K695

ArvinMeritor™

Brake Shoe Setting Gauge - MST 2005

This instruction contains the relevant information to carry out the above procedure. For more comprehensive detail please refer to the ArvinMeritor service manual MM 0267 which can be found at www.meritorhvs.com

WARNING: For optimum results and safety, ArvinMeritor recommends that all work be carried out by a suitably trained mechanic and worn disc brake assemblies should be replaced by new disc brake assemblies. If it is decided to service a used disc brake assembly particular attention should be paid to the following instructions. If in doubt fit a new disc brake assembly

Park the vehicle on hard ground and chock the road wheels. Apply air pressure to release the park brake and wind off the spring brake retraction screw (where appropriate). Jack up the axle and fit suitable axle stands securely. Remove the road wheels and exhaust all air from the system.
Remove the brake drum.
Remove any dirt from the brake assembly with a wire brush, avoiding damage to rubber dust excluders.

WARNING: Never use an air line to blow dust from the brake/rotor area. If inhaled any form of dust can at best be an irritant, at worst dangerous. Whenever possible remove dry brake dust with a vacuum brush. Alternatively wipe the areas with a damp cloth, never try to accelerate drying time by using an air line.

The Brake Shoe Setting Gauge is an essential tool for checking and setting the brake shoes on the F.C.S.S. and F.C.S.S.A. brakes. Its correct use ensures that the trailing shoe contacts the drum marginally before the leading shoe thereby avoiding differential braking across the axle.

The adjustment arm can be rotated through 180° to cater for different lining thicknesses (e.g. With the flat uppermost the pointer has a greater reach for thinner linings).

On the F.C.S.S. brake, adjustment is made using shims (Part No. 64276153). The operation is eased by using the Shoe Expanding Tool (Part No. MST 2002) which avoids the need to remove the brake shoes.

Using the Shoe Setting Gauge

Introduction

Whenever maintenance work is carried out the following check should be made to facilitate the correct bedding-in of the linings when renewed.
If this is not carried out differential braking across the axle may occur during the bedding-in period. The object is to ensure that the trailing shoe contacts the drum before the leading shoe and is achieved on the F.C.S.S. brake by shimming the adjuster tappet head whilst on the F.C.S.S.A. brake by manual adjustment (Refer to Fig. 1 if in doubt as to the brake type).

Time spent in setting up the brake initially will pay dividends in brake performance and driver satisfaction.

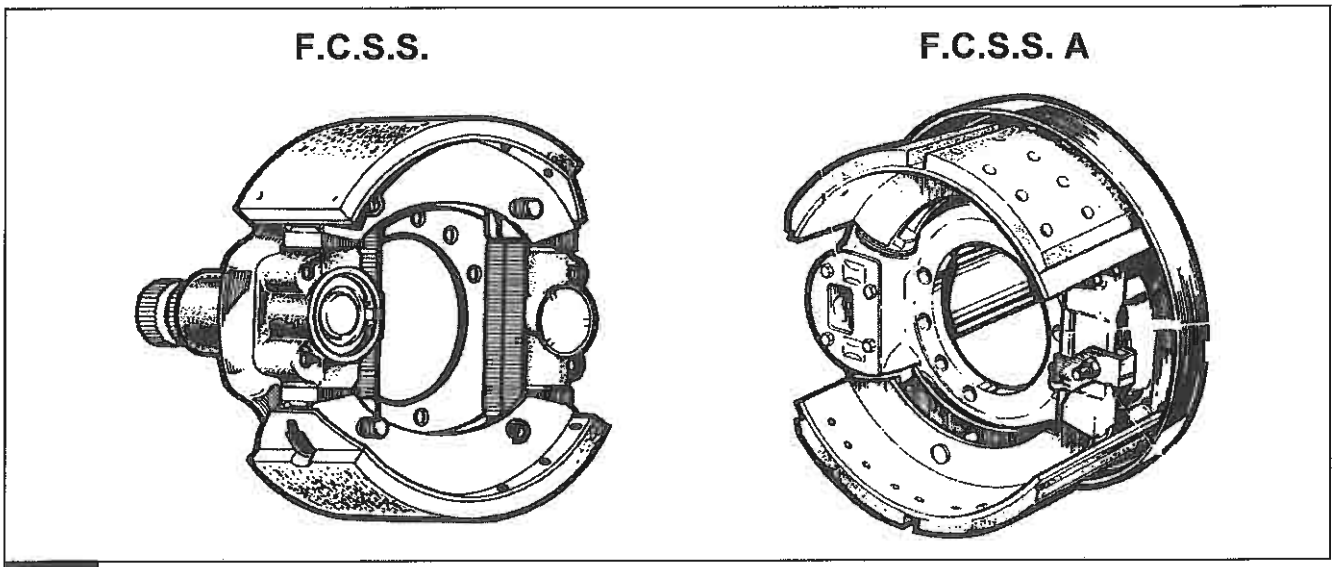

Fig 1

Shoe Setting Procedure (F.C.S.S. & F.C.S.S.A.)

The trailing shoe lead may need to be reset after fitting expanders, adjusters or new linings/shoes. The use of this gauge (Figs. 2 & 3) ensures that the correct relationship between the leading and trailing shoes and the drum is achieved.

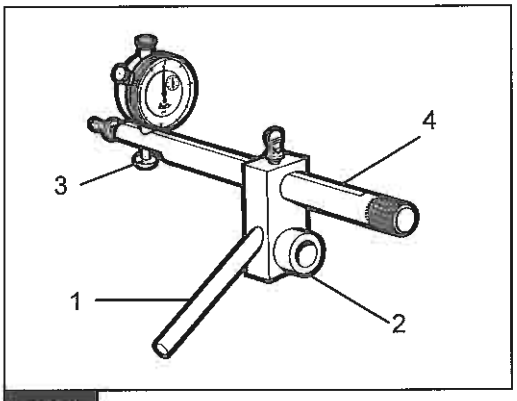

Fig 2

Centralising and checking the shoes

1. Both shoes should be centralised visually.

2. With the adjuster almost fully wound off, fit the gauge onto a wheel stud (Fig. 3), with the locating arm (1) against the next stud, and retain with a wheel nut.

NOTE: On F.C.S.S. brakes the sleeve (2) must be fitted. On F.C.S.S.A. brakes the sleeve (2) is not used.

Fit the pointer (3) onto the adjustment arm (4) and position over the trailing shoe (5).

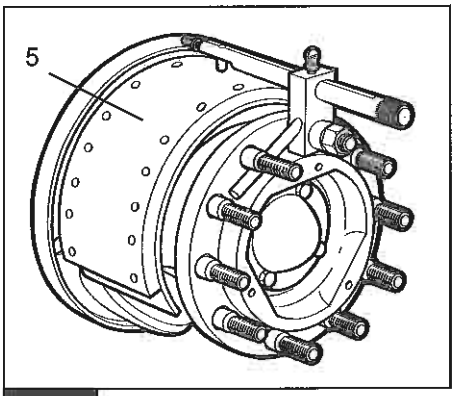

Fig 3

3. Position the pointer centrally on the lining at position A, avoiding any rivet holes.

4. Centralise the trailing shoe (5), so that the pointer lightly touches the lining at points A and B (Fig. 4). The arrows indicate forward direction of rotation. For FCSSA brakes (6) is the cam housing, for FCSS brakes (7) is the expander and (8) the adjuster.

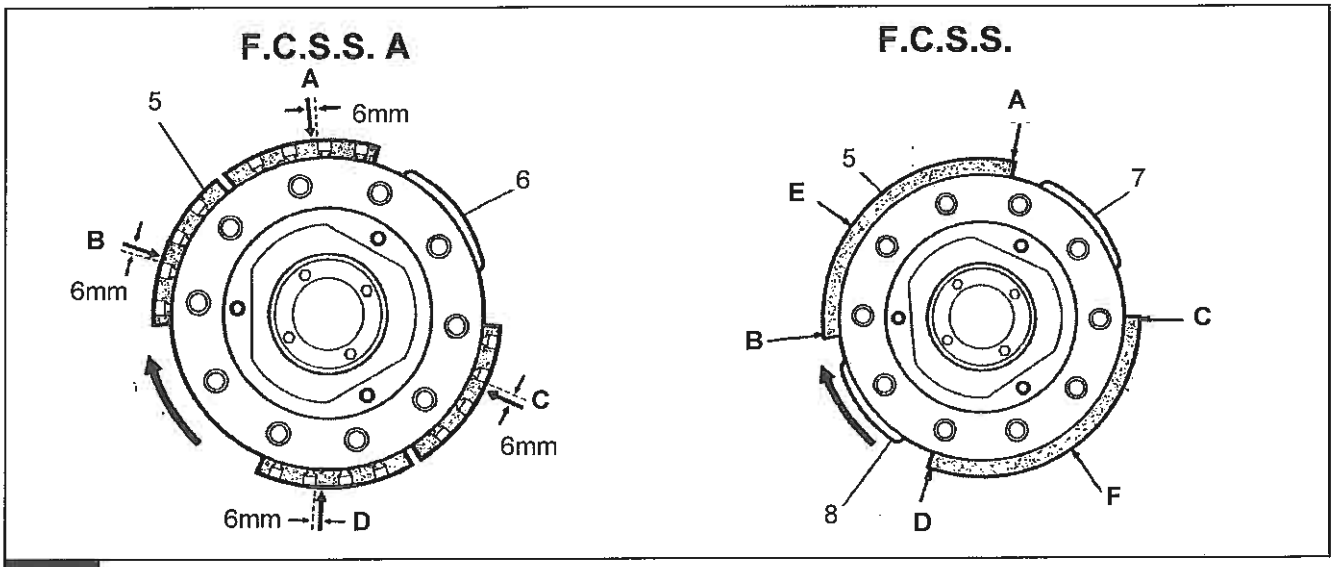

Fig 4

NOTE: The most effective way of achieving this is to lever the shoe across the brake by an amount greater than seems necessary, then gently tap the shoe back to obtain equality (Fig. 5).

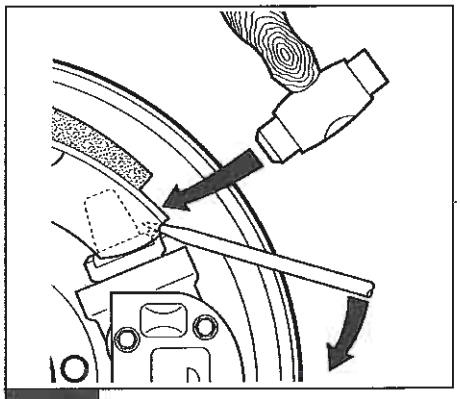
Fig 5

5. Carefully rotate the tool and centralise the leading shoe so that the pointer touches the lining at points C and D.

6. For a correctly set brake, the difference between the trailing and leading shoe should be 0.25 to 0.50 mm (0.010 to 0.020 in.). Reset the pointer on the trailing shoe (at E), revolve the tool to the leading shoe (at F) and using a feeler gauge check the measurement between the lining and the pointer. If this cannot be achieved refer to Resetting the Shoes.

7. If correctly set, remove the tool, fit the drum and adjust the shoes. F.C.S.S. brakes should have a shoe-to-drum clearance of 0.64 to 0.76 mm (0.025 to 0.030 in.) at the trailing shoe. F.C.S.S.A. brakes should have light shoe to drum contact.

8. Repeat on the other brake on the axle.

IMPORTANT: Ensure that you have correctly adjusted the shoe-to-drum clearance before driving the vehicle.

Resetting the Shoes

F.C.S.S. Brake

1. If step 6 of Centralising & Checking the Shoes cannot be achieved it will be necessary to reset the shoes.

2. Carefully rotate the hub and tool to position the Shoe Expanding Tool (Part No. MST 2002) in the adjuster area (Fig. 6).

3. Prevent the hub from rotating.

4. Fit the Shoe Expanding Tool between the shoe webs in the adjuster area. Expand the shoes and lock the tool.

5. Lift and support the lower shoe to allow access to the trailing shoe adjuster tappet head.

6. Remove tappet head (9) from its shaft (10). Note the number of shims (11) fitted under the tappet head (Fig. 7).

NOTE: Use only the shim which gives a change of 0.127 mm (0.005 in.) at E.

7. Calculate the difference between the dimensions E and F. Deduct 0.50 mm (0.020 in.) from this figure. Divide the result by 0.127, if the measurement is in millimetres, or 0.005, if in inches, to give the number of shims.

8a. If there is an excessive trailing shoe lead remove the appropriate number of shims.

8b. If there is insufficient trailing shoe lead then add the appropriate number of shims.

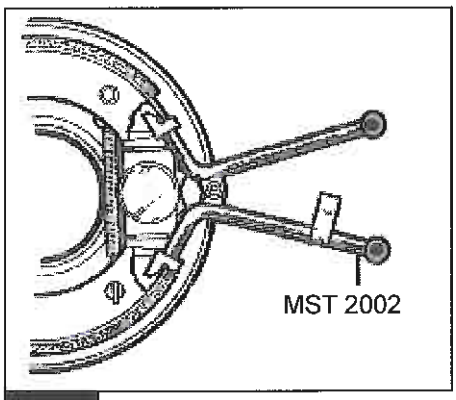

Fig 6

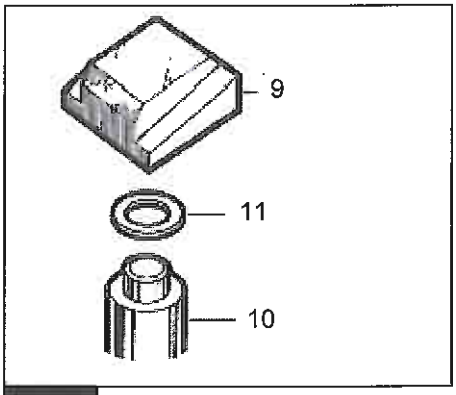

Fig 7

9. Remove the shoe expanding tool.

10. Centralise the trailing shoe and check the shoe measurements repeating the operations under Centralising & Checking the Shoes.

IMPORTANT: If more than six shims are required then the shoes are worn and new shoes should be fitted or the expander or adjuster is not adjusted correctly.

F.C.S.S.A. Brake

1. **If any step of Centralising & Checking the Shoes cannot be completed it will be necessary to reset the shoes. Problems will fall into three categories;**

1a. **Excessive trailing shoe lead**, i.e. greater than 0.50 mm (0.020 in.) when checking the leading shoe, steps 8 to 12 of Centralising & Checking the Shoes. Resolve by following 2.

1b. **Insufficient trailing shoe lead**, i.e. 0 to 0.25 mm (0 to 0.010 in.) when checking the leading shoe, steps 8 to 12 of Centralising & Checking the Shoes. Resolve by following 3.

1c. **Leading shoe lead.** Resolve by following 4.

2. **If 1a applies it means that the trailing shoe must be adjusted nearer to the drum as follows:**

NOTE: One full turn of the manual override stem will adjust the shoes by approximately 0.50 mm (0.020 in.).

2a. Remove the expander/adjuster cover plate and cross shaft (12) (Fig. 8), take care not to damage the cover plate gasket.

2b. Locate the override stem (13) onto the adjuster pinion (14) and rotate the stem in the opposite direction to that of forward wheel rotation the required number of turns or partial turns.

2c. Centralise the shoe and recheck the tool readings, repeating step 2b if necessary.

2d. Refit the cross shaft (12) and cover plate ensuring the shaft is properly located enabling the plate to sit squarely on the housing.

2e. Fit drum and adjust the shoes to give a light shoe to drum contact.

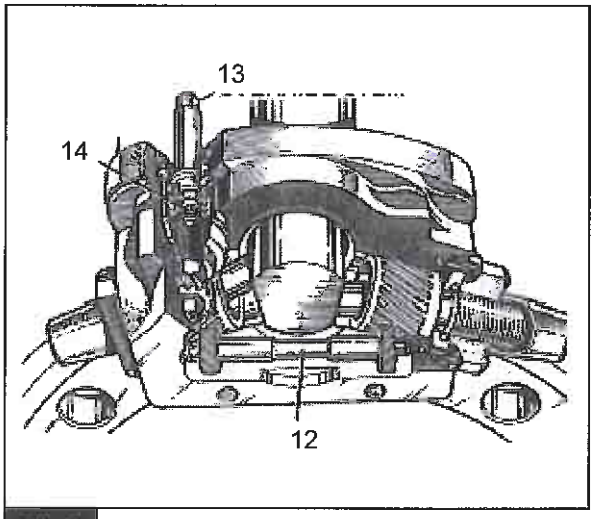

Fig 8

3. **If 1b applies it means that the trailing shoe does not have sufficient lead and the leading shoe must be adjusted further away from the drum as follows:**

NOTE: One full turn of the manual override stem (13) (Fig. 8) will adjust the shoes by approximately 0.50 mm (0.020in.).

3a. Locate the override stem (13) onto the adjuster pinion (14) and rotate the stem two full turns in the opposite direction to forward wheel rotation.

3b. Remove the expander/adjuster cover plate and cross shaft (12) (Fig. 8), take care not to damage the cover plate gasket.

3c. Relocate the override stem (13) onto the adjuster pinion (14) and rotate the stem in the same direction as forward wheel rotation the required number of turns or partial turns.

3d. Centralise the shoe and recheck the tool readings, repeating step 3c if necessary.

3e. Refit the cross shaft (12) and cover plate ensuring that the shaft is properly located and the plate sits squarely on the housing.

3f. Fit drum and adjust the shoes to give slight shoe to drum contact

4. **If it is established that the leading shoe is contacting the drum well in advance of the trailing shoe, then the leading shoe will need to be de-adjusted much further away from the drum than may be possible at this stage. Therefore it will be necessary to make the initial outward adjustment of both shoes (step 4a) before completing the sequence.**

4a. Locate and turn the manual override stem (Fig. 8) in the opposite direction to forward wheel rotation at least four full turns. More may be necessary if there is a large difference in tool readings.

NOTE: One full turn of the manual override stem will adjust the shoes by approximately 0.50 mm (0.020 in.).

4b. Follow the procedure laid out in steps 3b to 3f.

When the linings are fully bedded, some of the trailing shoe lead may, upon measurement through the lining inspection hole, appear to have become less. This is perfectly normal and acceptable.
Once the linings are fully bedded normal measurement of shoe-to-drum clearance, using feeler gauges through the lining inspection holes at the expander end is practicable.

ArvinMeritor Aftermarket
Neugutstrasse 89, 8600 Dubendorf, Switzerland
Tel: +41 44 824 8200

Park Lane, Great Alne, Alcester, England
Tel: +44 (0) 1789 768270