

WP0282

Dodge® Twin Tapered bushings: key overview

Dodge Customer/Order Engineering

07-27-2018



Twin tapered bushings have been used to mount Dodge reducers for over 40 years, starting with TDT series of Dodge shaft mount reducers, continuing on with TXT series, and extended to Torque-Arm II, Quantis, MTA, and Magnagear XTR product lines. This system revolutionized the shaft mount reducer concept and ensured that the speed reducer would not seize to the customer's shaft. A tapered bore in both sides of the reducer output hub mates up with a matching taper on the outer surface of each bushing ... "Twin Tapered."

Bushing mounting screws pass through the bushing flange into a backing plate on each side of the hub. As the screws are tightened, the bushing moves inward, gripping the driven shaft tightly and evenly around every point on its circumference. Power is transmitted from the reducer to the driven shaft by a key provided in the bushing kit.

PLEASE 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. For example, the key for the TA8407 x 4-7/16" bushing is 1.000" x 0.955", see **figure 1** below. This key MUST be installed so that the 1.000" dimension is oriented in the width of the keyseat, and NOT turned 90° in the height of the keyseat. If the key is installed with the 1.000" dimension in the height of the keyseat, it will prevent the reducer from mounting concentrically with the shaft, cause the reducer to wobble on the driven shaft, and it will cause distortion and damage to the output bearings.

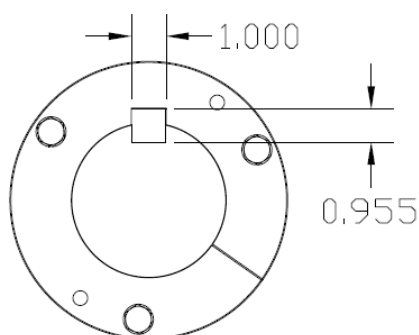


Figure 1. TA8407 x 4-7/16 bushing key dimensions

If the key is installed incorrectly, or a square key is mistakenly used, it can cause the bushings to be distorted (see **figure 2**), this can often be seen as a mismatch between the faces of the bushing flange on either side of the split. This results in permanent distortion to the bushings (see **figure 3**). If there is a noticeable mismatch on the face of the bushing flange on either side of the split, check the dimensions of the key per **Table 1** to make sure the key is installed in the correct orientation. There should be no more than 0.004" total clearance of the key in the width of the shaft keyseat – this can be checked with a feeler gage. Remove and re-install bushing kit to correct misalignment, replacing the bushing kit if required.

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Figure 2. Bushing mismatch



Figure 3. Bushing distortion

The keys supplied in twin tapered bushing kits are designed so the keyseat requirement for the customer’s shaft is a standard width and depth for that shaft diameter, these width and depth dimensions conform to ANSI B17.1 Standard for Keys and Keyseats. We list the dimensions required for the customer’s shaft keyseat in the catalog tables for twin tapered bushing kits – see **figure 4** below for an example. These dimensions in the catalog are the width and depth of the keyseat in the driven shaft, they do not indicate that a square key is used in the bushing kit. Be sure to use the key supplied in the bushing kit to ensure proper mount.

TXT5 Bushing Assemblies ●

Stock Bore Size		Part Number		Shaft Keyseat Required †	
		Tapered Bushing	Straight Bore Bushing	Tapered Bushing	Straight Bore Bushing
2-15/16	(Max.)	245112	◆	3/4 x 3/8 x 9-3/8	3/4 x 3/8 x 4-3/8
2-11/16	–	245110	245428	5/8 x 5/16 x 9-3/8	5/8 x 5/16 x 4-3/8
2-1/2	▲	245099	245427	5/8 x 5/16 x 9-3/8	5/8 x 5/16 x 4-3/8
2-7/16	▲	245094	245426	5/8 x 5/16 x 9-3/8	5/8 x 5/16 x 4-3/8
2-1/4	▲	245092	245425	1/2 x 1/4 x 9-3/8	1/2 x 1/4 x 3
2-3/16	▲	245090	245424	1/2 x 1/4 x 9-3/8	1/2 x 1/4 x 3
2	▲	245088	245423	1/2 x 1/4 x 9-3/8	1/2 x 1/4 x 3
1-15/16	▲	245086	245422	1/2 x 1/4 x 9-3/8	1/2 x 1/4 x 3

Figure 4. Example of customer shaft keyseat dimensions required

Table 1 below lists the dimensions of the rectangular keys used in selected TAIL and MTA bushing kits

For any questions on the dimensions or fit of keys in twin tapered bushing kits, please contact Dodge Engineering at 864.284.5700 or DodgeEngineering@abb.com.

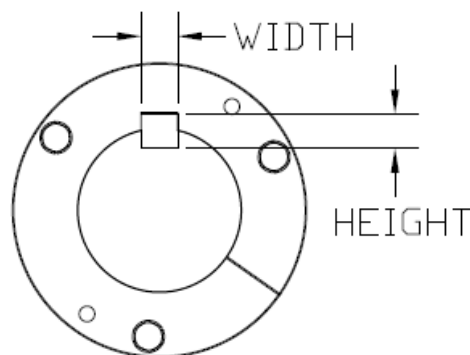


Table 1. Dimensions of selected rectangular keys for TAI/MTA bushing kits

Bushing Kit #	Shaft Diameter	TAI Reducer	MTA Reducer	Key P/N	Key Width	Key Height
900020	1-7/16	TA0107	MTA0107	900363	0.375	0.308
901020	1-1/2	TA1107	MTA1107	901365	0.375	0.409
901021	1-7/16	TA1107	MTA1107	901366	0.375	0.442
901030	1-7/16	TA1107	MTA1107	901366	0.375	0.442
902020	2-3/16	TA2115	MTA2115	902368	0.500	0.378
902022	2	TA2115	MTA2115	902370	0.500	0.475
902023	1-15/16	TA2115	MTA2115	902371	0.500	0.507
902024	1-7/8	TA2115	MTA2115	902372	0.500	0.540
902030	1-15/16	TA2115	MTA2115	902371	0.500	0.507
902031	1-7/8	TA2115	MTA2115	902372	0.500	0.540
903021	2-1/4	TA3203	MTA3203	903369	0.500	0.538
903022	2-3/16	TA3203	MTA3203	903370	0.500	0.570
903023	2-1/8	TA3203	MTA3203	903371	0.500	0.603
903024	2	TA3203	MTA3203	903372	0.500	0.667
903025	1-15/16	TA3203	MTA3203	903373	0.500	0.699
903026	1-7/8	TA3203	MTA3203	903374	0.500	0.732
903030	2-3/16	TA3203	MTA3203	903370	0.500	0.570
903031	2-1/8	TA3203	MTA3203	903371	0.500	0.603
903032	2	TA3203	MTA3203	903372	0.500	0.667
903033	1-15/16	TA3203	MTA3203	903373	0.500	0.699
903034	1-7/8	TA3203	MTA3203	903374	0.500	0.732
904020	2-11/16	TA4207	MTA4207	904368	0.625	0.587
904021	2-1/2	TA4207	MTA4207	904369	0.625	0.683
904022	2-7/16	TA4207	MTA4207	904370	0.625	0.716
904023	2-3/16	TA4207	MTA4207	904371	0.625	0.748
904032	2-7/16	TA4207	MTA4207	904370	0.625	0.716
904033	2-3/8	TA4207	MTA4207	904371	0.625	0.748
905020	3-3/16	TA5215	MTA5215	905368	0.750	0.655
905021	3	TA5215	MTA5215	905369	0.750	0.752
905022	2-15/16	TA5215	MTA5215	905370	0.750	0.784
905023	2-7/8	TA5215	MTA5215	905371	0.750	0.817
905033	2-15/16	TA5215	MTA5215	905370	0.750	0.784
905034	2-7/8	TA5215	MTA5215	905371	0.750	0.817
906020	3-7/16	TA6307	MTA6307	906368	0.875	0.827
906031	3-7/16	TA6307	MTA6307	906368	0.875	0.827
907019	4-7/16	TA7315	MTA7315	907369	1.000	0.757
907021	4-3/16	TA7315	MTA7315	907370	1.000	0.885
907022	3-15/16	TA7315	MTA7315	907371	1.000	1.000

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907031	3-15/16	TA7315	MTA7315	907371	1.000	1.000
908020	4-7/16	TA8407	MTA8407	908369	1.000	0.955
908021	4-3/16	TA8407	MTA8407	908370	1.000	1.083
908022	3-15/16	TA8407	MTA8407	908371	1.000	1.212
908027	4-7/16	TA8407	MTA8407	908369	1.000	0.955
908028	4-3/16	TA8407	MTA8407	908370	1.000	1.083
908029	3-15/16	TA8407	MTA8407	908371	1.000	1.212
909020	4-15/16	TA9415	N/A	909366	1.250	1.060
909025	4-15/16	TA9415	N/A	909366	1.250	1.060
910020	6	TA10507	N/A	910367	1.500	1.143
910021	5-15/16	TA10507	N/A	910368	1.500	1.176
912020	7	TA12608	N/A	912366	1.750	1.144

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