


Throughout this manual, there are a number of HAZARD WARNINGS that must be read and adhered to in order to prevent possible personal injury and/or damage to equipment. Two signal words "WARNING" and "CAUTION" are used to indicate the severity of a hazard and are preceded by the safety alert symbol.



WARNING

Used when serious injury or death MAY result from misuse or failure to follow specific instructions.

It is the responsibility of all personnel involved in installation, operation and maintenance to fully understand the  Warning procedures by which hazards are to be avoided.

1. Installation instructions for impellers equipped with Browning malleable iron split taper bushings: (see Figure 1)
 - a. Low profile plug fans are furnished with split taper bushings for mounting the impeller to the shaft. When properly assembled, the bushings grip the hub with positive clamping action.
 - b. Cap screws, when tightened, lock the bushing in the impeller. Use special plated cap screws threaded full length furnished by Twin City Fan & Blower.
 - c. The bushing is split so that when the locking cap screws force the bushing into the tapered bore, the bushing grips the shaft with a positive clamping fit. This will withstand vibration and punishing loads without being loosened.
 - d. The impeller and bushing assembly is keyed to the shaft and held in place by compression. This gives added driving strength. Before assembly, be sure that the shaft and keyway are clean and smooth. Check the key size with both the shaft and bushing keyways.
 - e. To assemble, insert the cap screws through the clearance holes in the bushing and place the bushing loosely into the impeller. Do not press or drive. Start the cap screws by hand, turning them just enough to engage the threads in the tapped holes on the impeller. Do not use a wrench at this time. The bushing should be loose enough in the impeller to move slightly. Slide the impeller and bushing assembly onto the shaft, making allowance for endplay of the shaft to prevent rubbing. Install the key into the keyway. Do not force the impeller and bushing onto the shaft. If it does not go on easily, check the shaft, bushing and key sizes once again.
 - f. Tighten the cap screws progressively with a wrench. Do this evenly as in mounting an automobile wheel. Tighten each cap screw part of a turn successively until all are tight. These cap screws force the taper bushing into the hub, which in turn compresses the bushing onto the shaft. This makes a positive clamping fit. The torque must not exceed that shown in Table 1. (Note: this is not a locating dimension.)
2. Instructions for removing impeller assembly from the shaft:
 - a. Remove all cap screws from the impeller and hub assembly.
 - b. Start cap screws into the threaded holes in the bushing flange.
 - c. Tighten each bolt successively part of a turn to force the impeller off the bushing. This forces the bushing loose from the impeller and releases the compression so that the entire assembly will slide from the shaft.
 - d. Pull the bushing off the shaft. If the assembly has been in place some time, it may be necessary to use a wheel puller to remove the bushing. Never use a wheel puller on the impeller.

Figure 1. Split Taper Bushing with Hub

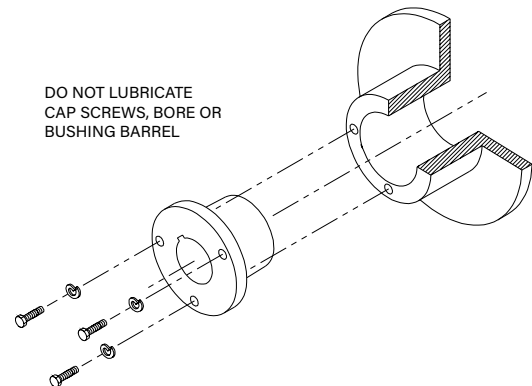


Table 1. Cap Screw Torque Values - Split Taper Bushings

BUSHING NO.	DIAMETER	LENGTH (IN.)	TORQUE FT. LBS.
H	1/4-20	1 1/4	7 1/2
P-1	5/16-18	1 1/2	13
P-2	5/16-18	1 3/4	13
Q-1	3/8-16	1 1/4	29
Q-2	3/8-16	2 1/2	24
R-1	3/8-16	1 3/4	29
R-2	3/8-16	3	24



WARNING

Do not attempt to pull the bushing flange flush with the hub end. There should be 1/8" to 1/4" clearance when tightened.