

## BIRRANA BRAKE WEAR GAUGE TO SUIT CAT® TRUCKS - FITMENT TO BRAKE GROUPS ALREADY IN SERVICE -

### WARNING

This document contains instructions for when it is needed to install a Birrana brake wear gauge into a brake group that is already in service. This method is not as accurate as setting the gauge to a known condition at the time of rebuild. The method detailed in this document does not account for warped brake plates, unevenly worn brake plates, and manufacturing tolerances in the brake group. Each of these conditions can result in an incorrect wear reading on the gauge. H-E Parts **STRONGLY RECOMMENDS** fitting brake wear gauges at the time of brake rebuild when condition of the brake can be determined by the direct inspection and measurement of individual plates. Instructions for this method can be found on the H-E Parts web page – [www.h-e-parts.com](http://www.h-e-parts.com) – or from your local H-E Parts representative.

Most accidents involving machine operation or maintenance are caused by failure to observe basic safety rules or safety precautions. Read and understand all safety precautions and warnings, before attempting installation and operation of the brake wear gauge.

H-E Parts International cannot anticipate every possible circumstance that may involve a potential hazard. You must comply with all mine-specific safety procedures, and satisfy yourself that any procedure, tool or operation method used is safe for yourself and others.

Refer to the truck manufacturer's repair and maintenance instructions in conjunction with these instructions where applicable. Obey all recommended safety instructions or warnings.

Before working on the truck make sure that the work area is safe, the truck wheels are chocked, and that the equipment is tagged and locked out in accordance with mine safety procedures.

*The Birrana brake wear gauge is a tool for measuring brake wear, and once installed, remains in the wheel end at all times. It is completely oil sealed, and eliminates the need for bleeding the brakes when checking brake wear.*

*In addition, the Birrana brake wear gauge can be set to a pre-determined wear condition – ie 0% wear on a new brake pack. The procedure to set the gauge is contained within this document.*

*Once the Birrana brake wear gauge has been set, only a single reading or measurement is required to check wear.*

### CAUTION

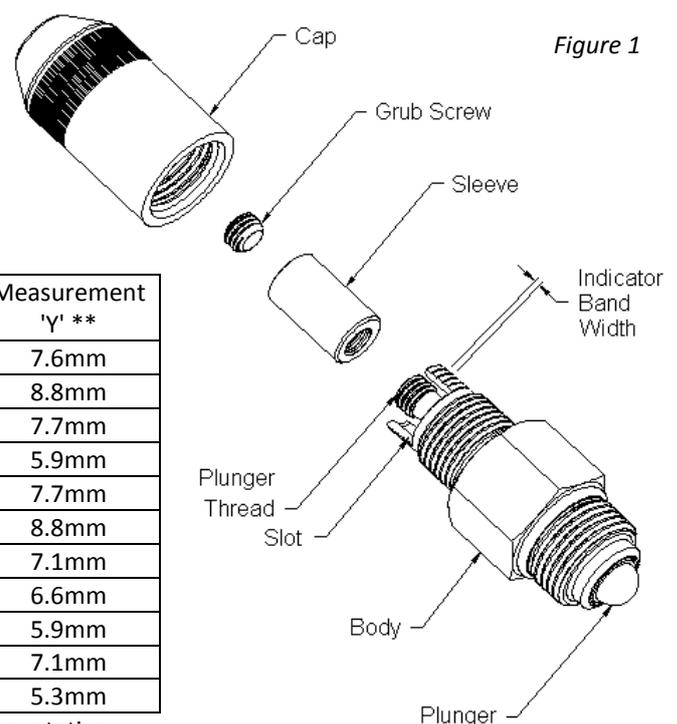
Use of the Birrana brake wear gauge does not eliminate the need to conduct regular braking performance checks, e.g. "drive-through" tests. All manufacturer's brake inspection and testing procedures, plus any mine specific, regulatory or statutory inspection and testing requirements must continue to be followed.

*Table 1*

Brake Group	Brake Wear Gauge Part No.	Reference Instructions*	Sleeve Colour	Measurement 'Y' **
793 EL Rear	A10365	II0053	Purple	7.6mm
793 Rear	A8093	II0029	Grey	8.8mm
789 Rear	A8727	II0031	Gold	7.7mm
785 Rear	A8728	II0033	Blue	5.9mm
777F Rear	A11200/A11870	II0059/64	Grey	7.7mm
777D Rear	A8720	II0041	Black	8.8mm
777A-C Rear	A8729	II0035	Purple	7.1mm
793 EL Front	A11250	II0057	Black	6.6mm
793 Front	A8728	II0033	Blue	5.9mm
789 Front	A8729	II0035	Purple	7.1mm
785 Front	A8730	II0037	Red	5.3mm

\* Available from [www.h-e-parts.com](http://www.h-e-parts.com) or your local H-E Parts representative.

\*\* Refer Step 5 - 'Measure Apparent Wear of Brake Group'



*Figure 1*

**CHECK FIT OF GAUGE IN BRAKE HOUSING**

Note: Due to the variance in brake housings, it is possible that the brake wear gauge plunger may interfere with the brake housing port it is installed into. Therefore, it is important to check that the plunger can fully and freely extend through the port it will be installed into.

**WARNING**

- Ensure the truck park brakes are applied, and chock the truck wheels.
  - Isolate and lock-out the truck, in accordance with mine safety procedures.
  - Do NOT activate the service brakes or retarder at any point until Brake Wear Gauge installation has been completed.
1. Unscrew the plug in the brake housing port labelled 'S'.
  2. Remove the cap from the brake wear gauge.
  3. Ensure that the plunger can fully extend. The sleeve may need to be wound out.
  4. Screw the brake wear gauge into the port labelled 'S'.
  5. Depress the brake wear gauge sleeve, to extend the plunger through the port.

If the plunger and circlip pass freely through the brake housing port, proceed to "Measure Apparent Wear of Brake Group".

If the plunger or circlip contacts the brake housing, the brake wear gauge cannot be fitted at this time. At the next brake rebuild, the brake housing port will need to be drilled out as detailed in the reference instructions - refer to Table 1.

6. Remove the brake wear gauge from the brake.

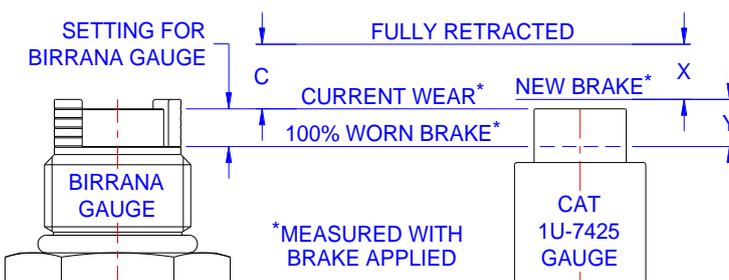


Figure 2

**MEASURE APPARENT WEAR OF BRAKE GROUP WITH CAT<sup>®</sup> 1U-7425 AND 5P-9726 / 160-1726 / 344-9164 GAUGE COMBINATION**

Note: This step involves measuring the apparent wear of the brake group using the CAT<sup>®</sup> method, and setting the Birrana gauge based on that measurement. Please read the warnings on the first page, and all relevant CAT<sup>®</sup> warnings. This is NOT as accurate or reliable as setting the gauge during the rebuild, and can only be as accurate as the CAT<sup>®</sup> procedure allows.

1. To measure the apparent wear of the brake group, use both the CAT<sup>®</sup> 1U-7425 and 5P-9726 / 160-1726 / 344-9164 brake wear gauge components, and the associated CAT<sup>®</sup> instructions.
2. Refer to the CAT<sup>®</sup> instructions to determine the total movement of the gauge plunger when the brake goes from fully applied to fully released (measurement 'C'). Also refer to Figure 2.

**CAUTION**

Ensure that the brake wear measurement from the CAT<sup>®</sup> gauge sounds appropriate for the known life of the brake. If the brake wear measurement does not sound likely for the hours on the brake, DO NOT proceed.

3. Determine what the CAT<sup>®</sup> gauge plunger travel should be for a new brake (0 percent of brake wear) - refer to the table in the CAT<sup>®</sup> instructions, or for the relevant "baseline value for piston stroke". This will be referred to as measurement 'X'. Also refer to Figure 2.
4. Ensure that the park brakes are applied. Ensure that the engine has been turned OFF. Remove the CAT<sup>®</sup> brake wear gauge.
5. Determine the setting for the Birrana brake wear gauge. This is found by the following method:

Setting height from the sleeve to the bottom of the slot = 'X' + 'Y' - 'C' (Refer Figure 2)

'X' is from Step 3.

'Y' is from Table 1 on page 1 of this document.

'C' is from Step 2.

**MEASURE APPARENT WEAR OF BRAKE GROUP WITH CAT<sup>®</sup>  
348-6962 GAUGE (793 EL FRONT)  
CAT<sup>®</sup> 348-6963 GAUGE (793 EL REAR)  
CAT<sup>®</sup> 348-8573 GAUGE (777F REAR)**

*Note: This step involves measuring the apparent wear of the brake group using the CAT<sup>®</sup> gauge (which has been previously adjusted as per OEM instructions), and setting the Birrana gauge based on that measurement. Please read the warnings on the first page, and all relevant CAT<sup>®</sup> warnings. This can only be as accurate as the CAT<sup>®</sup> procedure allows.*

1. Remove the cap from the CAT<sup>®</sup> brake wear gauge.
2. With the park brakes applied (ie no hydraulic pressure in the park brake release cavity), depress the indicator rod to ensure contact with the brake piston.
3. Measure the height from the top of the indicator rod to the top of the dowel bushing. Refer Figure 3. This height will be referred to as measurement 'Z'.

**CAUTION**

Ensure that the brake wear measurement from the CAT<sup>®</sup> gauge sounds appropriate for the known life of the brake. If the brake wear measurement does not sound likely for the hours on the brake, DO NOT proceed.

4. Ensure that the park brakes are applied. Ensure that the engine has been turned OFF. Remove the CAT<sup>®</sup> brake wear gauge.
5. To correctly adjust the Birrana brake wear gauge, the setting height from the sleeve to the bottom of the slot = 'Z'. Refer Figure 3.

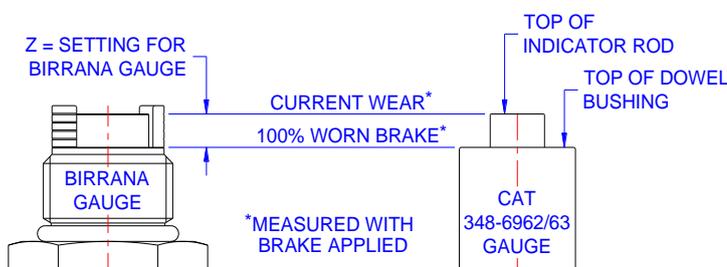


Figure 3

**INSTALL AND SET THE GAUGE**

**CAUTION**

The Brake Wear Gauge must be adjusted at the time of installation, to suit the actual brake port in which it will be used. Screwing the device into another port or using an incorrectly set gauge may lead to incorrect wear measurements being made.

**WARNING**

- Ensure the truck park brakes are applied, and chock the truck wheels.
- Isolate and lock-out the truck, in accordance with mine safety procedures.
- Do NOT activate the service brakes or retarder at any point until Brake Wear Gauge installation has been completed.

1. Remove the cap from the brake wear gauge. Remove the grub screw. Remove the sleeve.

**CAUTION**

Ensure the gauge is the correct model for the brake - refer to Table 1. If the sleeve is not the correct colour, the gauge may be intended for use with a different brake group, and could lead to incorrect wear measurements being made.

2. Screw the brake wear gauge into the selected port labelled 'S', which has been checked for clearance earlier (see "Check Fit of Gauge in Brake Housing").
3. Apply Loctite 243 to the thread inside the sleeve. Wind the sleeve in, until the plunger thread is just visible below the sleeve. Fit the grub screw into the sleeve - do not tighten at this stage.
4. With the park brakes applied (ie no hydraulic pressure in the park brake release cavity), depress the sleeve to contact the plunger with the brake piston.
5. Whilst depressing the sleeve, screw in the sleeve to achieve the correct setting - Refer to the final step of 'Measure Apparent Wear of Brake Group' for the relevant gauge type.

6. Hold the sleeve to prevent it from turning, and “nip-up” the grub screw with a 1/8” allen key.
7. Double check the setting of the sleeve. If not correct, loosen the grub screw, then repeat steps 4 - 7.
8. Unscrew the brake wear gauge from the brake housing.

**WARNING**

**Do NOT activate the service brakes or retarder when the brake wear gauge is removed. Potentially hot oil may be expelled, which may cause burns or personal injury.**

9. Depress the sleeve to expose the flats on the plunger. Refer to Figure 4. Put an 8mm (5/16”) spanner on the flats of the plunger. Using the spanner and allen key, tighten the grub screw to secure the sleeve in place.
10. Screw the brake wear gauge back into the brake housing.
11. Double check the setting of the sleeve. If not correct, loosen the sleeve and grub screw, then repeat steps 4 - 11.

12. Screw on the cap by hand. Do not overtighten.

13. Bleed the service brake as per manufacturer’s instructions.

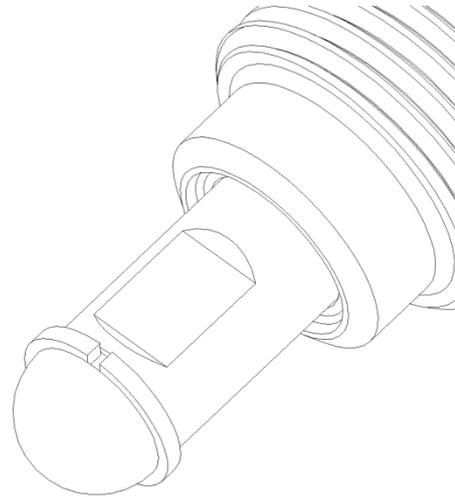


Figure 4

*Note: CAT<sup>®</sup> is a registered trademark of Caterpillar Inc. Peoria, Illinois, USA.  
The CAT<sup>®</sup> name is used for reference purposes only. No affiliation or association is claimed or implied.*

*If you require any further assistance with this procedure please contact your local H-E Parts representative.*

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