Taper-Grip® Bushing Installation Guide

Introduction

The keyless Taper-Grip® bushing system provides simple and reliable shaft attachment for Sumitomo Speed reducers and gearmotors. This system allows bi-directional shaft rotation and stop-start operation with a powerful, slip-free grip. To assure peak performance of your equipment, please read, understand and follow these installation instructions.

Safety

Disconnect all power sources from the equipment before beginning this installation procedure. Handle the components with care and avoid all sharp or machined edges to prevent personal injury or damage to the components.

Before Installing Unit on Driven Shaft (Steps 1– 5)

Carefully inspect the driven equipment shaft. Remove all burrs, corrosion, lubricants, and foreign matter from the shaft surface. Verify the shaft diameter is within the dimensional tolerances shown in this table:

Table 1 Driven Shaft Tolerances

Shaft Diameter (inches)	Shaft Tolerance (inches)
¾″ – 1 1/8″	+0″ –0.005″
1 3/16″ – 2″	+0″ –0.006″
2 1/16″ – 3 1/8″	+0″ –0.007″
3 3/16″ – 4 ¾″	+0″ –0.008″
4 13/16″ – 6 ½″	+0″ –0.009″

Clean all surfaces of the shaft, the bushing, the thrust collar and the unit bore with solvent to remove all grease and oil. **Do not apply lubricants, corrosion preventatives, anti-seize compounds or coatings to the mating surfaces of the shaft, bushing, thrust collar or unit bore.**

Step 1 - Remove the capscrews from the bushing. Lightly oil the threads of the capscrews and partially re-insert them into the threaded holes in the bushing flange. The ends of the capscrews should not extend beyond the rear face of the bushing flange.

Step 2 - Slide the thrust collar onto the Taper-Grip® bushing (see Fig. 2).

Step 3 – Carefully thread the Taper-Grip® bushing into the hub of the speed reducer or gearmotor until the thrust collar solidly engages the unit hub surface and the bushing flange (see Fig. 3). **Caution: Do not cross-thread. Bushing should thread easily into hub.**

Step 4 – Unscrew the Taper-Grip® bushing to create a 1mm (0.04″) gap between the thrust collar and the bushing flange.

Step 5 – Hand-tighten the cap screws until they firmly press the thrust collar against the unit hub surface. The unit is ready for installation on the driven shaft.



Fig. 1 Taper-Grip® Bushing Parts



Fig. 2 Slide Thrust Collar on Bushing

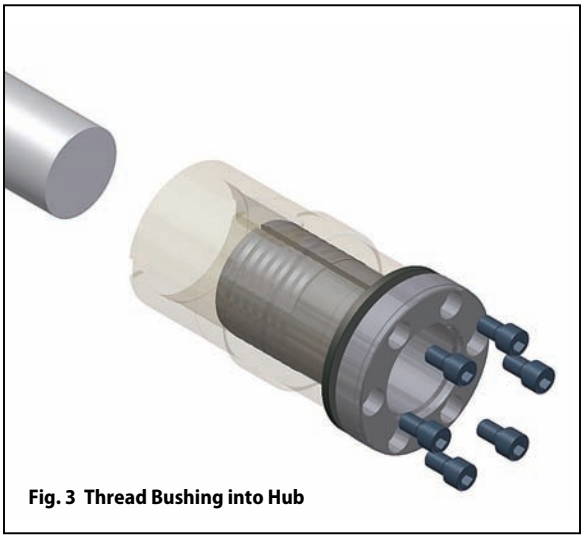


Fig. 3 Thread Bushing into Hub

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Unit Installation

Step 6 – Position unit with the bushing flange located on the outboard side of the unit. Align the bushing with the driven shaft. Slide the unit onto the driven shaft as close to the driven shaft support bearing as possible. Ideally, the driven shaft should extend beyond the bushing flange face (see Fig. 5). Refer to Fig. 4 and Table 2 for minimum shaft engagement:

Table 2 – Minimum Shaft Engagement

Minimum Shaft Engagement								
HSM			Cyclo® HBB			Cyclo® BBB		
Model	mm	in.	Model	mm	in.	Model	mm	in.
107C	117	4.61	Z	112.5	4.43	3A, 2A	208	8.19
115D	128.5	5.06	A	126	4.96	3B, 2B	242	9.53
203E	135.5	5.33	B	143	5.63	3C, 2C	279	10.98
207F	162	6.38	C	186	7.32	3D, 2D	326	12.83
215G	172	6.77	D	204	8.03	3E, 2E	359	14.13
307H	213	8.39	E	224	8.82			
315J	215	8.46						
407S	224	8.82						
415K	224	8.82						
507L	285	11.22						
608M	335	13.19						

Step 7 – With a torque wrench, gradually tighten the capscrews to engage the bushing system. Use the appropriate tightening pattern ("star-pattern" see Fig. 5) to assure complete bushing engagement. Tighten each capscrew to the torque values shown in this table:

Table 3 – Capscrew Tightening Torques

HSM Model	Cyclo® HBB Model	Cyclo® BBB Model	Capscrews (JIS Grade 12.9)		Capscrew Torque	
			Qty.	Size	Nm	Lb.Ft.
107C	Z		6	M10x14	50	37
115D			6	M10x14	55	41
203E	A	3A, 2A	6	M12x16	75	56
207F	B	3B, 2B	6	M12x16	140	104
215G	C	3C, 2C	6	M16x20	250	185
307H	D	3D, 2D	6	M16x20	250	185
315J	E	3E, 2E	8	M16x20	250	185
407S			10	M16x20	250	185
415K			10	M16x35	300	223
507L			12	M16x35	300	223
608M			16	M16x35	300	223

If the shaft is recessed in the bushing, fill the void with grease to prevent corrosion and fouling.

Step 8 – Please read, understand and follow the instructions shown in the reducer/gearmotor installation and operating manual to complete the unit installation and attach the torque arm

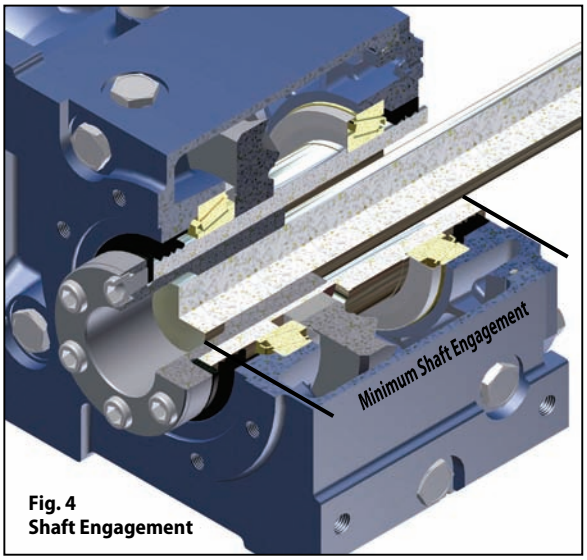


Fig. 4
Shaft Engagement

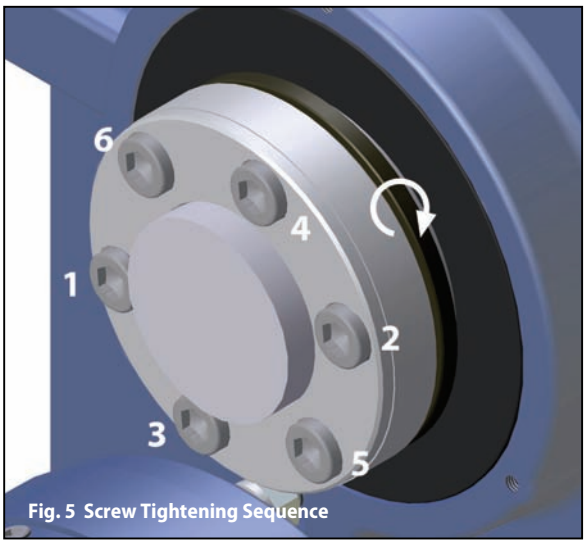


Fig. 5 Screw Tightening Sequence

Removal Procedure

Step 1 – Support the unit prior to beginning the removal procedure. Loosen all capscrews in the bushing until they are free from contact with the thrust collar.

Step 2 – With a soft mallet, sharply strike the flange of the Taper-Grip® bushing to release the taper engagement with the unit.

Step 3 – Hand-tighten at least two (2) capscrews until they contact the thrust collar. This will prevent accidental taper engagement between the bushing and the hub during removal of the unit from the shaft.

Step 4 – Slide the unit from the shaft. If unit removal is difficult due to corrosion or fouling, employ a puller on the bushing to remove the unit from the shaft.