Type E Tapered Roller Bearings - Standard and Defender Series
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.

INSTALLATION

1. Clean shaft and bore of bearing. Lubricate with light oil or anti-seize compound.
2. Slip bearing in position.
3. Bolt bearing to support, using shims where necessary to align bearing.
4. Tighten set screws to the torque values shown on Table 1.

   NOTE: For Defender Series bearings up to five inch bore size, displace rubber v-ring seal to allow allen wrench head to fit into set screws, then tighten to specified torque values as directed. Once torque is reached, reposition v-ring over set screws. For Defender Series bearings over five inch bore size, the v-ring is inboard of collar.
5. The effort required to turn the shaft should be the same before and after bolting bearing to the support.

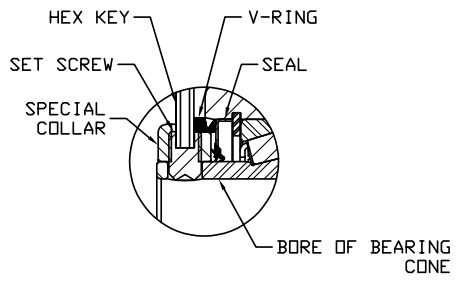

Figure 1 - V-ring displacement for Defender Series installation

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.

Table 1–Set screw torque table

Shaft size (in)	Set screw size (in)	Tightening torque (in-lbs)
1- 3/16—1-11/16	5/16—18	165
1-3/4—2-1/2	3/8—16	290
2-11/16—3-1/2	1/2—13	620
3 15/16—5	5/8—11	1325
5-7/16—6	3/4—10	2150
6-7/16—7	7/8—9	5130
Shaft size (mm)	**Set screw size (mm)**	**Tightening torque (nM)**
35—40	M8	17.8
45—65	M10	35
70—75	M12	57
80—90	M12	57
100—125	M16	126

Table 2–Shaft tolerance (in)

Shaft size	Tolerance
Up to 1-1/2	+0.000/-0.0005
1-5/8—4	+0.000/-0.001
4-7/16—6	+0.000/-0.0015
6-7/16—8	+0.000/-0.002

LUBRICATION GUIDELINES

This bearing is factory-lubricated with a lithium or lithium complex base grease which is suitable for most applications. However, extra protection is necessary if the bearing is subjected to excessive moisture, dust, corrosive vapor or other harsh environments. In these cases, the bearing should contain as much grease as speed will permit (a full bearing with consequent slight leakage through the seal is the best protection against contaminant entry).

For relubrication, select a grease that is compatible with a lithium or lithium complex grease. The following table is a general guide for normal operating conditions. However, some situations may require a change in lubricating periods as dictated by experience. Generally, a lower quantity of grease at frequent intervals is more effective than a greater quantity at extended lubrication intervals.

NOTE: Read preceding paragraphs before establishing lubrication schedule.

Table 3–Lubrication guide (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

Lubrication recommendations are intended for standard products applied in normal operating conditions. For modified products, high temperature environments and other anomalous applications, contact product engineering at +1 864 284 5700.

Normal operation—This bearing has been greased at the factory and is ready to run. The table above is a general guide for relubrication. However, certain conditions may require a change of lubricating periods as dictated by experience. See "High Speed Operation" and "Operating in Presence of Dust, Water, or Corrosive Vapors."

High speed operation—High speed operation is 70% of maximum catalog speed and above. In the higher speed ranges too much grease will cause overheating. The amount of grease that the bearing will take for a particular high speed application can be determined only by experience—see "Operating Temperature" below. If excess grease in the bearing caused overheating, it will be necessary to remove grease fitting to permit excess grease to escape. The bearing has been greased at the factory and is ready to run. When establishing a relubrication schedule, note that a small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals.

Operation in presence of dust, water or corrosive vapors—Under these conditions the bearing should contain as much grease as speed will permit, since a full bearing with consequent slight leakage is the best protection against entrance of foreign material. In the higher speed ranges too much grease will cause overheating—see "High Speed Operation." In the lower speed ranges it is advisable to add extra grease to a new bearing before putting into operation. Bearings should be greased as often as necessary (daily if required) to maintain a slight leakage at the seals. For extreme conditions or dust and/or moisture consider adding a supplemental sealing system with the E-Tect seal kits. See catalog for details.

Operating temperature—Abnormal bearing temperature may indicate faulty lubrication. Normal temperature may range from a few degrees up to 100 °F above ambient, depending on bearing size, speed, loading and environmental conditions. Unusually high temperature, in this range, accompanied by excessive leakage of grease indicates too much grease. In the circumstance that there is excess grease in the bearing, remove the grease fitting to allow the excess grease to purge. When purging ceases, wipe excess grease with a clean rag and screw fitting back into the bearing. High temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. Normal temperature and a slight showing of grease at the seals indicate proper lubrication.

KIND OF GREASE

Many ordinary cup greases will disintegrate at speeds far below those at which Dodge bearings will operate successfully if proper grease is used. Dodge bearings have been factory lubricated with an NLGI #2 lithium complex base grease. Relubricate with Lithium complex-base grease or a grease which is compatible with original lubricant and suitable for roller bearing service. In unusual or doubtful cases the recommendation of a reputable grease manufacturer should be secured.

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.

SPECIAL OPERATING CONDITIONS

Refer acid, chemical, extreme, or other special operating conditions to Application Engineering at +1 864 284 5700.

E-TECT SEAL KIT: ADDED PROTECTION FOR EXTREMELY WET AND DIRTY ENVIRONMENTS

A V-ring seal is added to the standard "R" seal system. The V-ring is held in place by the locking collar. The V-ring has face rubbing contact with the steel "R" seal carrier. The resulting system puts a flinger collar, V-ring seal, clearance seal, lip seal and two grease dams between the rollers and the outside environment. All components are designed for optimum sealing and purging action.

NOTE: Defender Series bearings come standard with the ArmorTect seal upgrade, eliminating the need for the optional E-Tect seal.

Table 4–E-Tect seal kits for Type E, TAF, Double Interlock, and Type K

Shaft size (in)	Kit part* number
1-3/16—1-1/4	037650
1-3/8—1-7/16	037651
1-1/2—1-11/16	037652
1-3/4—2	037653
2-3/16	037654
2-1/4—2-1/2	037655
2-11/16—3	037656
3-3/16—3-1/2	037657
3-5/16—4	037658
4-7/16—4-1/2	037659
4-15/16—5	037660
5-7/16—6	037673**
6-7/16—7	037674**

* Kit includes one collar, special set screws and seal.
** Kit for 5-7/16 to 7" consists of a modified v-ring seal only.
For Type K bearings, E-Tect seal may be used on collar side only.
For Double Interlock, TAF and Type E, two kits are required (one for each collar).

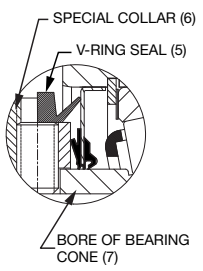

Figure 2 - E-Tect seal
1-3/16" through 5"

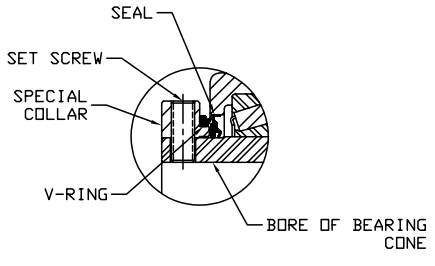

Figure 3 - E-Tect seal
5-7/16" through 7"

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

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