

Torque-Arm II, TXT-E, TDT 13-15, and MTA Speed Reducer Tapered and Short Shaft Bushing Assemblies 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.

CAUTION: DO NOT USE LUBRICANTS OR ANTI-SEIZE WHEN INSTALLING TWIN TAPERED BUSHINGS. The use of lubricants or anti-seize could result in over tightening of the bushing assembly. This may result in bushing assembly damage or future bushing removal issues.

BUSHING INSTALLATION

The Torque-Arm II and MTA Reducers are designed to fit both standard and short length driven shafts. The Standard Taper Bushings series is designed where shaft length is not a concern. The Short Shaft Bushing series is to be used where the driven shaft does not extend through the reducer.

The TXT-E series of reducers use ONLY Standard Taper Bushings. For shorter shafts, a TXT-E Straight Bore Reducer may be able to be used instead.

Standard Taper Bushings

1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of two tapered bushings, bushing screws and washers, two bushing backup plates and retaining rings, and necessary shaft key or keys.

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.

The driven shaft must extend through the full length of the reducer. If the driven shaft does not extend through the reducer, do not use the standard tapered bushings; instead use the short shaft bushings as described in the Short Shaft Bushings section that follows (TAII and MTA only). The minimum shaft length, as measured from the end of the shaft to the outer edge of the bushing flange (see Figure 2), is given in Table 1.

2. If not already mounted, install one bushing backup plate on the end of the hub and secure with the supplied retaining ring. Repeat procedure for the other side.
3. Place one bushing, flange end first, onto the driven shaft and position per dimension "A", as shown in Figure 2 and Table 2. This will allow the bolts to be threaded into the bushing for future bushing and reducer removal.
4. Insert the output key in the shaft and bushing. For ease of installation, rotate the driven shaft so that the shaft keyseat is at the top position.

NOTE: In most cases the keys that are supplied with the bushing kit are NOT square keys, and the orientation of the key is important. Install the key so that it fits snugly in the width of the keyseat. The keys are marked with a part number and some keys are also etched with "THIS SIDE UP" – these markings should be showing on the top of the key when it is installed in the shaft keyseat, see Figure 1 below.

5. Mount the reducer on the driven shaft and align the shaft key with the reducer hub keyway. Maintain the recommended

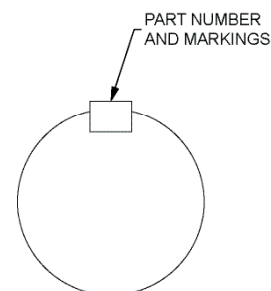


Figure 1 - Key Marking

minimum distance “A” from the shaft bearing.

6. Insert the screws, with washers installed, in the unthreaded holes in the bushing flange and align with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing screws. Tighten the screws lightly. If the reducer must be positioned closer than dimension “A”, place the screws with washers installed, in the unthreaded holes in the bushing before positioning reducer making sure to maintain at least 1/8” between the screw heads and the bearing.
7. Place the second tapered bushing in position on the shaft and align the bushing keyway with the shaft key. Align the unthreaded holes in the bushing with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing holes. Insert bushing screws, with washers installed in the unthreaded holes in the bushing. Tighten screws lightly.
8. In an alternating pattern, tighten the screws in the bushing nearest the equipment to the recommended torque given in Table 2. Repeat procedure on outer bushing.

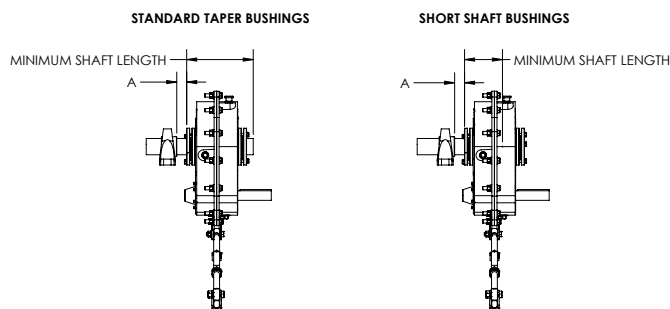


Figure 2 - Minimum Recommended Dimensions

Short Shaft Bushings (TAIL and MTA only)

1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of one long tapered bushing, one short tapered bushing, one tapered bushing wedge, bushing screws and washers, two bushing backup plates and retaining rings, and necessary shaft key or keys. The driven shaft does not need to extend through the reducer for the short shaft bushing to operate properly. The minimum shaft length, as measured from the end of the shaft to the outer edge of the bushing flange (see Figure 2), is given in Table 1.
2. The long bushing is designed to be installed from the side of the reducer opposite the driven equipment as shown in Figure 3. The long bushing when properly installed is designed to capture the end of the customer shaft that does not extend through the reducer.
3. Install the tapered bushing wedge into the hollow bore of the reducer from the same side as the long bushing will be installed. When installing the tapered bushing wedge into the reducer hub, install the flange end first so that the thin taper is pointing outwards towards the long bushing as shown in Figure 3. The wedge is properly installed when it snaps into place in the reducer hub.

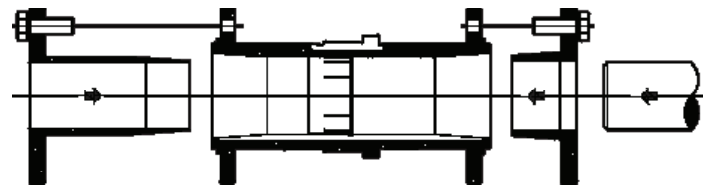


Figure 3 - Short Shaft Bushing and Output Assembly

4. Align the tapered bushing wedge keyway with the reducer hub keyway. The keyway in the wedge is slightly wider than the keyway in the reducer hub allowing for easier installation.

NOTE: In most cases the keys that are supplied with the bushing kit are NOT square keys, and the orientation of the key is important. Install the key so that it fits snugly in the width of the keyseat. The keys are marked with a part number and some keys are also etched with “THIS SIDE UP” – these markings should be showing on the top of the key when it is installed in the shaft keyseat, see Figure 4 below.

5. Install one bushing backup plate on the end of the hub and secure with the supplied retaining ring. Repeat procedure for other side.
6. Install the short bushing; flange first, on the driven shaft and position per dimension “A”, as shown in Table 1. This will allow the bolts to be threaded into the bushing for future bushing and reducer removal.
7. Insert the output key in the shaft and bushing. For ease of installation, rotate the driven shaft so that the shaft keyseat is at the top position.

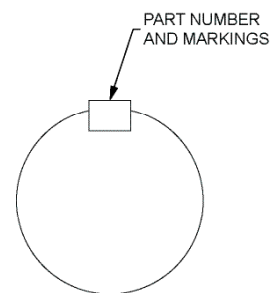


Figure 4 - Key Marking

8. Aligning the shaft key with the reducer hub keyway, and being careful not to knock out the tapered bushing wedge from its installed position, mount the reducer on the driven shaft. Maintain the recommended minimum distance “A” from the shaft bearing.
9. Insert the screws, with washers installed, in the unthreaded holes in the bushing flange and align with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing screws. Tighten the screws lightly. If the reducer must be positioned closer than dimension “A”, place the screws with washers installed, in the unthreaded holes in the bushing before positioning reducer making sure to maintain at least 1/8” between the screw heads and the bearing.
10. Place the long bushing in position on the shaft and align the bushing keyway with the shaft key. Use care to locate the long bushing with the tapered bushing wedge installed earlier. Align the unthreaded holes in the bushing with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing holes. Insert bushing screws, with washers installed in the unthreaded

holes in the bushing. Tighten screws lightly.

- In an alternating pattern, tighten the screws in the bushing nearest the equipment to the recommended torque given in Table 2. Repeat procedure on outer bushing.

Bushing Removal for Standard Taper or Short Shaft Bushings

- Remove bushing screws.
- With the lock washers removed, place the screws in the threaded holes provided in the bushing flanges. Tighten the screws alternately and evenly until the bushings are free on the shaft. For ease of tightening screws make sure screw threads and thread holes in the bushing flanges are clean. If the reducer was positioned closer than the recommended minimum distance "A" as shown in Table 1, loosen the inboard bushing screws until they are clear of the bushing flange by 1/8". Locate two (2) wedges at 180 degrees between the bushing flange and the bushing backup plate. Drive the wedges alternately and evenly until the bushing is free on the shaft.
- Remove the outside bushing, the reducer, and then the inboard bushing.

Table 1 - Minimum Required Shaft Length (Inches)

Reducer Size	Standard Taper Bushing	Short Shaft Bushing
TA0107L	6.83	4.32
TA1107H	6.95	4.43
TA2115H, MTA2115H	7.80	4.80
TA3203H, MTA3203H	8.55	5.46
TA4207H, MTA4207H	8.94	5.66
TA5215H, MTA5215H	10.33	6.35
TA6307H, MTA6307H	10.82	6.72
TA7315H, MTA7315H	11.87	7.62
TA8407H, MTA8407H	12.82	8.10
TA9415H, MTA9415H	13.74	8.56
TA10507H, MTA10507H	15.46	9.67
TA12608H, MTA12608H	18.32	11.60
TXT1E	6-1/2	N/A
TXT2E	6-3/4	N/A
TXT3E	8-9/16	N/A
TXT4E	9-5/16	N/A
TXT5E	9-3/4	N/A
TXT6E	10-3/4	N/A
TXT7E	11-15/16	N/A
TXT8E	13-1/8	N/A
TXT9E	13	N/A
TXT10E	14-3/16	N/A
TXT12E	17-3/8	N/A
TDT 13	19-7/8	N/A
TDT 14	22-3/8	N/A
TDT 15	27-3/8	N/A

Table 2 - Bushing Screw Information and Minimum Clearance for Removal

Reducer Size	Fastener Size	Torque in Ft. -Lbs.	A (inches)
TA0107L	5/16-18	17-20	1.08
TA1107H	5/16-18	17-20	1.20
TA2115H, MTA2115H	3/8-16	23-26	1.20
TA3203H, MTA3203H	3/8-16	23-26	1.20
TA4207H, MTA4207H	3/8-16	23-26	1.48
TA5215H, MTA5215H	1/2-13	67-77	1.81
TA6307H, MTA6307H	1/2-13	67-77	1.81
TA7315H, MTA7315H	1/2-13	67-77	2.06
TA8407H, MTA8407H	1/2-13	67-77	2.06
TA9415H, MTA9415H	5/8-11	75-86	2.39
TA10507H, MTA10507H	5/8-11	75-86	2.39
TA12608H, MTA12608H	5/8-11	75-86	2.39
TXT1E	5/16-18	17	1-1/4
TXT2E	5/16-18	17	1-1/4
TXT3E	3/8-16	30	1-1/2
TXT4E	3/8-16	30	1-3/4
TXT5E	7/16-14	49	1-13/16
TXT6E	7/16-14	49	1-13/16
TXT7E	1/2-13	67	2-1/16
TXT8E	1/2-13	67	2-1/16
TXT9E	5/8-11	75	2-7/16
TXT10E	5/8-11	75	2-7/16
TXT12E	5/8-11	75	2-7/16
TDT 13	5/8-11	75	2-11/16
TDT 14	3/4-10	133	3
TDT 15	3/4-10	133	3

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