



# Dura-Light Hub® and Rotor Assembly

## Air Disc Brake

### Technical Service Manual



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# Introduction

The information provided in this technical service manual applies to air disc brake hubs and rotors that are designed and manufactured by Walther Engineering and Manufacturing Company - "WEMC". If your hub and rotor are from a different manufacturer, refer to their service manual. Hub and rotors can be identified by our logo "WEMC" and part numbers "191" or "240" cast into the assembly. See Figures 1, 2, and 3.

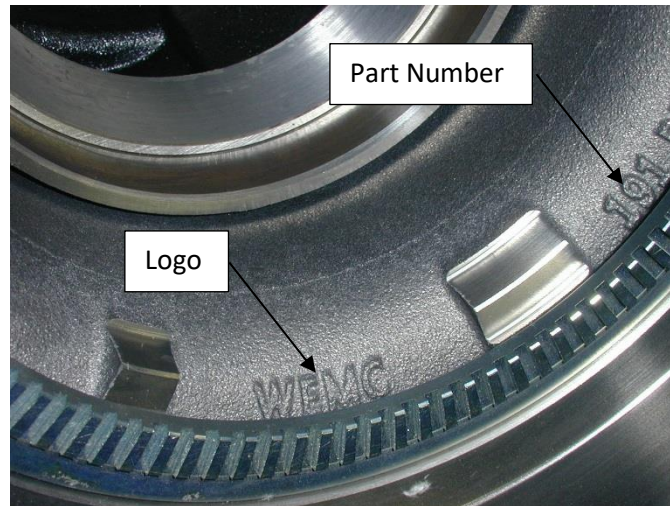


Figure 1

This document includes inspection guidelines for the replacement of the 430mm disc brake rotor, a procedure for removing and replacing the rotor from the hub as well as removing and installing damaged wheel studs. Note: the rotor ABS tone ring is not a serviceable item. Information that is related to brake calipers and brake disc pads is not part of this manual. For engineering specification information related to the Dura-Light Evolution hub and rotors, refer to WEMC's website [www.waltheremc.com](http://www.waltheremc.com).

Before you begin, please make sure that you pay attention to all Warning and Caution messages before attempting to disassemble the hub and rotor. Use special tools as recommended in this manual. Follow your company's safety guidelines where necessary.

## Safety and Hazard Statements

### WARNING

Failure to properly secure the trailer from movement while removing the hub and rotor assembly may lead to serious injury or death.

### CAUTION

Failure to follow the procedures in this manual or the vehicle manufacturer's manual can result in personal injury, or damage to components, vehicles, or personal property.

### NOTE

A note includes information that may be in addition to the information outlined in this manual to further assist the technician.

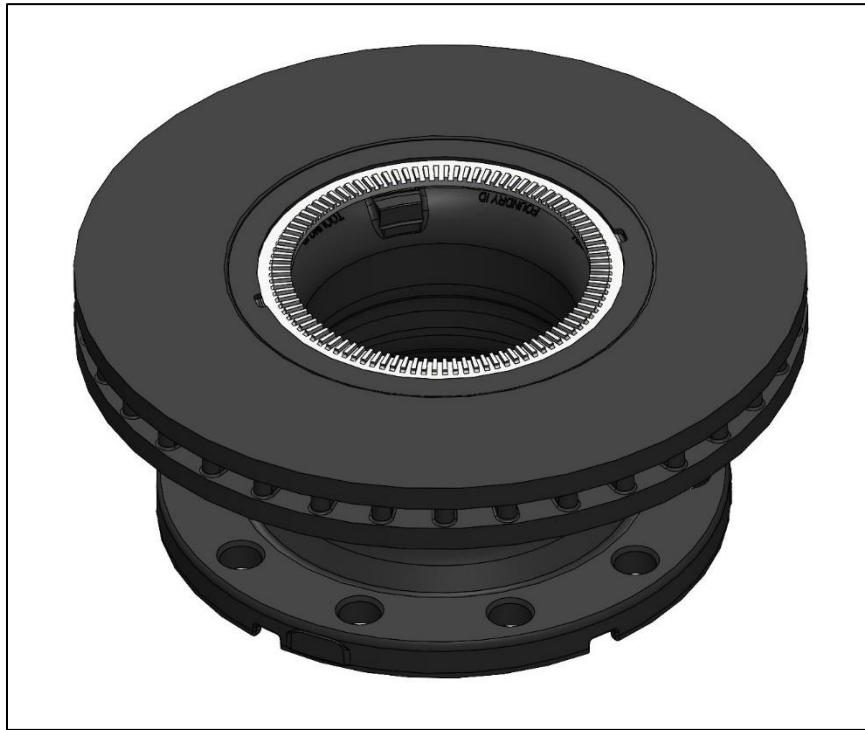


Figure 2 – 191 Rotor

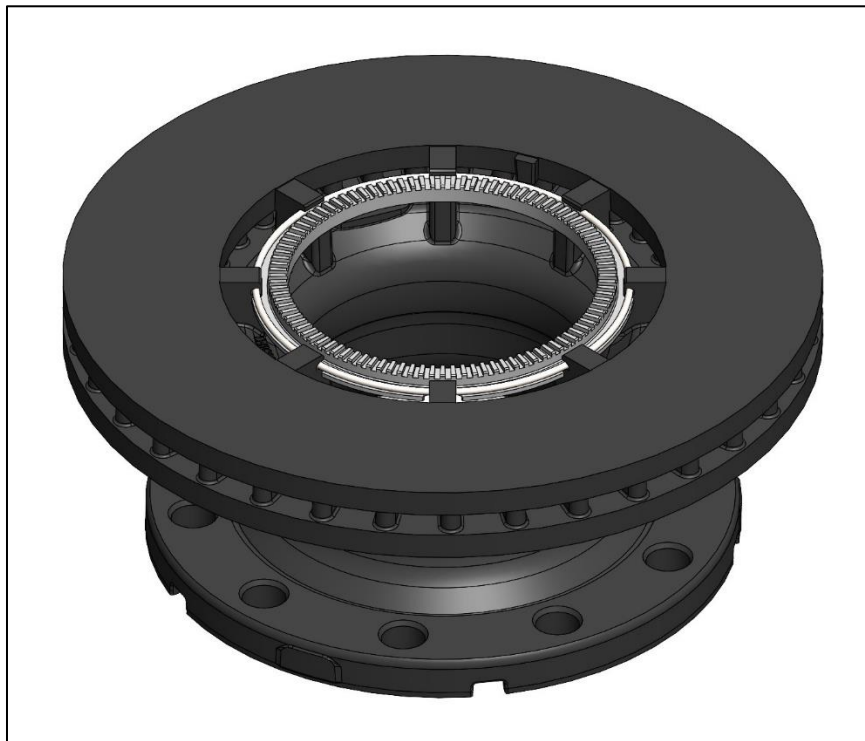


Figure 3 – 240 Rotor

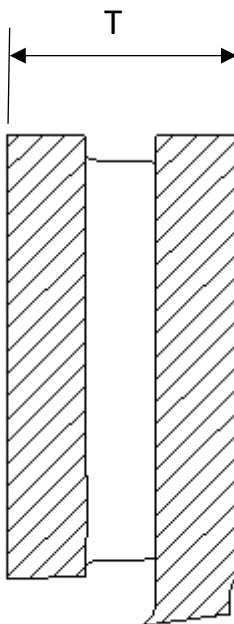
## Inspection Disc Brake Rotor

Examine the rotor and measure the plate thickness for the thinnest point near or at the center of the plate. See Figure 4 and Figure 5. Avoid measuring near the edge of the rotor plates. The following illustrations show acceptable rotor thickness and surface condition:

### WEAR LIMIT

Figure 4

Replace the rotor if thickness "T", when measured at several locations around the rotor, is at or near minimum wear limit. See Figure 9.



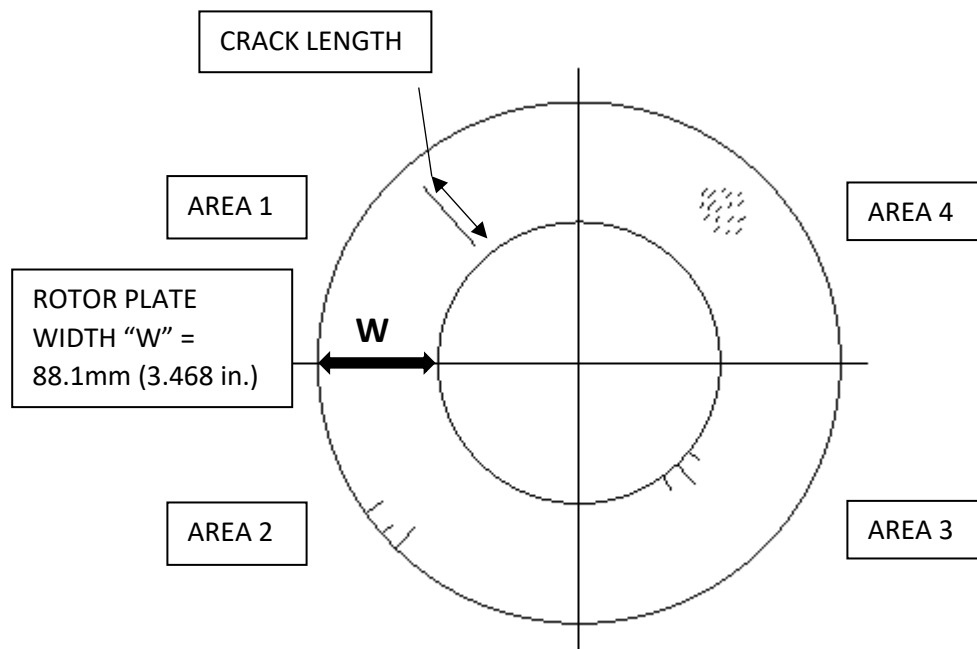
T(New) = 45mm (1.768in)

T(Minimum) = 41.9mm (1.650in) 191 Rotor

T(Minimum) = 39.0mm (1.535in) 240 Rotor

# SURFACE INSPECTION

Figure 5



- AREA 1: Radial crack length which exceed 75% of "W" – replace rotor.  
AREA 2: Radial crack which reaches O.D. of plate – replace rotor.  
AREA 3: Radial crack which reaches I.D. of plate – replace rotor.  
AREA 4: Light to moderate radial cracks (heat checks) over surface – no action required.

## NOTE:

- 1) Any rotor in which a crack has propagated thru the section thickness of the brake plate regardless of length, must be replaced immediately.
- 2) Any rotor that develops cracks radiating from or between the mounting holes must be replaced immediately.
- 3) Any rotor which exhibits martensite must be replaced – see Figure 6. Martensite is characterized by localized black spots on the brake plate surface.



- 4) WEMC does not recommend the turning, re-surfacing, or machining of the brake plates.
- 5) When replacing rotors, it is recommended that the brake pads be replaced at the same time.
- 6) **When replacing rotors, the wheel studs must be replaced at the same time.** Contact your OEM for the appropriate rotor service kit that includes wheel studs.
- 7) Lining Transfer – The buildup of lining material can occur on the brake plates of the rotor. This may be an indication of high brake operating temperatures. This can accelerate lining wear and the cause should be identified and corrected if possible.
- 8) Lateral runout - Runout of the braking surface of the rotor when measured at the center of the rotor face should not exceed .006 in. T.I.R. when measured with a dial indicator. This measurement should be performed after the end play of the hub bearings has been adjusted to the manufacturer's recommendations. The rotor should be replaced if T.I.R. exceeds .006 in. See Figure 7.
- 9) Radial runout – Runout on the outside diameter of the rotor should not exceed .015 in. T.I.R. when using a dial indicator as shown in Figure 8. The rotor should be replaced if T.I.R. is exceeded.
- 10) Thickness variation – the thickness of the rotor when measured at several locations around the rotor should not vary more than .005 inch. If the thickness exceeds .005, replace the rotor. See Figure 9.

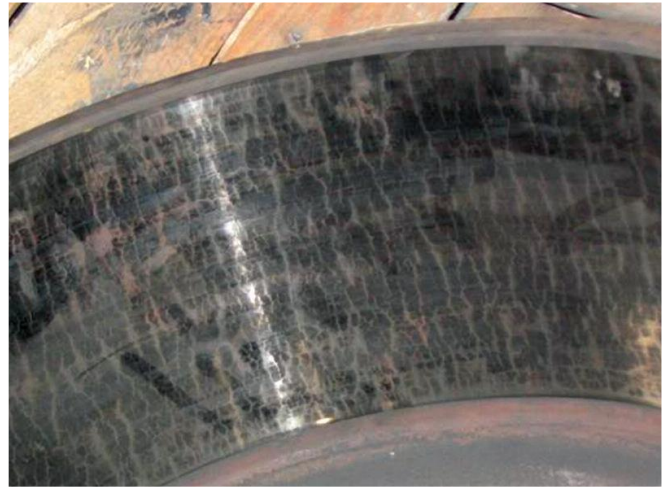


Figure 6



Figure 7



Figure 8



Figure 9

# Hub and Rotor Disassembly

1) The Dura-Light Hub® and rotor assembly is a two-piece assembly held together by the (10) wheel mount 22mm studs. Once the brake caliper and hub-rotor assembly have been removed from the axle, place the WEMC assembly on a clean surface with the wheel studs pointing in the air. This is necessary to gain easier access to the ten (10) wheel studs and allow removal. See Figure 10.

2) The studs may be marked individually with a paint stick to not mix with the new replacement studs when assembling the rotor back onto the hub.

3) Using a standard 22 mm stud removal tool, press each old stud out of the hub-rotor assembly until all (10) studs have been removed. See (Figure 11).

The hub can now be separated from the rotor by lifting it upwards and out of the way. Removal of studs with a hammer is not recommended due to potential impact damage to the hub. Discard all used studs. **Do not reuse.**

## 4) ⚠ CAUTION

Once the old rotor and studs have been discarded, careful attention should be paid to the rotor side of the hub mounting flange. This hub flange may have corrosion or rust where the drain slots and pilot on the old rotor were in contact. See Figure 12. This area must be thoroughly cleaned using a stiff wire brush or emery cloth to allow a snug fit of the new replacement rotor. Failure to do this may cause fitment and/or runout issues between the hub and rotor and

ultimately lead to premature stud or hub-rotor failure of the assembly or wheel loss. If the condition of the hub is considered unusable due to heavy corrosion, fatigue cracks, or oversized stud holes - discard it and replace it with a new one.

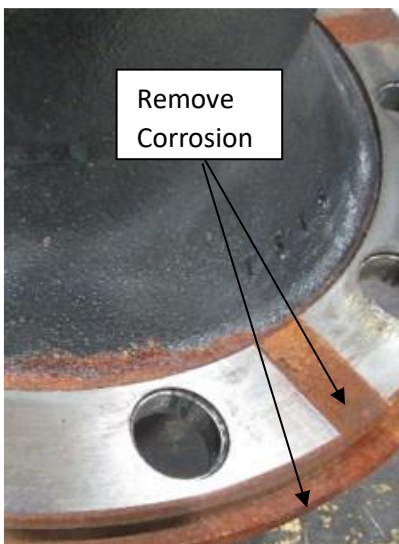


Figure 12



Figure 10



Figure 11

## Note:

- 1) Example of a stud removal tool - Wheel Stud Service Kit – OTC p/n 4295 [www.otctools.com](http://www.otctools.com)



# Rotor Replacement and Assembly

- 1) With a new rotor sitting on a flat surface face down on the brake plates, gently locate the hub on the rotor pilot such that the stud holes carefully align and that the previous drain slot impressions are in line with the new rotor cast drain slots. See Figures 13 & 14.

## WARNING

The hub and rotor connection must be correctly seated to ensure proper clamp and engagement of the wheel studs. Failure to do so may lead to premature stud or hub-rotor failure of the assembly or a wheel loss.

- 2) Using the same tool that was used to remove the studs, pull the first new stud into the assembly until the head of the stud has seated against the rotor flange face. See Figure 15. You may check bolt head seating with a .002 in. feeler gauge between the two. If the gap is greater than .002 in., repeat this step.

## WARNING

Failure to properly seat the wheel studs may lead to premature stud or hub-rotor failure of the assembly or wheel loss.

- 3) After the initial stud has been inserted into the assembly, install the second stud at 180° from the first. See Figure 16. The remainder of the studs may now be installed randomly into the assembly. See Figure 10.

Note:

- 1) When assembling the hub to the rotor, always use the appropriate WEMC new wheel studs.

## WARNING

Failure to use WEMC OEM replacement wheel studs may lead to premature bolt or hub-rotor failure of the assembly or wheel loss.

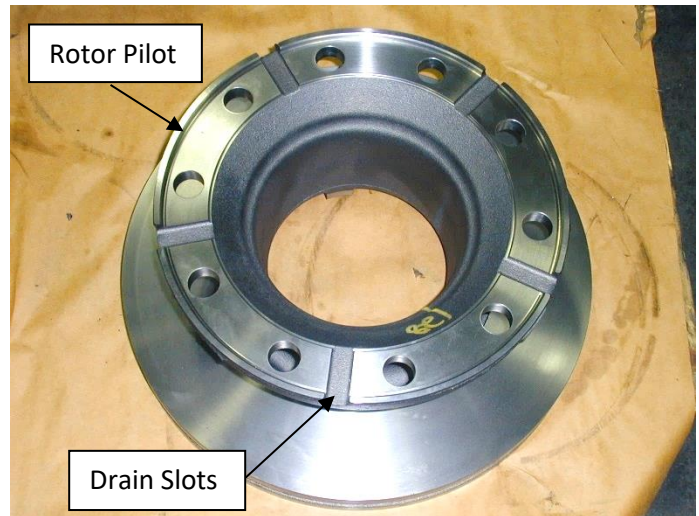


Figure 13

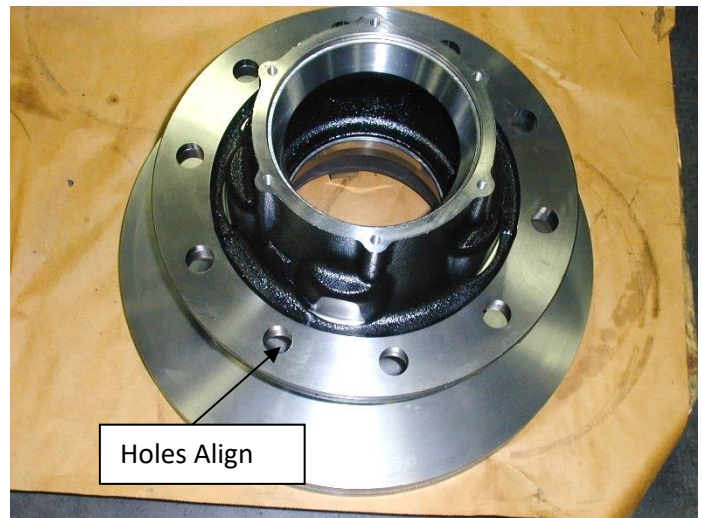


Figure 14

# Wheel Stud Replacement - Assembly

- 1) Circumstances may dictate that a wheel stud requires replacement due to damage or breakage while on the vehicle or in the field. The damaged stud should be removed along with the stud on either side. See Figure 17.
- 2) Using the same tool that was used to remove the stud, pull the new stud thru until the head of the stud has seated against the rotor flange face. See Figure 18.

## Note:

1) Removal of a wheel stud does not require that the rotor be removed nor does the assembly need removal from the axle. In cases where a stud removal tool is unavailable, it may be necessary to pound out the stud with a hammer. This is not recommended for damage to the hub or the bearing races and cones may occur. This should only be performed under extreme circumstances. Install each new stud using a two-piece flange wheel nut along with a piece of tubing or a stack of washers. Discard the wheel flange nut after this procedure if used on more than one stud due to possible thread damage that can occur due to high friction forces and heat distortion. Where used in this case, replace with a new 22mm wheel flange nut.

## ⚠ CAUTION

Use a different wheel nut to install each stud. Tighten up to 300 lb-ft (407 Nm) of torque to seat the wheel stud against the rotor flange face. Do not apply more than 500 lb-ft (678 Nm) of torque to ensure that the wheel stud is fully seated. Note: Several drops of oil may be applied to the stud if there is thread corrosion.



Figure 15

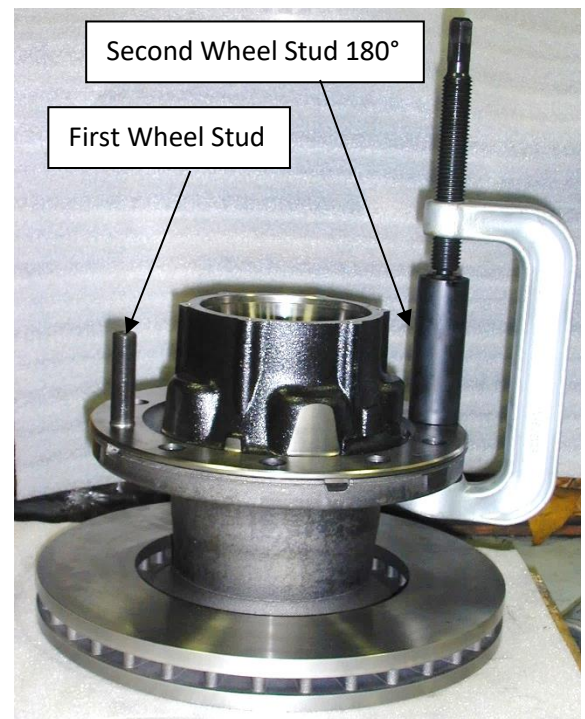


Figure 16

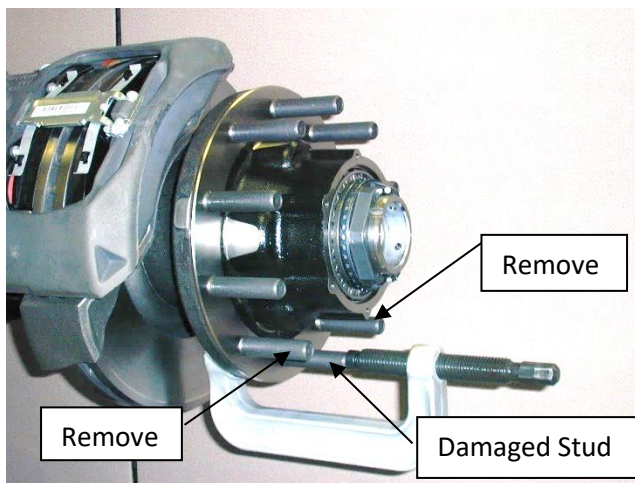


Figure 17



## Hub Installation and Bearing Adjustment

- 1) Download details regarding our installation manual for wheel hubs with manually adjusted bearings can be found at [www.waltheremc.com](http://www.waltheremc.com).
- 2) Download details regarding product specification sheets for The Dura-Light Hub® and rotor assemblies can be found at [www.waltheremc.com](http://www.waltheremc.com).
- 3) If access to our website is not available follow the trailer OEM recommended procedure.



Figure 18

## Caliper Installation

- 1) Reinstall the brake caliper and brake pads and adjust them according to the brake caliper OEM recommended procedure.

## Wheel Installation

- 1) Rotate a hub wheel pilot boss to a vertical 12 o'clock position on the axle.
- 2) Reinstall the wheels.
- 3) After tightening to 50 lb-ft, torque the wheel flange nuts in a star pattern to 450-500 lb-ft. See Figure 19. After the first 50 to 100 miles, re-torque again.

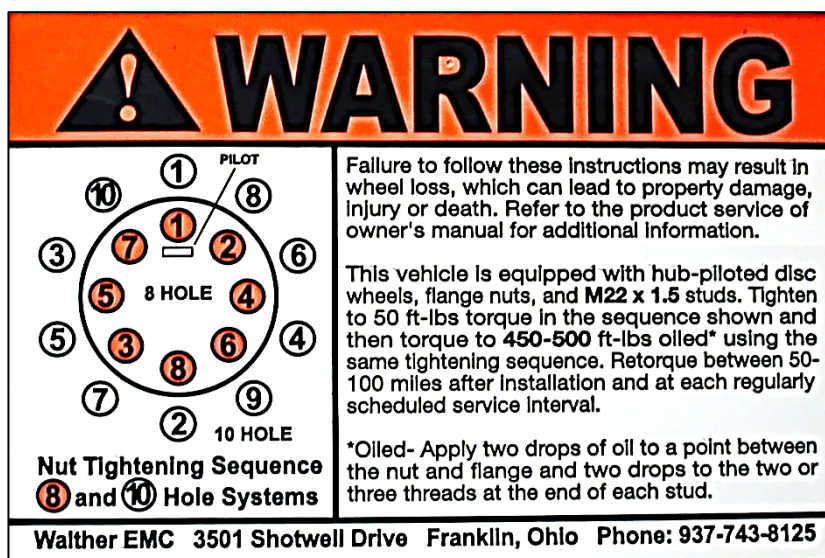


Figure 19

### Reference Documents Available Upon Request from Walther EMC:

- TMC RP 618B . . . . . Wheel Bearing Adjustment Procedures
- TMC RP 622B . . . . . Wheel Seal and Bearing Removal, Installation and Maintenance
- TMC RP 631C . . . . . Recommendations for Wheel End Lubrication
- TMC RP 644A . . . . . Wheel End Conditions Analysis Guide
- SAE J2535\* . . . . . Setting Preload in Heavy-Duty Wheel Bearings

\* SAE documents only available on [www.sae.org](http://www.sae.org).

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