

Safety Mount® ISN Mounted Spherical Roller Bearings 90 to 170 mm 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.



REQUIRED TOOLS

- 9 mm rod (fits in hole drilled into the OD of the external nut)
- Marker or grease pen
- Impact hex drive socket
- 1/2" drive ratchet
- Dead blow mallet
- Torque wrench

INSPECTION

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

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.

Typical commercial shaft tolerances

Shaft size in (mm)	Tolerance in (mm)
≤ 1-1/2 (40)	+0.000 (0.000) to -0.002 (0.051)
1-9/16—2-1/2 (45—60)	+0.000 (0.000) to -0.003 (0.076)
2-5/8—4 (65—100)	+0.000 (0.000) to -0.004 (0.102)
4-3/16—6 (110—150)	+0.000 (0.000) to -0.005 (0.127)
≥ 6-7/16 (150)	+0.000 (0.000) to -0.006 (0.152)

MOUNTING

Install non-expansion unit first

The lock nut 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 split nut configuration prior to installation is shown in Figure 1. Note the position of the external nut slots relative to the hex cap bolts.

The socket set screws located in the external nut are used only to dismount the bearing. Ensure that they are flush with the outer face of the external nut prior to mounting. They should be positioned this way when shipped from the factory, but their position should be verified. If they protrude into the gap between lock nuts during installation, the bearing cannot be mounted correctly.

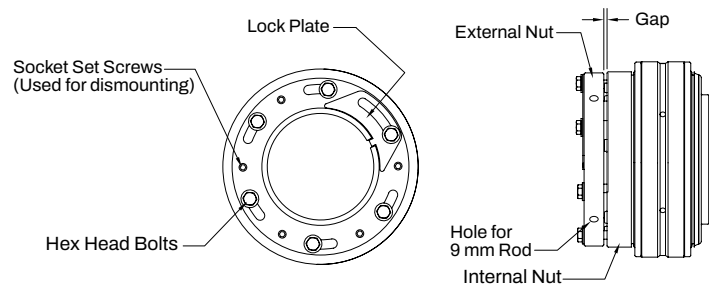


Figure 1 - Bearing with split nut as shipped with gap



NOTE: All weight must be removed from the bearing when obtaining the zero reference point.

1. Remove the lock plate by removing the hex head bolt securing it. Reinstall the hex head bolt before proceeding.
2. Slide bearing assembly onto the shaft. If the bearing will not slide onto the shaft, rotate the nut assembly counterclockwise until the bearing will freely slide onto the shaft.

NOTE: Ensure socket set screws located in the external lock nut are flush with the outer face of the external nut prior to mounting.

3. Slide bearing to the desired position on the shaft.
4. The zero reference point is defined as the point when the clearance between the adapter sleeve, shaft, and bearing bore has been removed. As soon as the zero reference point is reached, the adapter is collapsed around the shaft and you will not be able to move the bearing axially along the shaft. To reach zero reference point, use barring rod to turn lock nut assembly clockwise as much as possible. The bearing should grip the shaft at this point. Check by pushing or pulling on the bearing to confirm it is clamped to the shaft. If it moves axially, zero reference has not been reached. Once zero reference is obtained, continue to tighten nut by tapping on the OD and using the barring rod to obtain an additional 1/8 turn.
5. **Important: Mark a line across the front and top of 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 hex head bolts are tightened.**

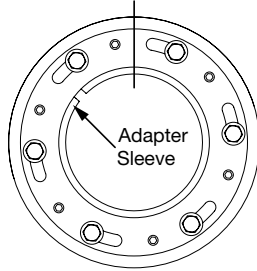


Figure 2 - Mark face of external nut and adapter

6. Loosen but do not remove the hex head bolts. Using a barring rod to hold the external lock nut, grasp one of the hex mounting bolts and shift it counterclockwise until shouldered against the side of the slot 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.**

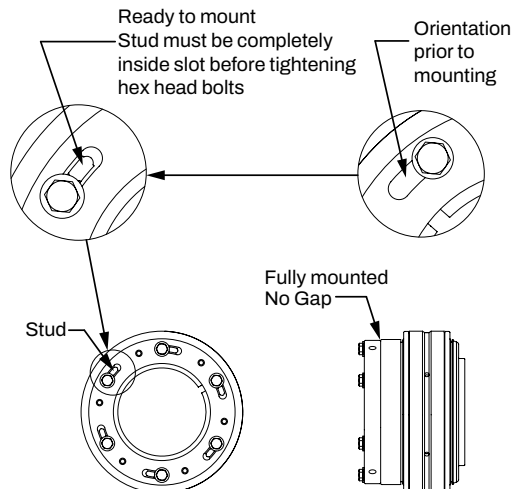


Figure 3 - Nut rotated and ready for installation



Figure 4 - Holding external nut and rotating internal nut using hex head bolt

7. 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 hex head bolts in a star pattern, as shown in Figure 5, until the external nut firmly seats against the internal nut and the gap is completely closed as shown in Figure 3 (not yet full torque).
8. Remove the hex head bolt nearest to the slot in the adapter. A slight gap may appear between the two nuts when the hex head bolt is removed. This is a normal occurrence and the gap will close up when the hex head bolt is reinstalled. Install the lock plate so that the tab fits into 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 hex head bolt to secure the lock plate. **Using a star pattern, as shown in Figure 5, torque the hex head bolts to the values shown in Table 1.** It is considered a best practice to initially tighten the hex head bolts to 50 percent of full torque, then tighten again to 100 percent full torque (using the star pattern both times).

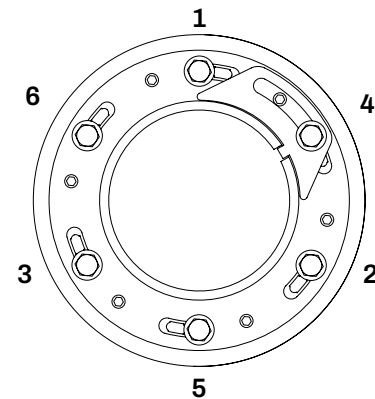


Figure 5 - Correct installation star pattern

Table 1-Installation hex head bolt size and torque ratings

Shaft size (mm)	Hex HD bolt size & grade	Torque (max)		Socket size mm
		ft-lbs	Nm	
90—100	M8-1.25 X 35, CL 10.9	20	25	13
110	M10-1.5 X 40, CL 8.8	30	40	17
115—125	M10-1.5 X 45, CL 8.8	30	40	17
135	M12-1.75 X 45, CL 8.8	50	65	19
140—150	M16-2.0 X 45, CL 8.8	120	165	24
160—170	M16-2.0 X 50, CL 8.8	120	165	24

9. Bolt down pillow block to structure

NOTE: Bearing will shift axially during installation or drive up of the bearing. Important to position the housing with shoulder bolts away from you (opposite side of the nut) to allow for movement during the mounting process.

Install expansion unit

1. Turn lock nut counterclockwise until it will freely slide onto the shaft.
 - b. If the lock nut 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.
 - c. If the lock nut 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 4 through 9 under "Install non-expansion unit first" section.

DISMOUNTING

1. Remove the hold down bolts securing the bearing to the pedestal.
2. Remove weight from bearing with slings or jacks.
3. Loosen the hex head mounting bolts so that a 9 mm gap is present between all of the hex head bolts and external nut. Tighten the socket set screws in a star pattern to dismount the bearing. The set screws drive against the internal nut which pushes the bearing off the adapter. Make sure the hex head mounting bolts are loose during dismounting. If the external nut contacts the hex head mounting bolts, the bearing can no longer be loosened. If the hex head mounting bolts become tight during dismounting, loosen them again to create a gap with the internal nut. Continue to tighten the socket set screws until the bearing fully dismounts and can be freely removed from the shaft. Socket set screws and hex sizes are shown in Table 2.

Table 2-Dismount set screw sizes

Shaft size (mm)	Socket set screw size	Hex key size (mm)
90—100	M8-1.25	4
110	M10-1.5	5
115—125	M10-1.5	5
135	M12-1.75	6
140—150	M16-2.0	8
160—170	M16-2.0	8

REASSEMBLY AFTER DISMOUNT

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

1. With the bearing still on the shaft, back out socket set screws until they are flush with the outer face of the external nut.
2. Loosen the hex head mounting bolts and position the external nut so that it is seated on top of the raised tabs, which creates the gap between the external and internal nuts. The external nut should be rotated counterclockwise so that the bolts are shouldered against the side of slot as shown in Figure 6. Thread the hex head bolts into the internal nut through each one of the slots on the external nut about three turns.

NOTE: It is important to loosen but not remove the bolts to maintain the relative position of matched lock nuts. If they are removed, ensure the marks are aligned to maintain concentricity.

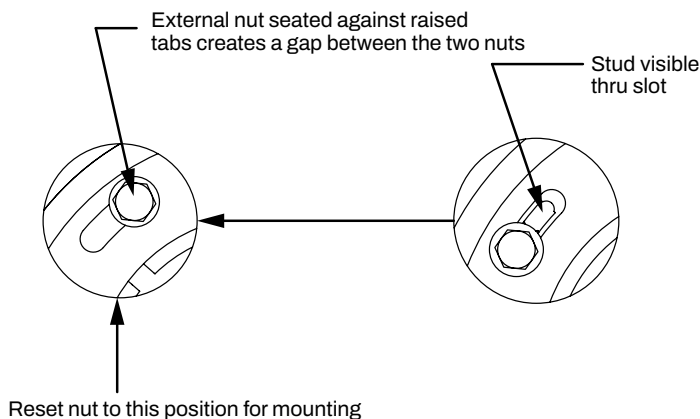


Figure 6 - External nut position for installation

3. Rotate the lock nut assembly approximately three turns counterclockwise to expand the adapter to allow mounting on the shaft.

NOTE: Typically 3—4 exposed threads beyond the face of the external nut are visible.
4. Hand tighten each hex head bolt first and then torque the screws to 20—30 ft-lbs using a star pattern to ensure the external and internal lock nut move as a set.

FIELD CONVERSION OF A NON-EXPANSION BEARING INTO AN EXPANSION BEARING

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

GREASE LUBRICATION

Safety Mount ISN bearings are pre-packed with NLGI #2 lithium complex grease. For relubrication select a grease that is compatible with a #2 lithium complex grease. Relubricate in accordance with Table 3.

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. After storage or idle period, add a little fresh grease before running.

Table 3–Relubrication intervals (in months, based on 12 hours per day at 66 °C / 150 °F)

Shaft size		Rpm									
mm	inch	250	500	750	1000	1250	1500	2000	2500	>3000	1500
90—110	3-11/16—4-1/2	2	1.5	1	0.5	0.25	0.25	0.25	—	—	—
115—135	4-15/16—5-1/2	1.5	1	0.5	0.25	0.25	0.25	—	—	—	—
140—150	5-15/16—6	1	0.5	0.5	0.25	0.25	0.25	—	—	—	—
160—170	6 7/16—7	1	0.5	0.25	0.25	0.25	—	—	—	—	—

ADDITIONAL RESOURCES

Installation video:



youtu.be/vu8W1MmKhEM

Translated material and product specifications:



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