

Unisphere II Spherical Roller Bearings

Instruction Manual

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 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.

NON-EXPANSION BEARING

1. Clean shaft and bore of bearing. The shaft should be straight, free of burrs and nicks, and correct size (see Table 1). If used shafting is utilized, the bearing should be mounted on unworn section.

Table 1 - Recommended Shaft Tolerance

Nominal Shaft Size	Low to Normal Equivalent Loads and Catalog Speed	
Up to 1-½ Inches	+0.000 Inches	-.0005 Inches
Over 1-1/2 to 2-1/2 Inches	+0.000 Inches	-.0001 Inches
Over 2-1/2 to 4 Inches	+0.000 Inches	-.001 Inches
40–90 mm	+0.000 mm	-.025 mm

2. Lubricate shaft and bearing bore with light oil to facilitate assembly. Slip bearing into position. When light press fit is required, press against the end of the inner ring. Do not strike or exert pressure on the housing or seals.
3. Mount bearing to support, using shims where necessary to align bearing so inner ring does not rub on seal metal shield. Use full shims which extend across the entire housing base.
4. Determine final shaft position and tighten setscrews in locking collar of non-expansion bearing to recommended torque from Table 2 while the other bearing remains free. For normal thrust loads, shock loads, or vibration, the shaft should be spot milled to provide additional holding power. Under heavy thrust load applications it is advisable to use auxiliary thrust carrying devices such as shaft shoulder, snap rings or a thrust collar.

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.

5. Tighten housing bolts to torque listed in Table 5.

EXPANSION BEARING

1. Clean shaft and bore of bearing. The shaft should be straight, free of burrs and nicks, and correct size (see Table 1). If used shafting is utilized, the bearing should be mounted on unworn section.
2. Lubricate shaft and bearing bore with light oil to facilitate assembly. Slip bearing into position. When light press fit is required, press against the end of the inner ring. Do not strike or exert pressure on the housing or seals.
3. Mount bearing to support, using shims where necessary to align bearing so inner ring does not rub on seal metal shield. Use full shims which extend across the entire housing base.
4. Position expansion bearing in the housing. For normal expansion conditions, the bearing insert should be positioned in the center of the housing. To center bearing insert in housing, move bearing insert to extreme position and mark shaft. Then using bearing Table 3, move bearing insert in opposite direction one half the total expansion. If maximum expansion is required, move bearing insert to the extreme position in the housing to permit full movement in direction of expansion. After expansion bearing has been positioned in the housing, tighten the setscrews in the locking collar to the recommended torque found in Table 2.

Table 2 - Set Screw Torque Table

Shaft Size	Socket Set Screw Size	Tightening Torque
1-7/16 – 1-3/4 Inches	5/16 Inches	165 Inch-Pounds
1-7/8 – 2-1/2 Inches	3/8 Inches	290 Inch-Pounds
2-11/16 – 3-1/2 Inches	1/2 Inches	620 Inch-Pounds
3-11/16 – 5 Inches	5/8 Inches	1325 Inch-Pounds
40 – 45 mm	M8	17.8 Newton-meters
50 – 65 mm	M10	35 Newton-meters
70 – 90 mm	M12	57 Newton-meters

SHAFT AND BEARING ASSEMBLY

Manually rotate shaft before and after tightening mounting bolts. Torque required to rotate should be the same. If there is any strain, irregular rotational torque or vibration, it could be due to incorrect alignment, bent shaft or bent supports. Installation should be rechecked and correction made where necessary.

FIELD CONVERSION (RE-OP) OF A NON-EXPANSION BEARING INTO AN EXPANSION BEARING

All bearings sizes can be re-oped to become an expansion bearing. To re-op a non-expansion to an expansion bearing remove snap ring from the side opposite collar, remove the non-expansion spacer and discard. Re-install snap ring.

Table 3 - Bearing Maximum Total Expansion

Shaft Size		Total Expansion
In.	MM	In.
1-7/16 – 2-3/16	40,45,50	5/32
2-7/16 – 3-7/16	55–90	3/16
3-15/16–4	–	7/32

MAINTENANCE

GREASE LUBRICATION

DODGE UNISPHERE Unitized Spherical roller bearings are prepacked with a NLGI #2 lithium complex grease. For relubrication select a grease that is compatible with #2 lithium complex. Relubricate in accordance with the recommendation of Table 4.

OPERATION TEMPERATURES

Abnormal bearing temperatures may indicate insufficient lubrication. If the housing is too hot to touch for more than a few seconds, check the temperature by applying a thermometer at the top of the pillow block with the thermometer top surrounded by putty.

Because the thermometer reading will be approximately 10°F lower than the actual bearing temperature, add ten degrees to the reading and compare to the temperature rating of your grease. If the bearing temperature reading is consistent and operating within the recommended limits of your grease, the bearing is operating satisfactorily.

LUBRICATION GUIDE

Table 4 - Suggested Lubrication Period 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

Table 5 - Mounting Bolt Information

Inch								
Bearing Bore Size (In.)	Pillow Block				4-Bolt Flange			
	Bolt Size	Bolt Qty.	Bolt Torque (ft-lb)		Bolt Size	Bolt Qty.	Bolt Torque (ft-lb)	
			Grade 2	Grade 5			Grade 2	Grade 5
1-7/16 – 1-1/2	1/2–13	2	50	75	1/2–13	4	50	75
1-11/16 – 1-3/4	1/2–13	2	50	75	1/2–13	4	50	75
1-15/16 – 2	5/8–11	2	100	150	1/2–13	4	50	75
2-3/16	5/8–11	2	100	150	5/8–11	4	100	150
2-7/16 – 2-1/2	5/8–11	2	100	150	5/8–11	4	100	150
2-11/16 – 3	3/4–10	2	175	260	3/4–10	4	175	260
3-7/16 – 3-1/2	7/8–9	2	170	430	3/4–10	4	175	260
3-15/16 – 4	1–8	2	250	640	7/8–9	4	170	430
Metric								
Bearing Bore Size (mm)	Pillow Block				4-Bolt Flange			
	Bolt Size	Bolt Qty.	Bolt Torque (N-m)		Bolt Size	Bolt Qty.	Bolt Torque (N-m)	
			Grade 5.8	Grade 8.8			Grade 5.8	Grade 8.8
40, 45	12 x 1.75	2	47–50	83–89	12 x 1.75	4	47–50	83–89
50	16 x 2	2	115–124	200–215	12 x 1.75	4	47–50	83–89
55	16 x 2	2	115–124	200–215	16 x 2	4	115–124	200–215
60,65	16 x 2	2	115–124	200–215	16 x 2	4	115–124	200–215
70,75	20 x 2.5	2	219–238	390–420	20 x 2.5	4	219–238	390–420
80,85,90	22 x 2.5	2	298–322	530–570	20 x 2.5	4	219–238	390–420

Dodge Industrial, Inc.
1061 Holland Road
Simpsonville, SC 29681
+1 864 297 4800

