

## BIRRANA BRAKE WEAR GAUGE TO SUIT CAT<sup>®</sup> 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. Birrana **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 Birrana web page – [www.birrana.com.au](http://www.birrana.com.au) – or from your local Birrana 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.

Birrana Engineering 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.

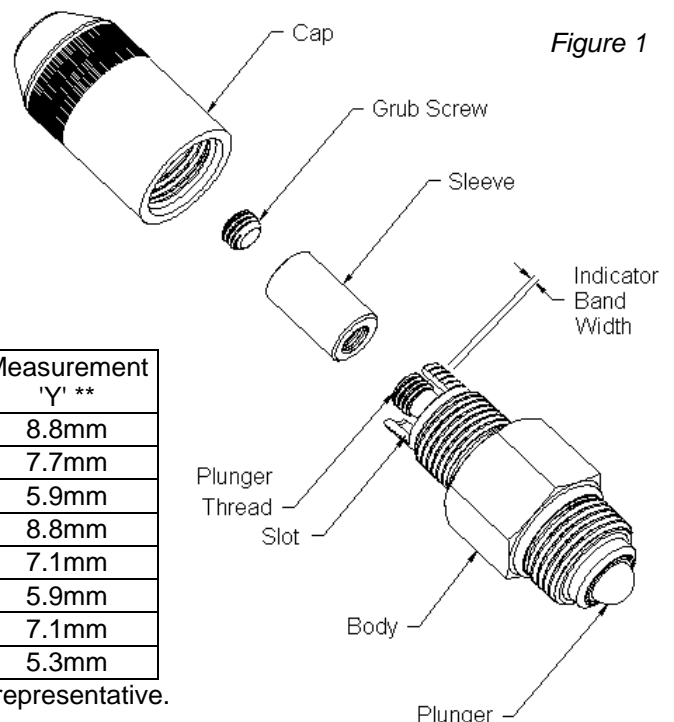


Table 1

| Brake Group | Brake Wear Gauge Part No. | Reference Instructions* | Sleeve Colour | Measurement 'Y' ** |
|-------------|---------------------------|-------------------------|---------------|--------------------|
| 793 Rear    | A8093                     | II0029                  | Grey          | 8.8mm              |
| 789 Rear    | A8727                     | II0031                  | Gold          | 7.7mm              |
| 785 Rear    | A8728                     | II0033                  | Blue          | 5.9mm              |
| 777D Rear   | A8720                     | II0041                  | Black         | 8.8mm              |
| 777A-C Rear | A8729                     | II0035                  | Purple        | 7.1mm              |
| 793 Front   | A8728                     | II0033                  | Blue          | 5.9mm              |
| 789 Front   | A8729                     | II0035                  | Purple        | 7.1mm              |
| 785 Front   | A8730                     | II0037                  | Red           | 5.3mm              |

\* Available from [www.birrana.com.au](http://www.birrana.com.au) or your local Birrana representative.

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

### 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. Unscrew the brake wear gauge.

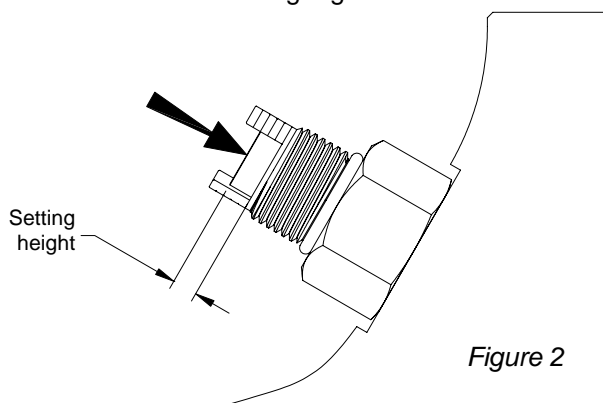


Figure 2

### MEASURE APPARENT WEAR OF BRAKE GROUP

*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 previous page. This is NOT as accurate or as reliable as setting the gauge during the rebuild, and is only as accurate as the CAT<sup>®</sup> measurement.*

1. To measure the apparent wear of the brake group, use the CAT<sup>®</sup> 1U-7425 brake wear gauge 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').

#### **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. This will be referred to as measurement 'X'.
4. Remove the CAT<sup>®</sup> brake wear gauge. Ensure that the park brakes are applied. Ensure that the engine has been turned OFF.
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.

The brake wear gauge will only be set to this value on installation. Refer to 'Install and Zero the Gauge'.

## INSTALL AND “ZERO” 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 “zeroed” 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 Step 5 of 'Measure Apparent Wear of Brake Group'.

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 3. 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.

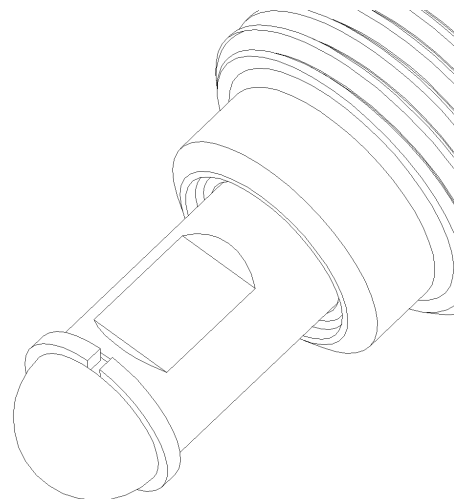


Figure 3

Note: CAT® is a registered trademark of Caterpillar Inc. Peoria, Illinois, USA.  
The CAT® 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 Birrana representative.  
Adelaide (08 8445 7755) Perth (08 9370 5048) Mackay (07 4952 5422) Singleton (02 6571 4488)