

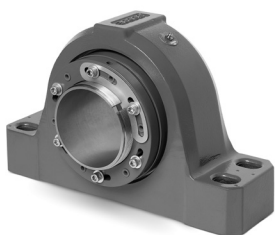
# Instruction Manual for Dodge® Metric ISN Unitized Spherical Roller Bearings 115 to 170 mm

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see [new.abb.com](http://new.abb.com) for updated instruction manuals.

**Note!** The manufacturer of these products, Baldor Electric Company, became ABB Motors and Mechanical Inc. on March 1, 2018. Nameplates, Declaration of Conformity and other collateral material may contain the company name of Baldor Electric Company and the brand names of Baldor-Dodge and Baldor-Reliance until such time as all materials have been updated to reflect our new corporate identity.

**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.



## Required Tools

- 9mm rod (fits in hole drilled into the OD of the external nut)
- Marker
- Impact hex drive socket
- Drive ratchet
- Dead blow hammer
- Torque Wrench

**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 ABB nor are the responsibility of ABB. 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.

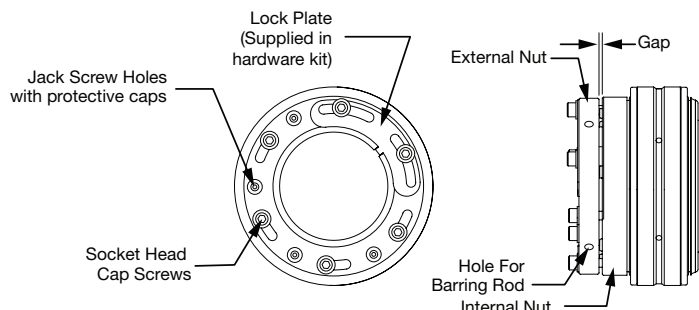
## Inspection

Inspect shaft to ensure it is smooth, straight, clean, and within commercial tolerances.

## Mounting

### Install Non-Expansion Bearing First

The locknut assembly is comprised of an external nut and internal nut. The bearing is shipped such that there is a gap between the two nuts. The two nuts must maintain this gap prior to mounting the bearing. The dual nut configuration prior to installation is shown in Figure 1. Note the position of the external nut slots relative to the socket head cap screws.



**Figure 1. Bearing with dual nut as shipped with gap (lock plate is shipped in a separate hardware package).**

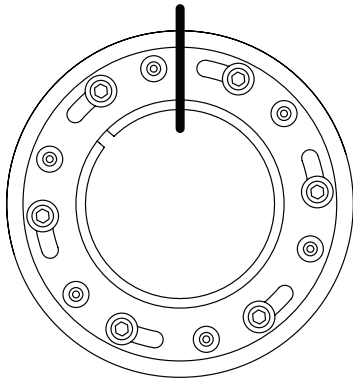
1. Slide bearing assembly onto the shaft. If the bearing will not slide onto the shaft, rotate the nut assembly counter clockwise until the bearing will freely slide onto the shaft.
2. Slide bearing to the desired position on the shaft.

**NOTE:** All weight must be removed from the bearing when obtaining the “ZERO Reference Point”.

3. The “ZERO Reference Point” is defined as the point when the clearance between the adapter sleeve, shaft and bearing bore has been removed.

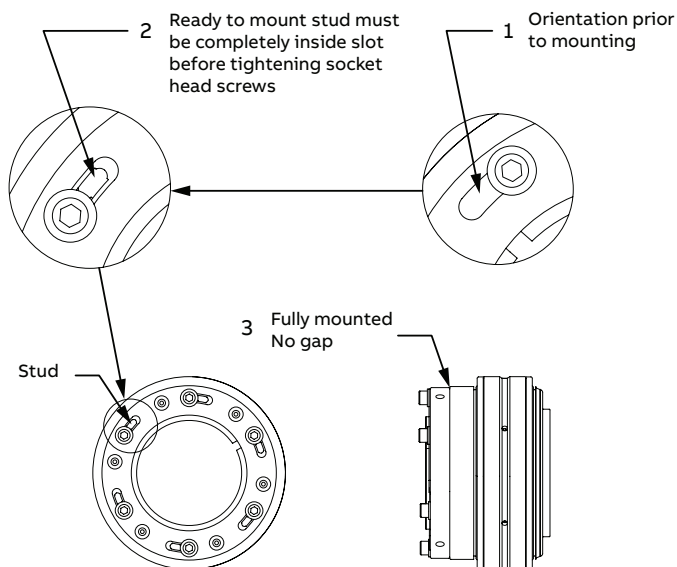
To reach the "ZERO Reference Point" rotate locknut clockwise, using both hands as tight as possible. Holes are drilled into the OD of the external nut to be used with a 9mm rod to help tighten the nut. Strike the OD of the external nut with a dead blow or rubber mallet and continue to tighten by hand. When the nut can no longer be tightened, the "ZERO Reference Point" has been reached. When the "ZERO Reference Point" is reached, the adapter is collapsed around the shaft, and you will not be able to move the bearing axially on the shaft.

4. **Mark a line on the adapter and external nut to be used as a location reference – see Figure 2. This is a critical point and represents the location of the nut assembly before the socket head cap screws are tightened.**



**Figure 2. Mark face of external nut and adapter.**

5. Loosen but do not remove the socket head cap screws. Use 9mm rod to hold external nut in position when loosening the socket head cap screws. While holding the external nut with a 9mm rod, grasp one of the socket head cap screws, and rotate the internal nut counter clockwise to shoulder the socket head screws as shown in Figure 3. See Figure 4 demonstrating this step. **If the external nut moves during this step, it is imperative to reposition the nut assembly so that the external nut is positioned with the alignment mark made in step 4 before proceeding to the next step. Make sure the spacing stud is visible in the slot as shown in Figure 3, or the nut will not install correctly.**



**Figure 3 - Nut rotated and ready for installation**



**Figure 4 – Holding external nut and rotating internal nut using socket head cap screw**

6. At this point the machined studs used to create the gap have been positioned inside the elongated slots, and the two nuts can be pulled together, which installs the bearing on the shaft. **If the external nut moves during this step, it is imperative to reposition the nut assembly so that the external nut is positioned with the alignment mark made in Step 4 before proceeding to the next step.** Gradually tighten the screws in a star pattern until the external nut firmly seats against the internal nut and the gap is completely closed as shown in Figure 3.
7. Remove two socket head cap screws nearest to the slot in the adapter. A slight gap may appear between the two nuts when these two socket head cap screws are removed. This is a normal occurrence and the gap will close up when the two socket head cap screws are reinstalled. Remove lock plate from hardware kit and position the lock plate so that it can be installed to fit the adapter slot. If the lock plate does not line up with the two holes, it can be flipped over to fit as shown in Figure 1. Reinstall the two socket head cap screws to secure the lock plate and torque all of the socket head cap screws to the values shown in Table 1. Spare screws and washers are supplied in a hardware kit in case one is lost.

Table 1 - Installation screw size and torque ratings				
Shaft Size (mm)	Soc HD Bolt Size CL 12.9	Torque (max)		Hex Key Size mm
		ft-lbs	N-m	
115 - 125	M10 X 1.5 X 45	57	77	8
135	M12 X 1.75 X 45	100	135	10
140 - 150	M16 X 2.0 X 45	150	206	14
160 - 170	M16 X 2.0 X 50	150	206	14

8. Bolt down pillow block to structure.

## Install Expansion Unit

1. Turn locknut counter clockwise until it will freely slide onto the shaft.
  - a. If the locknut is facing away from the non-expansion bearing: Align housing and snug the mounting bolts. Push the insert as far as possible in the direction of the non-expansion bearing
  - b. If the locknut faces the non-expansion bearing: Align housing and snug the mounting bolts. Position the insert in the middle of the expansion travel. This is necessary because the insert shifts toward the nut during installation.

**NOTE: All weight must be removed from the bearing when obtaining the “ZERO Reference Point”.**

2. Follow steps 3 through 8 under mounting of the non-expansion bearing.

### Dismounting

1. Remove weight from bearing with slings or jacks.
2. Remove the hold down bolts securing the bearing to the pedestal.
3. Remove protective caps from jack screw holes shown in Figure 1.
4. Remove the socket head cap screws from the nut assembly and install them into the threaded jack screw holes where the protective caps were located in the face of the external nut. Tighten the socket head screws in a star pattern to dismount the bearing. The screws drive against the internal nut which pushes the bearing off the adapter. Continue to tighten screws until the bearing fully dismounts and can be freely removed from the shaft.

### Reassembly after dismount

To set up the dual nut assembly after dismounting the bearing, follow the steps below

1. With the bearing still on the shaft, remove the socket head cap screws from the jack screw holes.
2. Rotate the internal nut so that you can see the threads through the external nut slots while the studs are positioned to make full contact with the back of external nut.
3. Thread the screws into the internal nut through each one of the slots on the external nut about 3 turns.
4. Rotate the nut assembly 3 turns counter-clockwise.
5. Hand tighten each screw first and then torque the screws to 27-40 Nm.

## Field Conversion of a Non-Expansion Bearing into an Expansion Bearing

### ISN

1. Move snap ring opposite locknut side, to the outer snap ring groove. See Figure 5.
2. Remove non-expansion name plate and relabel as an expansion bearing.

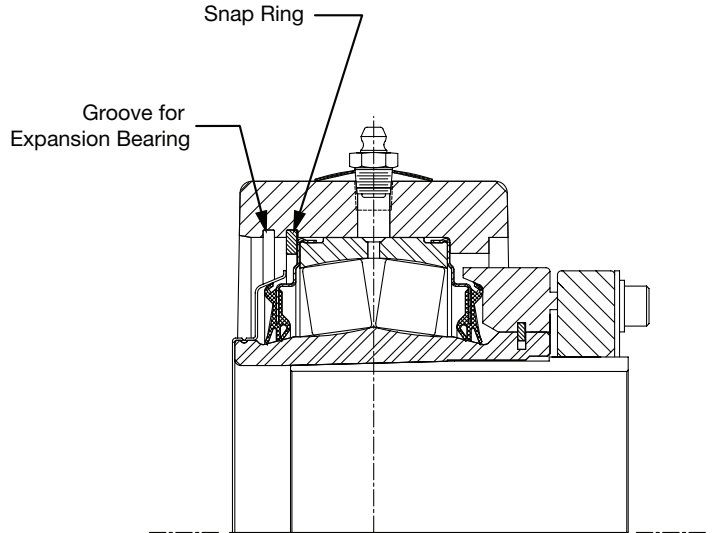


Figure 5. 115mm ISN

### Grease Lubrication

DODGE IP, ISAF, and ISN bearings are pre-packed with NLGI-2 Lithium Complex Grease. For re-lubrication select a grease that is compatible with a #2 Lithium Complex grease. Re-lubricate in accordance with Table 2.

### 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.

Table 2 - Relubrication Intervals (Months) Based on 12 hours per day, 66°C						
Shaft Size (millimeters)	RPM					
	250	500	750	1000	1250	1500
115-135	1.5	1	0.5	0.25	0.25	0.25
140-150	1	0.5	0.5	0.25	0.25	0.25
160-170	1	0.5	0.25	0.25	0.25	

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