

BIRRANA A10000 BRAKE WEAR GAUGE TO SUIT KOMATSU TRUCKS – HD785 REAR BRAKE

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 any equipment make sure that the work area is safe, 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 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. This ability to set the brake wear gauge eliminates the build-up of manufacturing tolerances, which allows far more accurate measurement. 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.

CHECK FIT OF GAUGE IN BRAKE HOUSING

(Check to be carried out before reassembly of brake group, with housing stripped from brake)

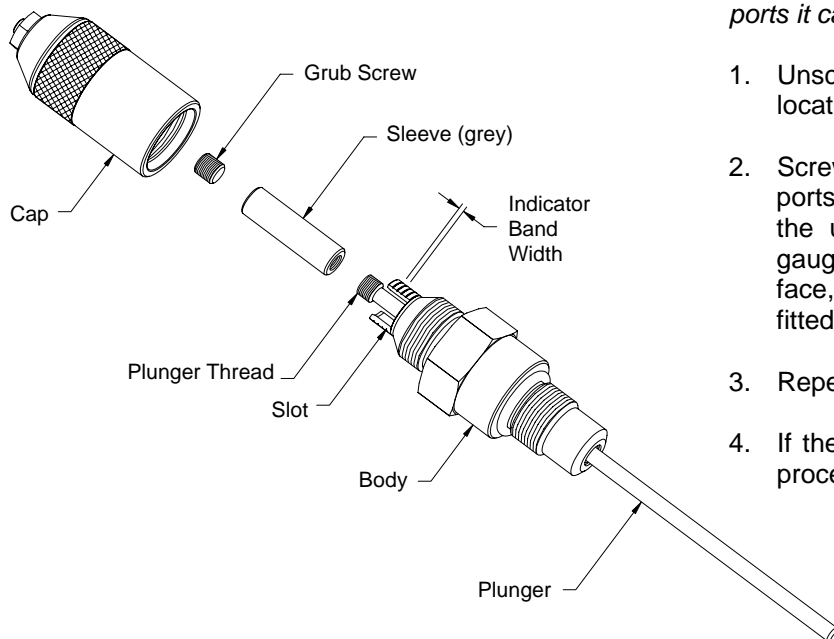


Figure 1

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 ensure that the plunger can fully and freely extend through both ports it can be installed into.

1. Unscrew the plugs in the brake housing ports located next to the brake cooling lines.
2. Screw the B10030 port gauge into one of the ports located next to the brake cooling lines. If the underside of the hex head of the port gauge does not contact the brake housing face, the A10000 brake wear gauge cannot be fitted to this port. Unscrew the port gauge.
3. Repeat steps 1 – 2 for the second port.
4. If the port gauge seats correctly in the ports, proceed to "Measure Plates".

MEASURE PLATES

1. Measure the thickness of the friction discs.

Table 1

Friction Disc Wear Chart	
Disc Thickness	Percent Disc Worn
5.08mm (0.200")	0%
5.03mm (0.198")	10%
4.98mm (0.196")	20%
4.93mm (0.194")	30%
4.88mm (0.192")	40%
4.83mm (0.190")	50%
4.78mm (0.188")	60%
4.72mm (0.186")	70%
4.67mm (0.184")	80%
4.63mm (0.182")	90%
4.57mm (0.180")	100%

2. Replace any discs that do not have the necessary thickness to last until the next scheduled brake rebuild.

The difference between the thickest and thinnest friction disc should not be greater than 0.1mm.

3. Replace any discs that exhibit signs of overheating, water damage, spline damage or cracking.
4. Replace any stationary plates that are thinner than 2.29mm.
5. Replace any stationary plates that have deep radial grooves, or are warped.
6. Replace both of the dampers.
7. Add up the thicknesses of all the friction discs. Record the overall width of the friction disc stack.

INSTALL AND "ZERO" THE GAUGE

1. Having ensured that the previous steps have been completed, assemble the brake as per Komatsu or Birrana specification.

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

If the Brake Wear Gauge installation is done with the axle installed in the truck:

- 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.
 - Ensure the brake has cooled to ambient temperature before performing work on the brake.
2. Remove the cap from the brake wear gauge. Loosen the grub screw, and wind the sleeve out (ACW), until the plunger thread is just visible below the sleeve.

CAUTION

Ensure the sleeve is grey in colour. If the sleeve is not grey, the gauge may be intended for use with a different brake group, and could lead to incorrect wear measurements being made.

3. Screw the brake wear gauge into the selected port (next to brake cooling line, normally fitted with a plug), which has been checked for clearance earlier (see "Check Fit of Gauge in Brake Housing").
4. 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 (use Table 2 as a guide).
6. Hold the sleeve to prevent it from turning, and “nip-up” the grub screw with a 3mm allen key.
7. Double check the setting of the sleeve. If not correct, loosen the grub screw, then repeat steps 5 - 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 the supplied 4mm spanner (B10099) 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 5 - 11.
12. Screw on the cap by hand. Do not overtighten.
13. Bleed the service brake as per manufacturer’s instructions.

Table 2 – HD785 Rear

Friction disc stack height - See Step 7 of “Measure Plates”	Percent brake wear remaining	Height from sleeve to bottom of slot
76.20mm	100%	7.7mm [†]
75.44mm	90%	6.9mm
74.67mm	80%	6.1mm
73.91mm	70%	5.4mm
73.14mm	60%	4.6mm
72.38mm	50%	3.8mm
71.61mm	40%	3.1mm
70.85mm	30%	2.3mm
70.08mm	20%	1.5mm
69.32mm	10%	0.8mm
68.55mm	0%	0.0mm

[†]Set the sleeve flush with the top of the gauge castellations, when new plates are fitted.

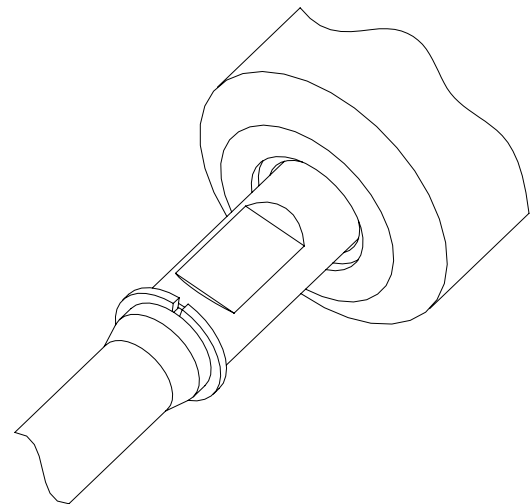


Figure 3

USING THE GAUGE TO MEASURE BRAKE WEAR

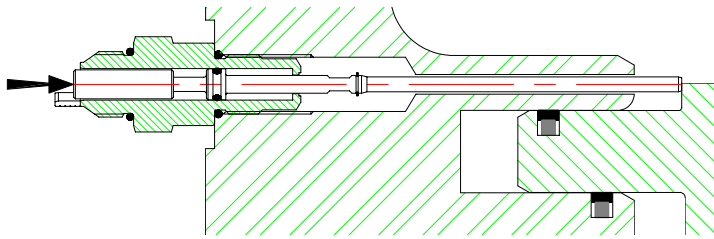


Figure 4

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.

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 measurement has been completed.

1. Remove the cap from the brake wear gauge.
2. Depress the sleeve to contact the plunger with the brake piston.

Table 3 – HD785 Rear

Percent brake wear remaining	Height from sleeve to bottom of slot	Sleeve aligned to top of band* no.
100%	7.7mm [†]	5
90%	6.9mm	
80%	6.1mm	4
70%	5.4mm	
60%	4.6mm	3
50%	3.8mm	
40%	3.1mm	2
30%	2.3mm	
20%	1.5mm	1
10%	0.8mm	
0%	0.0mm	0

[†]Sleeve flush with top of gauge castellations when new plates are fitted (100% wear remaining).

*Each band corresponds to 20% brake wear. Refer Figure 1 and Figure 5.

3. Take a reading of the wear. This can be done by:
 - a) Measuring the height of the sleeve from the bottom of the slot with a vernier. Refer to Table 3 to determine brake wear.
 - b) Referring to bands on the gauge. If the sleeve is flush with the *bottom* of the castellations, the brake has 0% wear remaining (completely worn). If the sleeve is flush with the *top* of the castellations (aligned to the top of the band 5), the brake has 100% wear remaining (brand new). Refer to Table 3 for more information.
4. Screw on the cap by hand. Do not overtighten.

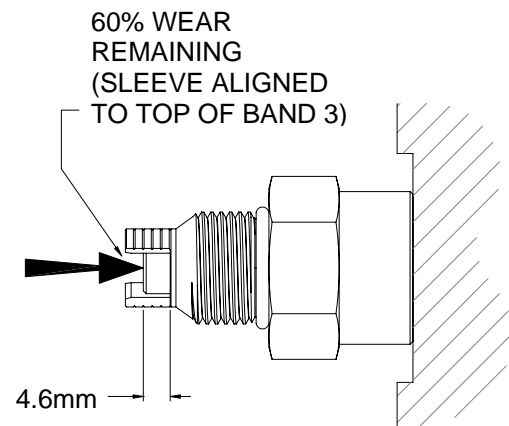
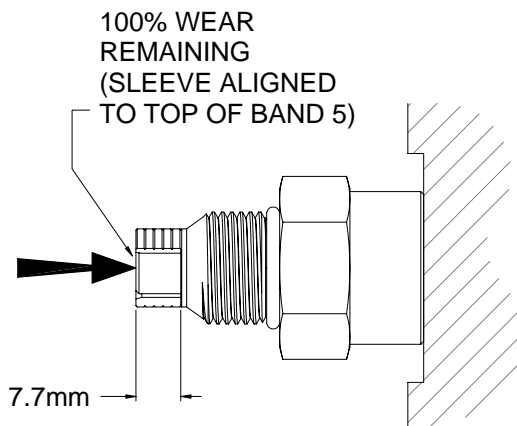


Figure 5

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)