

10 STUD BRAKE DRUM
INSTALLATION GUIDE
FOR HUB-PILOTED (FN)
MOUNTING SYSTEMS



Nuts and Studs (FN)

- Ensure that nuts and studs are clean and clear of any paint, dirt, or grease.
- If stud or nut threads are found to be damaged or worn, replace with like hardware.
- For additional fastener maintenance guidelines, please refer to TMC Recommended Practice 656 “Hub and Spoke Wheel Fastener Maintenance”
- Use only the correct, matched components when mounting disc wheels.
- Hub-Piloted (FN) wheels use two-piece flange nuts as seen below.



Two-Piece Flange Nut For (FN)
Mounting Systems

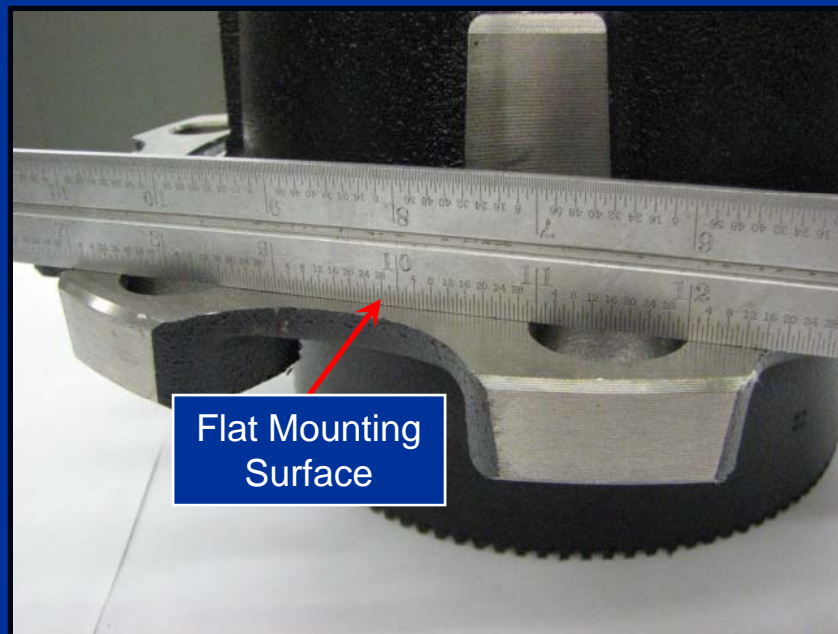


Inner and Outer Capnuts for Ball-
Seat (BSN) Mounting Systems

**Do NOT use Ball-Seat (BSN)
Capnuts with Hub-Piloted (FN)
Mounting Systems**

Step 1: Hub Inspection (FN)

Inspect the hub's mounting flange for damage or wear. A straight edge may be used to verify it's flatness. There should be no visible gaps between the flange and straight edge. If a visible gap is found, the hub must be replaced. If uncertain, please contact Webb Product Engineering Department for further information.



Visually inspect the pilot pads for any signs of damage as seen below. This damage was created from a misinstalled brake drum and would prevent future drums from centering properly. If damage is evident, the hub must be replaced.



Step 2: Clean Mounting Features (FN)

Before mounting a brake drum on its respective hub, ensure that the hub and drum's mounting flange and pilots are free and clear from any corrosion, dirt, or excessive paint. A wire brush may be used to clean these surfaces as seen in Figures 1 and 2 below. Assembling painted, dirty, or rusty components can prevent the wheel from seating properly and lead to premature failure.



Figure 1

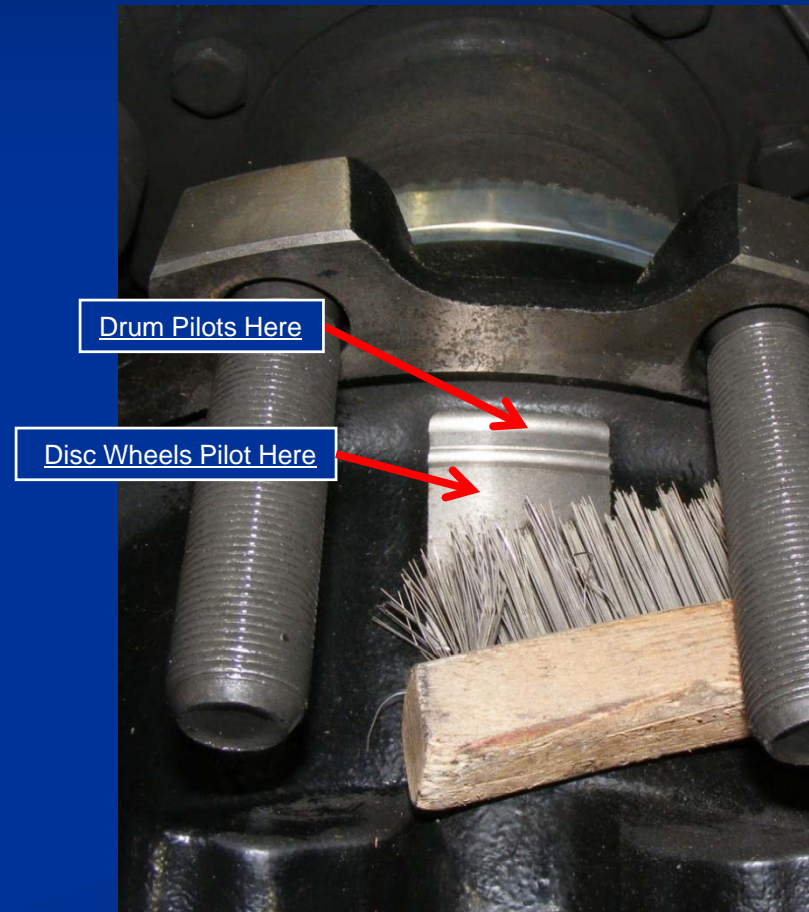


Figure 2

Step 3: For Hub Piloted Applications Only (FN)

For Hub-Piloted flange nuts and studs, apply two drops of 30 weight oil to the following:

1. Each Stud: apply to the last 2 or 3 threads on each stud as seen in Figure 3.
2. Flange Nut: apply between the nut and washer as seen in Figure 4.



Figure 3



Figure 4

NOTE: the studs and cap nuts used in BSN or Stud-Piloted applications are NOT to be lubricated.

Step 4: Align Hub & Mount Drum (FN)

Once the hub and drum's mating surfaces are clean and clear from any corrosion, dirt or debris and the studs and nuts have been properly lubricated, rotate the hub so that a mounting pilot pad is at the 12 O'clock position as shown below in Figure 5. In the event the hub has one continuous pilot rather than separate pilot pads, simply start any stud at the 12 O'clock position.



Figure 5

Install the brake drum taking care not to damage the threads on the mounting studs. Make sure to push the drum against the hub until it's seated over the hub's mounting pilot and firmly against the mounting flange with no interference. This is necessary to ensure the hub and drum mounting pilots have engaged correctly. If any interference exists, verify hub and drum compatibility and/or contact Webb's Product Engineering Department if the problem persists.

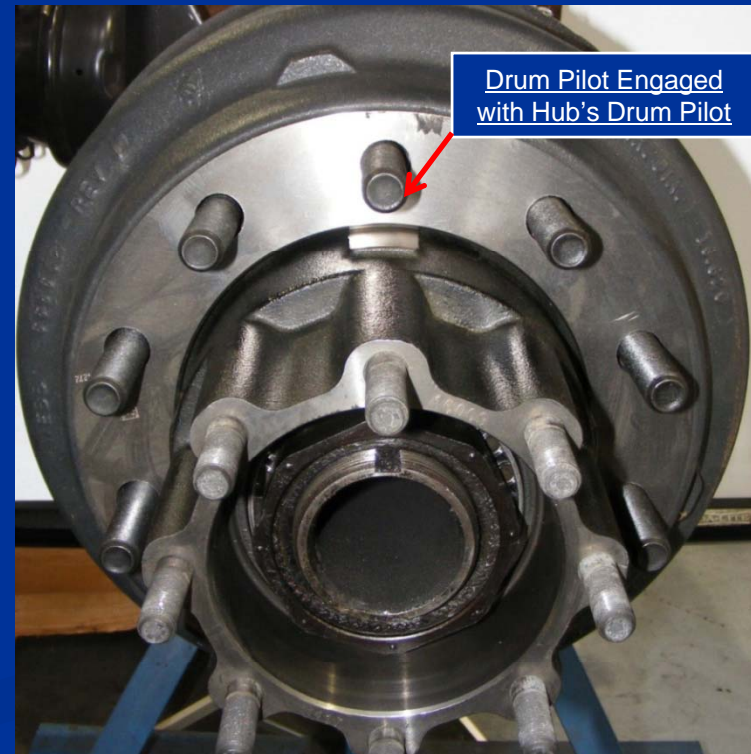


Figure 6

Step 5: Install Wheel(s) and Nuts (FN)

Next, install the inner and/or outer disc wheel(s) taking care not to damage the mounting studs. You also need to make sure to push the wheel firmly against the mounting plate of the drum until seated. If installing dual wheels, ensure that the outer disc wheel is seated flush against the inner.

Once the brake drum and disc wheel(s) have been properly mounted onto the hub, hand tighten nuts in the 12 O'clock, then 6 O'clock position. Continue installing the remaining nuts hand-tight to the remaining studs.



Figure 7



Figure 8

Step 6: Properly Tighten Two-Piece Flange Nuts (FN)

Once all the nuts are hand tightened on their respective studs and ensuring that the hub's pilot pad remains in the 12 O'clock position, tighten the flange nuts to approximately 50 ft-lbs using the sequence shown below beginning with stud position 1 that is located nearest the 12 O'clock position with the hub pilot pad. Continue tightening the remaining studs in the sequence shown to 50 ft-lbs. **It is extremely important to follow this sequence, by beginning with position 1 will help insure that the drum and wheel(s) seat properly on their pilots.** Once all the nuts have been tightened to 50 ft-lbs, fully tighten the nuts to the specified torque level in Figure 9 below, ensuring that the same sequence is followed beginning at position 1. The hub mounting pilot and/or stud is to remain at the 12 O'clock position throughout the tightening sequence.

Hub-Piloted Systems with Flange Nuts	
Nut Thread	Torque Level Ft-Lb (Oiled)
1 1/16"-16	300-400
M20 x 1.5	280-330
<u>M22 x 1.5</u>	<u>450-500</u>
7/8 - 14	350-400

Figure 9



Figure 10

Step 7: Verify Proper Torque Values

Proper torque is important. Use a calibrated torque wrench to assure proper torque on each nut. Insufficient torque can cause stud breakage and damage wheel pilots. Over torque can overstress the studs and strip the threads. Do not deviate from recommended torques specified in Figure 9. Doing so may result in loose wheels.

If air wrenches are used, they must be periodically calibrated in both directions for proper torque output. Use a hand torque wrench to check the air wrench output. If output is not correct, take the necessary steps to adjust.



Figure 11



Figure 12

Step 8: Verify Proper Installation

Once each stud/nut torque is verified, ensure that the drum and wheel(s) are properly seated and installed on the hub. This may be accomplished by visually inspecting the hub pilots and ensuring all components are flush with one another and uniformly centered about each hub pilot. Rotate the assembly, checking for any irregularities.

You may also verify that the brake drum is properly centered with respect to the axle with the use of a dial indicator. This can be accomplished by the placement of the dial indicator needle perpendicular to the drum's braking surface and attaching the opposing end to a stationary object, such as the axle. In the photo below, a magnetic base is used. Once the indicator is secure perpendicular to the braking surface and set to zero, slowly rotate the assembly one complete revolution (360°) while visually monitoring the indicator. The total indicated runout (TIR) should not exceed 0.020". Should the TIR exceed this value, disassemble the drum and wheel(s) and begin the installation process over from the beginning.

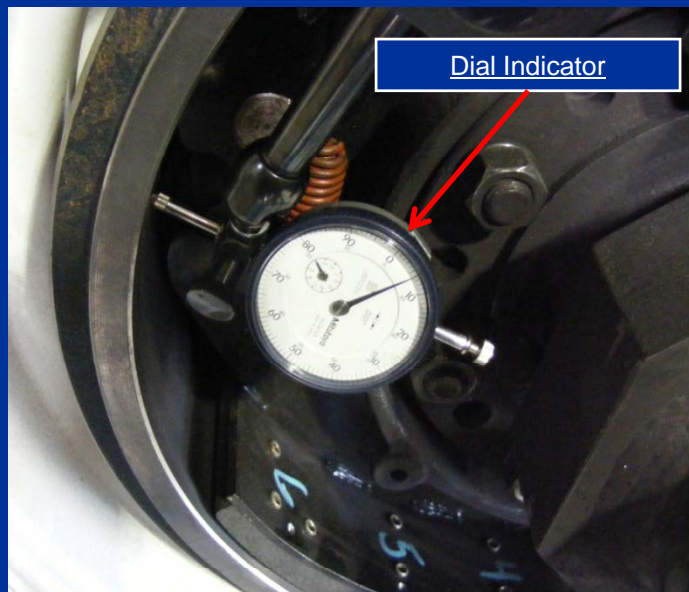


Figure 13

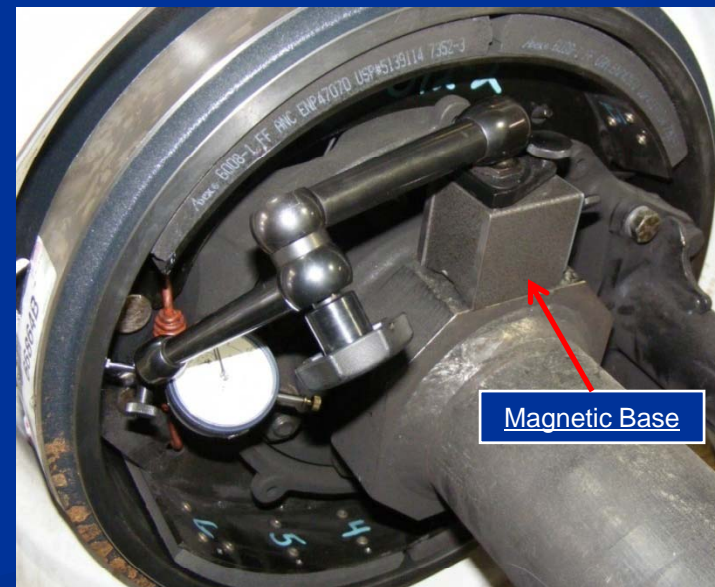


Figure 14

Step 9: Setup Proper Maintenance Intervals

For both new installations and reinstallations, the assembly components will seat naturally and torque may drop after the first fifty (50) to one hundred (100) miles of operation. Check the flange nuts for proper torque after this 50-100 mile interval and retighten to specified value in Figure 9. If this retightening schedule is found to be impractical, you may refer to TMC RP237 for guidelines.

It is recommended that a preventative maintenance program be established to periodically check for wear, damage, proper nut torque, wheel alignment, cracks, and leaks. Such a program will help ensure maximum performance, service life and safety from our product.