KIC TECHNICAL BULLETIN

TIPS FOR AVOIDING DRUM FAILURE

The most prevalent premature failure of a brake drum is illustrated in the top photo. A crack has propagated across the center of a wheel stud hole and extends down the side of the drum. This is caused when a drum is not properly seated on the hub and is misaligned or cocked during assembly.

During installation the heavy drum can hang up on the small step between the wheel and drum pilot diameters on the hub. Therefore the portion of the drum at the 12:00 position does not rest on the flange of the hub, instead there is a gap between these mating surfaces. When the wheel and wheel nuts are installed and torqued it creates a high concentration load on the portion of the drum flange that is not supported by the hub. If a stud hole is in this location there is less cross sectional area to resist the load. The relatively brittle cast iron drum can crack.

To avoid misalignment between the drum and the hub, the wheel nuts should be installed and snugged to about 50 ft- lbs in the sequence shown in Figure 1. The crisscross sequencing allows the drum to properly seat itself if it wasn't fully seated prior to installing the wheels. It can "ratchet" into its fully seated position. After all of the nuts are installed, tighten the nuts to the recommended torque shown in Table 1 below using the same crisscross sequence. If the wheel nuts are fully torqued without the 50 ft-lb step, the drum can cock and remain misaligned during the remaining nut torquing.

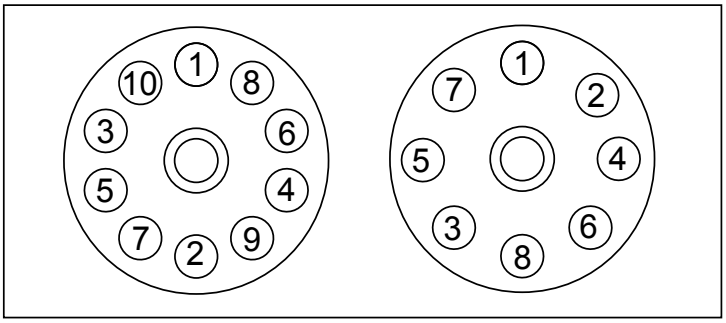

Figure 1: Nut Tightening Sequence for Hub Piloted Disc Wheels

Another cause for misalignment is improper cleaning of the hub before installing a new drum. During normal operation the drum pilot diameter on the hub gets rusty and encrusted with road debris. If the pilot diameter is not cleaned, the material build-up can make it difficult to slide the heavy drum into position. The drum may appear to be in full contact with the hub flange, when in fact it is seated against a heavy build up of road debris. This is especially true in areas where urea and other de-icing chemicals are used in the winter. These chemicals can form rock hard material build up which may required a chisel to remove. Clean the pilot diameter with a wire brush before mounting.

If these installation and maintenance practices are followed the possibility of drum cracking at the flange will be greatly minimized thus increasing the service life of the drum and reducing overall maintenance costs.

Call KIC at 800-488-5422 for more information

TABLE 1
RECOMMENDED MOUNTING TORQUE FOR DISC WHEELS

Mounting Type	Nut Thread	Torque Level Ft-Lb (Oiled*)
Hub Piloted with flange nut	11/16" - 16 M20 x 1.5 M22 x 1.5	300-400 280-330 450-500
		Ft-Lb (Dry)
Stud-Piloted, double cap nut Standard type (7/8" radius)	3/4"-16 1-1/8"-16	450-500 450-500
Stud-piloted, double cap nut Heavy duty type (1-3/16"" radius)	15/16"-12 1-1/8"-16 1-5/16"-12	750-900 750-900 750-900

*** See "Disc Wheel Installation Procedure-Hub Piloted Disc Wheel System", Step 10**

Notes:

1. If using specialty fasteners, consult the manufacturer for recommended torque levels.
2. Tightening wheel nuts to their specified torque levels is extremely important. Under tightening which results in loose wheels can damage wheels, studs and hubs and can result in wheel loss. Over tightening can damage studs, nuts and wheels and result in loose wheels as well.
3. Regardless of the torque method used, all torque wrenches, air wrenches and any other tools should be calibrated periodically to ensure the proper torque is applied.