge at operating speed until fresh grease appears at both seals.

Select a grease with an operating temperature viscosity which will provide full film lubrication (see Table 4). Expect a 20° to 100°F temperature increase in the bearing. A small amount of grease at frequent intervals is preferable to a large amount of grease at infrequent intervals.

Table 4 - Grease Viscosity	
DN (In. Δ × rpm)	Viscosity for average loads (SUS @ operating temp.)
100	3500
500	2000
1000	900
2000	400
4000	200
8000	100
Δ Bore diameter	

For special applications involving high speeds, high temperatures or oil lubrication consult DODGE Engineering.

Table 5 - Regreasing Intervals (Months) (Based on 12 hours per day 150°F max.)						
Size	RPM					
	250	500	750	1000	1250	1500
2-3/16	7	5	3	2	1	1
2-7/16 - 3	6	4	3	2	1	0.5
3-3/16 – 3½	5	3	2	1	0.5	0.5
3-15/16 – 4½	4	3	2	1	0.5	0.25
4-15/16 – 5½	3	2	1	0.5	0.25	
5-15/16 – 7	2	1	1	0.5		
7-3/16 - 9	1	1	0.5			
10 –12	1	0.5				

P.O. Box 2400, Fort Smith, AR 72902-2400 U.S.A., Ph: (1) 479.646.4711, Fax (1) 479.648.5792, International Fax (1) 479.648.5895

Dodge Product Support

6040 Ponders Court, Greenville, SC 29615-4617 U.S.A., Ph: (1) 864.297.4800, Fax: (1) 864.281.2433

www.baldor.com

11/14 TCP 15,000