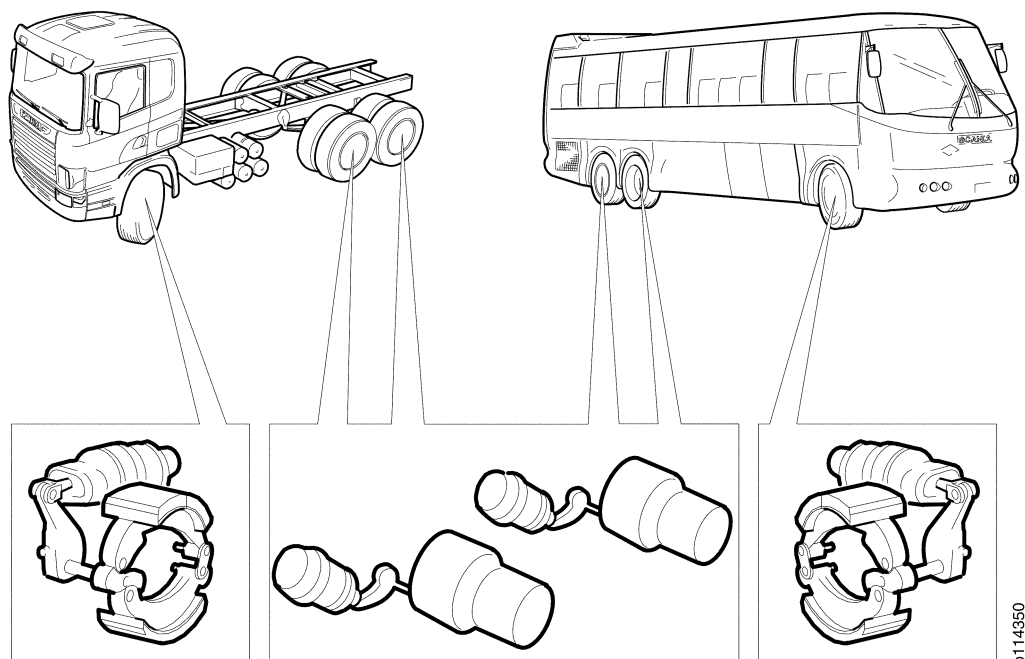


Wheel brake components for drum brakes

Function description



b114350

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	Slack adjusters 13
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Wheel brake components for drum brakes

Safety



WARNING!

Work on the brake system may only be carried out by personnel with the requisite training and skills for the job. If problems nevertheless occur, your immediate superior must be requested to help.

When carrying out any work on the brake system, it is important to follow the instructions carefully so as to avoid accidents and personal injury.

It is also important to use the right components at all times when working on the brake system. A defective brake system due to defective components can have serious consequences on the road.



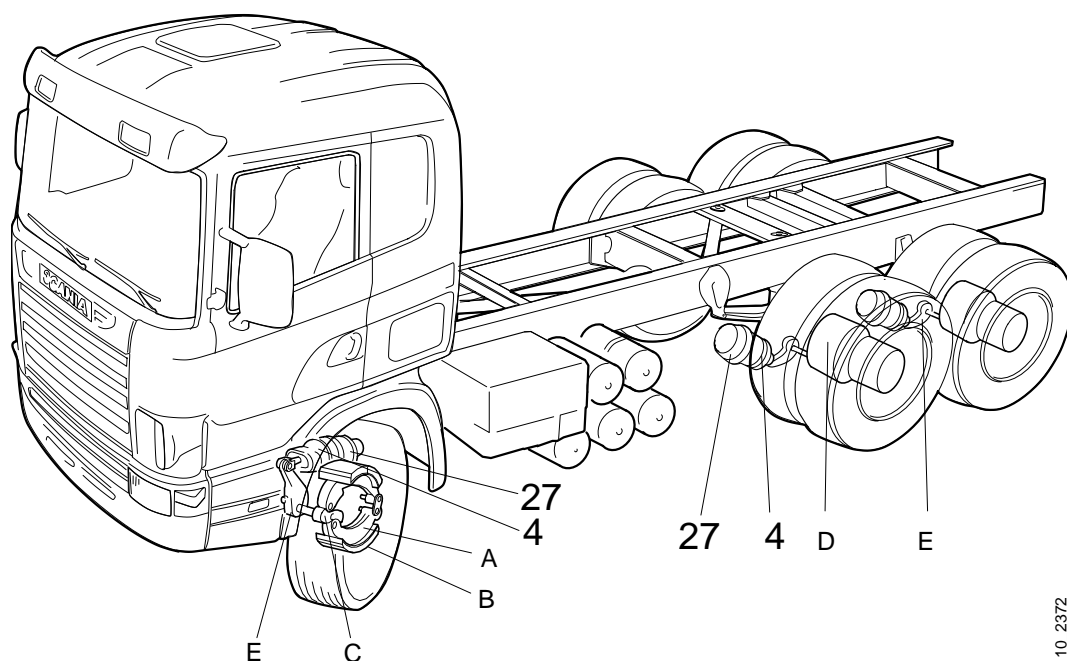
WARNING!

Always support the frame when working on air-sprung vehicles.

Empty the air bellows.

The tag axle must be lowered on tag axle vehicles.

Component location



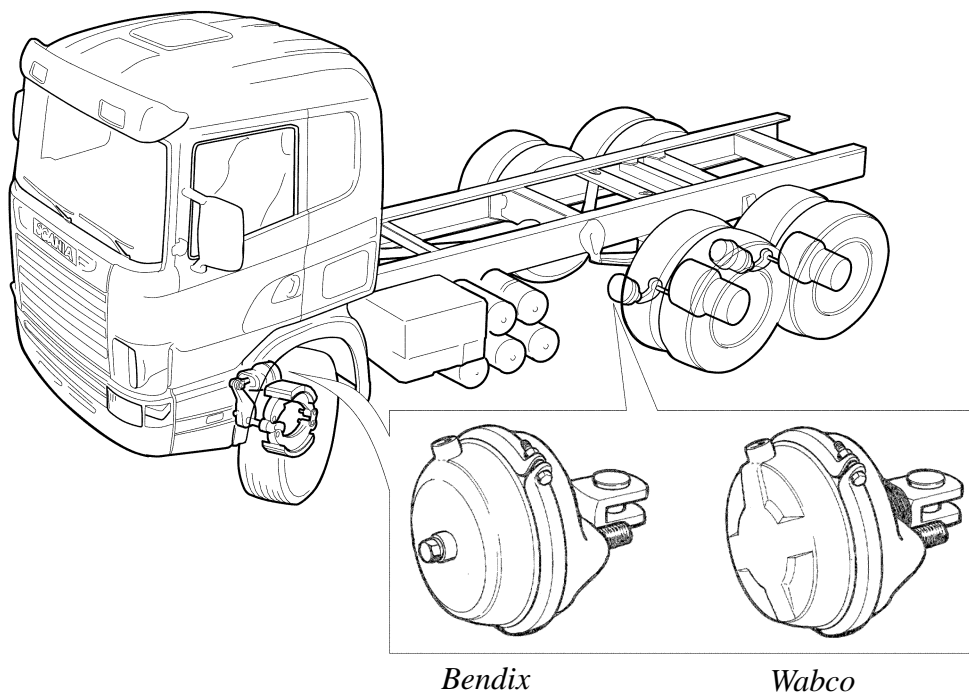
10_2372

- 4 Brake cylinder
- 27 Spring brake cylinder
- A Brake shoe
- B Brake lining
- C Brake camshaft
- D Brake drum
- E Slack adjuster

Brake cylinders

General

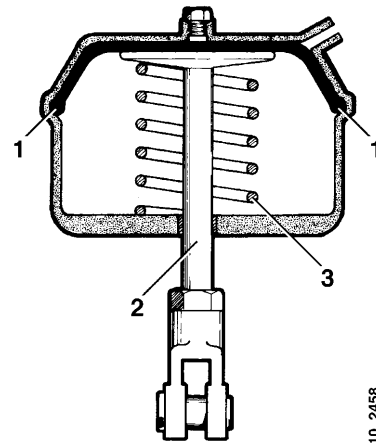
When replacing the brake cylinder, it is imperative that the same size and type of brake cylinder is used. Otherwise, the wheel brakes on different wheels may have differing braking force.



Function

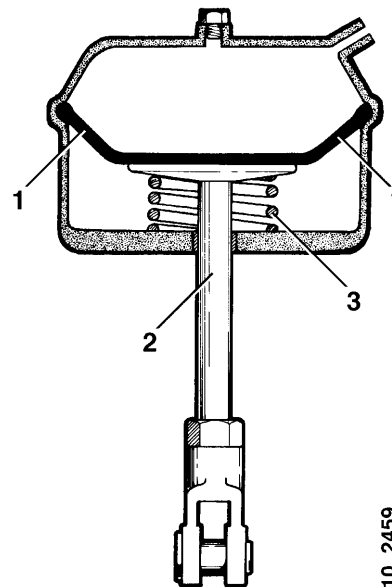
The brake cylinder transfers force to the slack adjusters. The amount of force is determined by the cylinder size and the pressure applied.

The brake cylinder comprises a chamber separated by a membrane.



Brake cylinder in the rest position

When braking, compressed air flows into the brake cylinder and acts on the membrane's 1 surface. The membrane presses on push rod 2, which is connected to the slack adjuster. When the brake pedal is released, the air flows out and the return spring 3 pushes the membrane and push rod back into the rest position.



Brake cylinder in the braking position

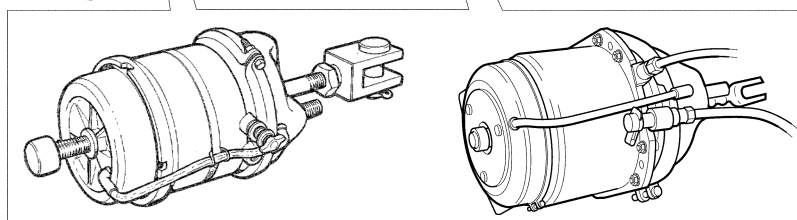
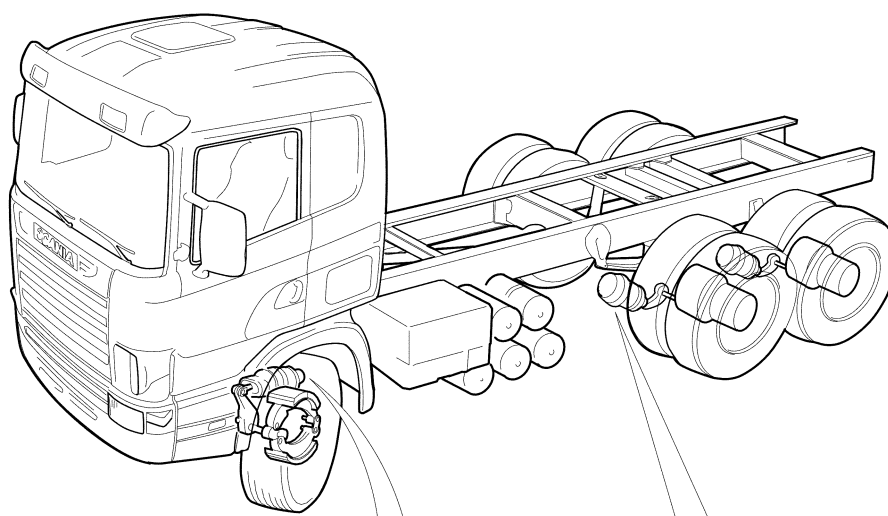
Spring brake cylinders

General

The spring brake cylinders have a compression spring to activate the parking brake.

The wheel brake part works the same way as a separate wheel brake cylinder.

The brake cylinders have internal ventilation by means of a hose between the air chambers, which prevents water and other impurities from penetrating the spring brake cylinder when the brake is applied or released.



Bendix

Wabco

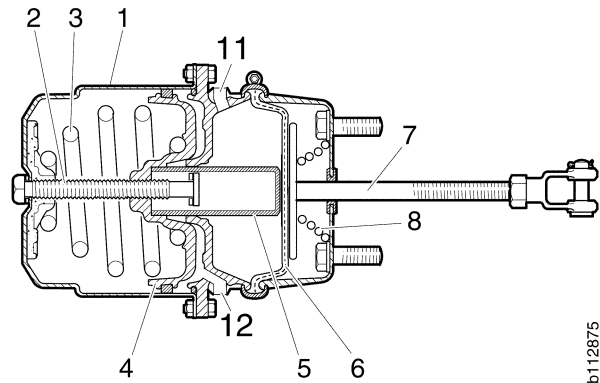
b112716

Function description

The parking brake is applied by a compression spring 3 and is released using compressed air. The parking brake is automatically applied when there is no brake pressure in the vehicle's compressed air system.

The parking brake is controlled by a manual control valve. When the compressed air is released to the spring/brake cylinder, spring 3 is compressed and the brakes released. When the air is released from the chamber, the brakes are applied by the compression spring.

The spring brake cylinder is equipped with a mechanical release device which can deactivate the parking brake so that the vehicle can be moved without the need for compressed air.

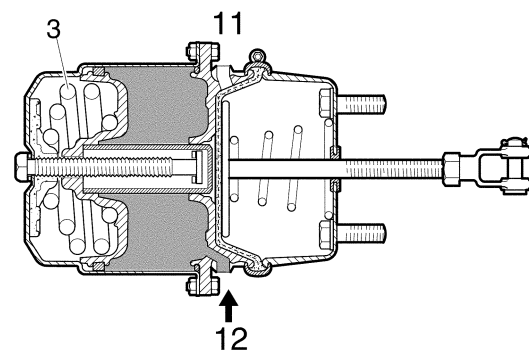


b112875

- 1 Cover
- 2 Release bolt
- 3 Compression spring, parking brake
- 4 Piston
- 5 Push rod
- 6 Membrane
- 7 Push rod
- 8 Return spring
- 11 Inlet from wheel brake valve (relay valve)
- 12 Inlet from parking brake valve (relay valve)

Drive position

The spring brake part is pressurised, the compression spring 3 is compressed and the brakes are released,



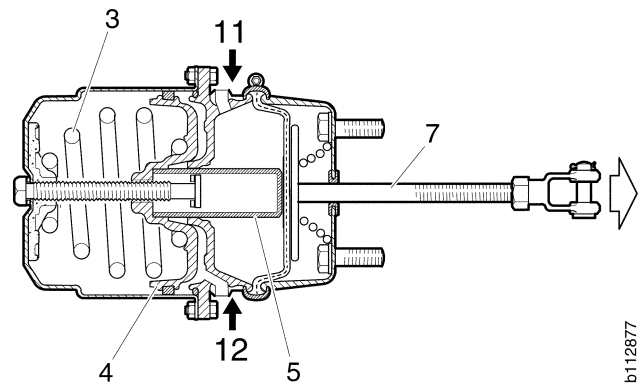
b112876

- 3 Compression spring
- 11 Inlet from wheel brake valve (relay valve)
- 12 Inlet from parking brake valve (relay valve)

Parking position

The air has been released from the spring brake cylinder. The compression spring 3 depresses the piston 4 and the push rod 5, which in turn acts on the push rod 7, applying the brakes.

The parking brake remains in this position until the compressed air has increased sufficiently for the compression spring 3 to be compressed.



b112877

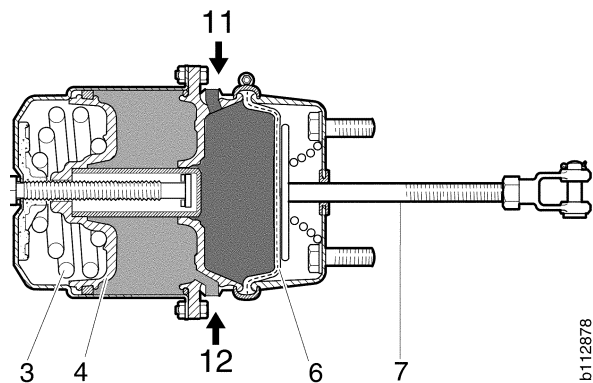
- 3 *Compression spring*
- 4 *Piston*
- 5 *Push rod*
- 7 *Push rod*
- 11 *Inlet from wheel brake valve (relay valve)*
- 12 *Inlet from parking brake valve (relay valve)*

If the service brake and the parking brake are applied at the same time, the dual check valve, 23 for truck and K911A for bus, directs the air so that the service brake part and the parking brake part are filled with air simultaneously. The parking brake force is released by the same amount and at the same time as the force on the membrane in the wheel brake part is increased.

Wheel brake position

The spring brake part is pressurised, the compression spring 3 is compressed.

When the brake pedal is depressed, compressed air flows into the service brake cylinder above the membrane 6, which acts on the push rod 7, applying the brakes.



b112878

- 3 *Compression spring*
- 4 *Piston*
- 6 *Membrane*
- 7 *Push rod*
- 11 *Inlet from wheel brake valve (relay valve)*
- 12 *Inlet from parking brake valve (relay valve)*

Releasing the parking brake by filling with air

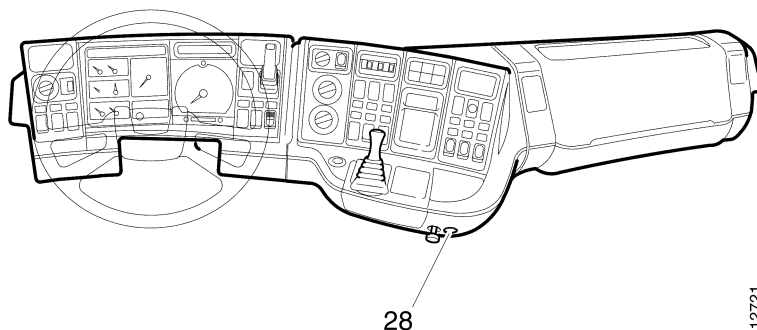


WARNING!

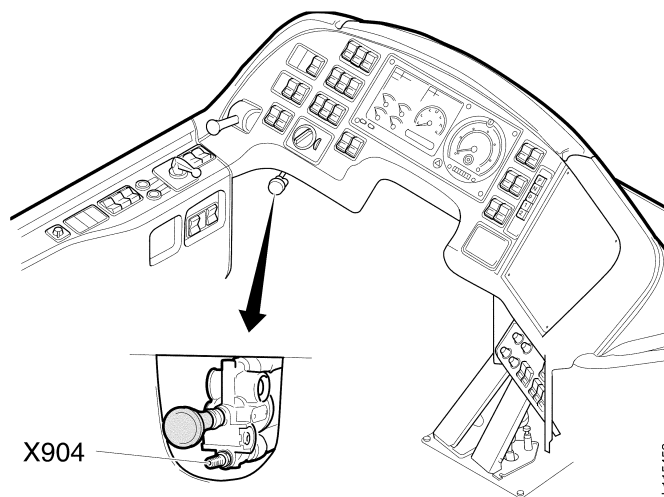
The manometers on the instrument panel do not show the pressure in the parking brake circuit. Therefore, do not tow with the parking brake released with refilled air for long stretches because the brake will be applied if the compressed air drops.

If the compressed air system is deactivated, the parking brake can be released by refilling with air from one of the tyres or from another compressed air system.

Air can be refilled using the filler hose which can be found in the tool equipment. Connect the hose to one of the tyres and to the filler valve 28 or X904 on the instrument panel. This enables the parking brake to be released for a short period of time.



b112721



b115463

Deactivating the parking brake

If no other possibility of releasing the parking brake is available or if the vehicle needs to be towed some distance, the brake can be deactivated using the release bolt in each of the spring brake cylinders.



WARNING!

When the parking brake is deactivated in this way, the parking brake will not function at all. This means that the vehicle must be prevented from rolling before the release bolts are unscrewed. Use a draw bar when towing.

Vibration dampers

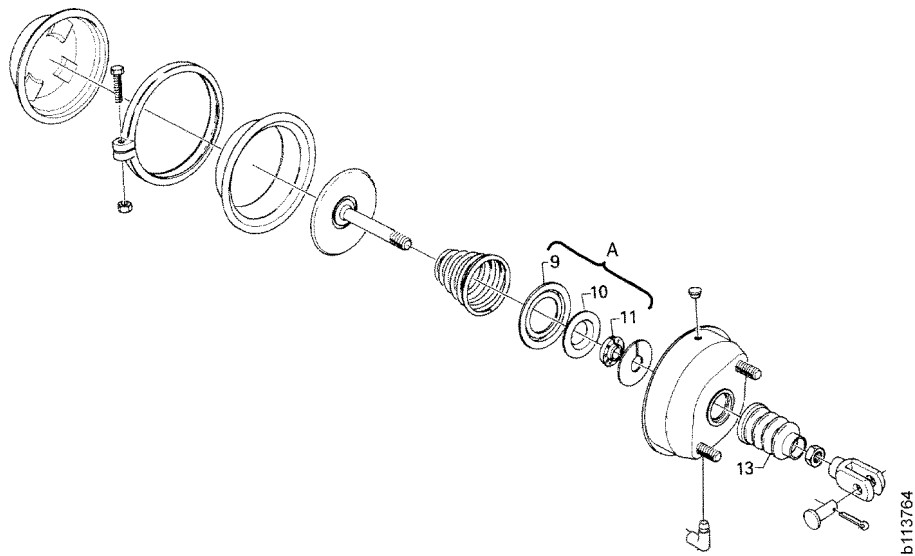
For brake and spring brake cylinders

An integrated vibration damper A is available as an option for Wabco front axle brake and spring brake cylinders. A vibration damper kit is also available as a spare for spring brake cylinders.

The integrated vibration damper requires a higher level of pressure in the front circuit before the brake is activated. In some cases, this can cause the brake linings to wear quicker than those on the rear axle.

If dirt penetrates the vibration damper, this will also cause greater wear on the linings on the rear axle or uneven wear between the left-hand and right-hand front axle which can result in uneven braking.

To reduce the risk of dirt in the vibration damper, rubber bellows 13 has been fitted.



A Vibration damper

9 Cover

10 Cover

11 Ring

13 Rubber bellows

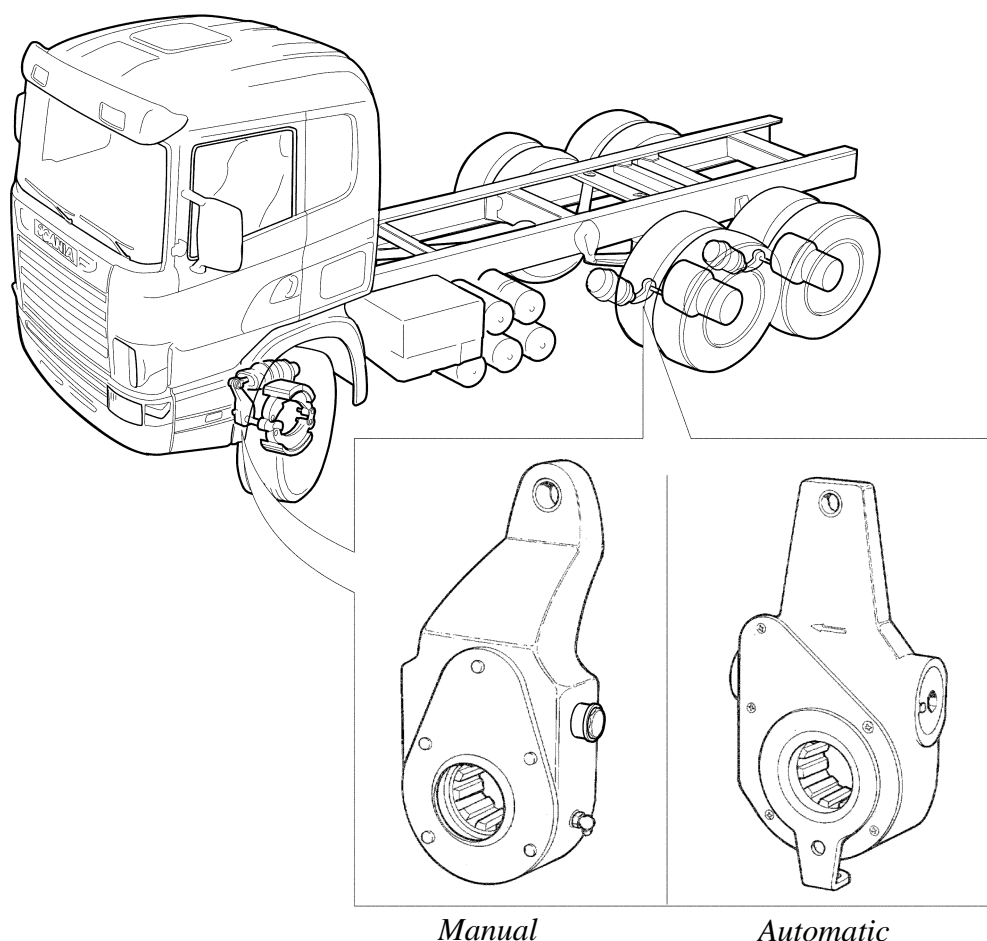
Slack adjusters

General

The upper end of the slack adjuster is attached to the brake cylinder's push rod and its lower end to the brake camshaft. The slack adjuster is designed such that it works partly as a lever and partly as an adjusting device.

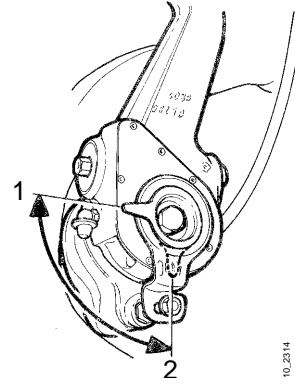
There are two designs of slack adjuster.

- **Manual:** Must be adjusted as the brake linings wear.
- **Automatic:** Adjusted automatically to the correct braking position as the brake linings wear.



Both types are equipped with a wear indicator in the form of an arrow attached to the brake camshaft.

On new linings, the arrow must point in the direction in which the slack adjuster moves when braking so that it will have rotated approximately 90° downwards when the linings are fully worn.



Wear indicator

1 *New linings*

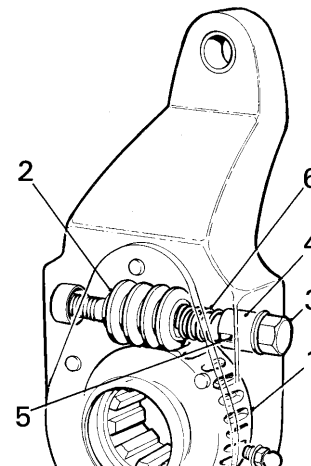
2 *Fully worn linings*

Manual slack adjuster

The slack adjuster is equipped with an integral worm gear unit, gear 1 of which is attached to splines on the brake camshaft. The worm gear screw 2 is securely connected to the adjusting screw 3. So that the set position of adjusting screw 3 is not displaced, it is equipped with a lock sleeve 4. Pin 5 securely retains the lock sleeve to prevent it from turning during adjustment.

When adjusting, the lock sleeve is pushed inwards so that the head of the adjusting screw is released and can be turned. The lock sleeve is pushed out by compression spring 6. Adjusting screw 3 is locked in the lock sleeve's 12-sided hole.

When the adjusting screw is turned, the worm gear also turns with the brake camshaft in relation to the slack adjuster. The brake camshaft's neutral position can in this way be displaced gradually as the brake linings wears.



1 *Worm gear*

2 *Worm screw*

3 *Adjuster screw*

4 *Lock sleeve*

5 *Pin*

6 *Compression spring*

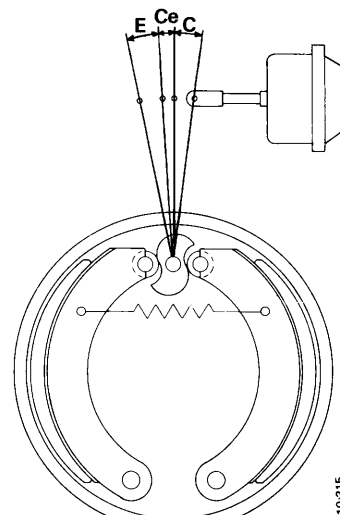
Automatic slack adjuster

Function

Adjustment takes place during the return stroke when there is no load on the slack adjuster.

If there is a large amount of clearance between the brake lining and the brake drum, the brake cylinder stroke can be subdivided into three areas:

- Clearance C corresponds to normal clearance between the brake lining and brake drum.
- The excess C_e corresponds to clearance excess due to lining wear and heat release.
- The elasticity E occurs due to elasticity in the brake drum, brake lining, brake shoe, etc.

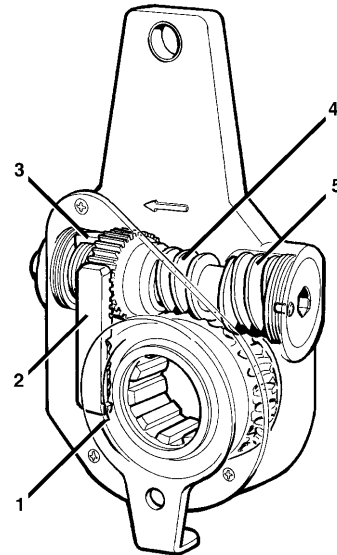


C. Normal clearance

C_e. Clearance excess

E. Clearance due to elasticity

The normal clearance is determined by a notch 1 in the guide disc. When normal clearance is exceeded, the lower tooth in the guide disc notch pushes the rack 2 upwards and, when there is clearance excess, rotates the gear wheel of the one-way connection 3.



100516

The one-way connection slides in this direction of rotation. When there is clearance due to elasticity, the worm screw 4 is displaced axially towards compression spring 5 at which point the worm screw is released from the one-way connection.

When the brake is released, the one-way connection 3 is reconnected to worm screw 4 at the end of the clearance due to elasticity.

Normal clearance is then exceeded and ultimately the clearance excess, at which point rack 2 is pushed down by the upper tooth in the guide disc's notch 1.

The rack turns the gear wheel in the one-way connection 3 which engages in this direction. The worm screw 4, the worm gear and the brake camshaft which adjusts brake clearance are then turned.

After a number of brake applications, the clearance will be normal.

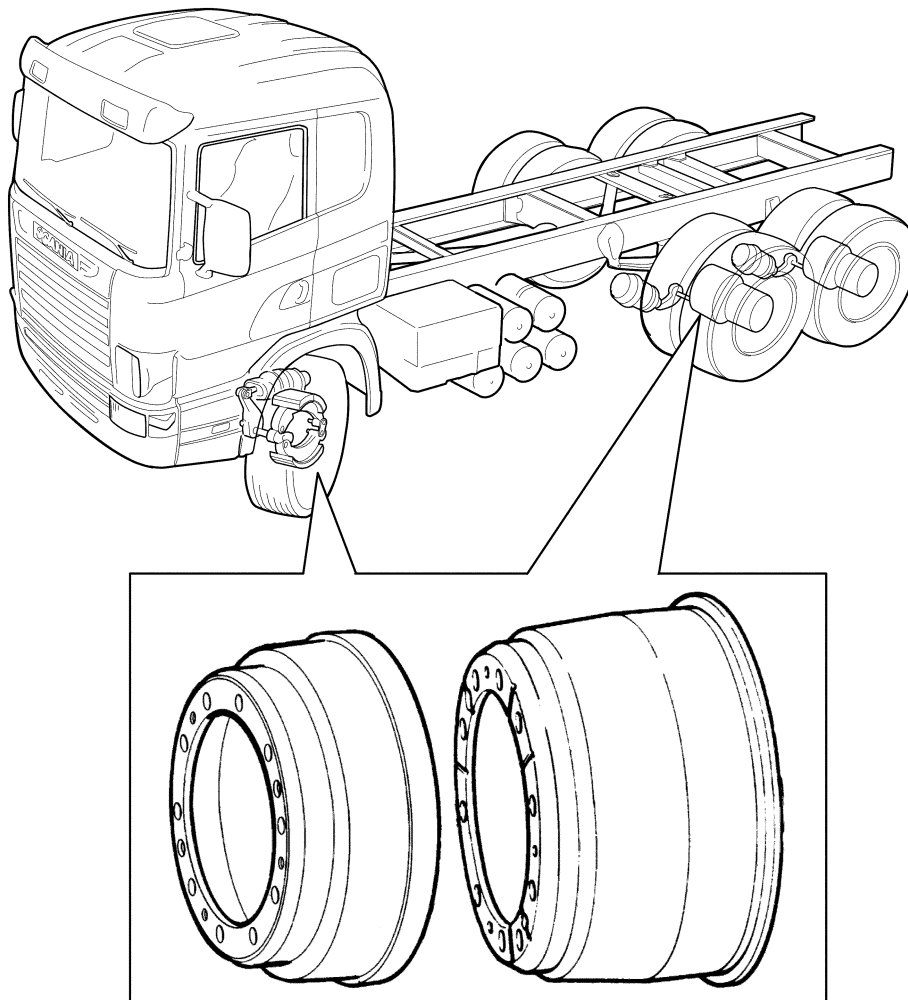
- 1 Notch in guide disc
- 2 Rack
- 3 One-way coupling
- 4 Worm screw
- 5 Compression spring

Brake drums

General

Brake drums are available in the following widths:

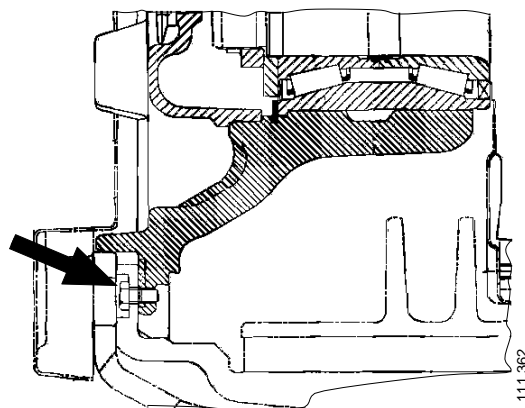
	Truck	Bus
Front axle	7", 8"	8"
Rear axle	8", 10"	8", 10"
Tag axle	5", 7", 8"	8"



b112720

Brake drum screws

Two screws are fitted to secure the brake drum against the hub when removing/fitting the wheel.



Brake drum screw union - wheel hub

Leaving the brake drum on the hub prevents dirt and dust from getting onto the contact surface between the hub and drum. This also facilitates the removal and fitting of the front wheel.

The screws are fitted in production from chassis number:

Scania Södertälje	1 240 250
Scania Netherlands	4 393 400
Scania Angers	9 032 550
Scania Buses and Coaches Katrineholm	1 832 943

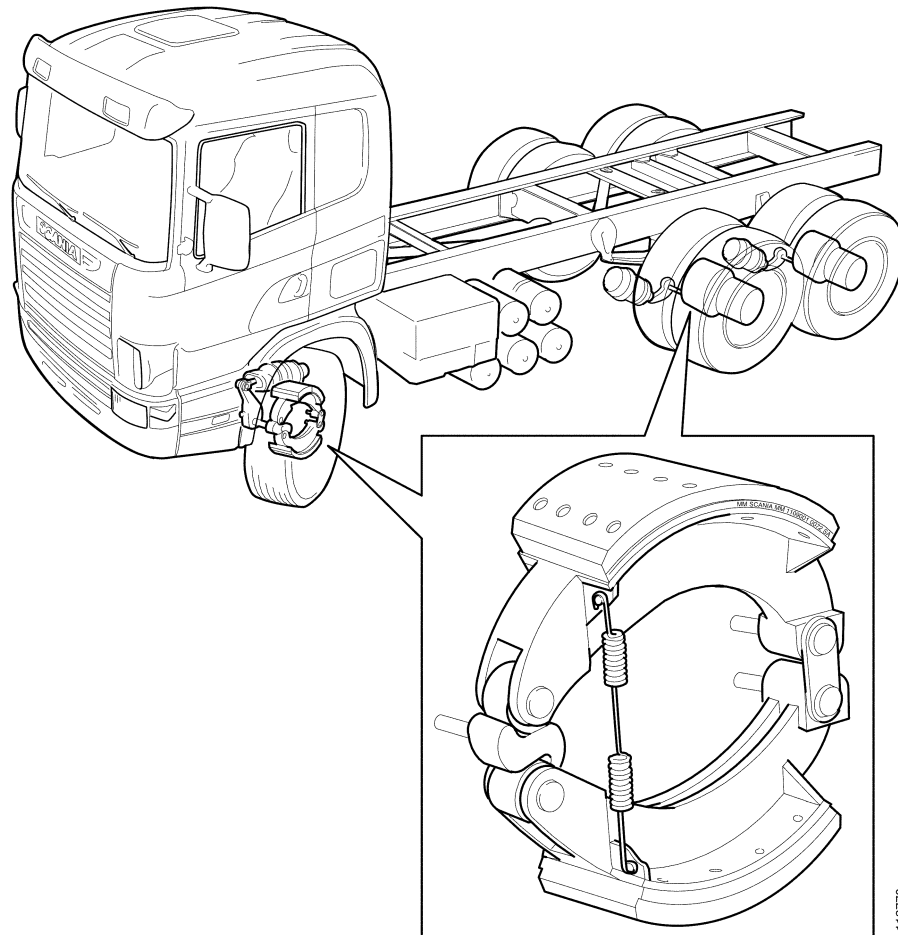
The screws can be fitted to old vehicles, refer to main group 10, Wheel brake components for drum brake, - Fitting of brake drum screws.

Brake shoes and linings

General

All vehicles have brake shoes with asbestos-free linings. The linings are attached to the shoes with rivets. All linings are equipped with wear indicators in the form of a rim on the side of the lining.

The size of the linings is determined by the size of the brake drums.

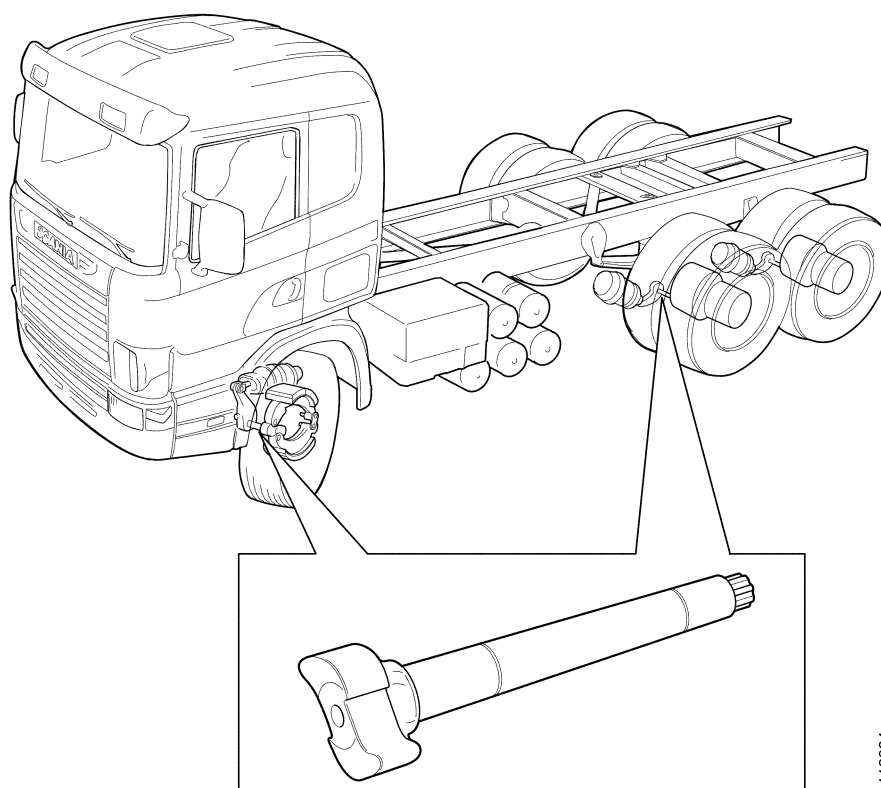


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Brake camshafts

General

The brake camshaft transfers the torque from the slack adjuster to the brake shoes via the camshaft's outermost part, the S-cam.



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