



Assembly and Maintenance Instructions

Mechanical Sliding Caliper Disc Brake
Type **NG 22**



1th Edition



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Note:

The Service Instruction focuses on trained specialists. Operations on the brake can only be carried out if the appropriate paragraphs have been read through and understood. The safety instructions according to paragraph 2.1 are to be considered and to be followed.

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1. Description of the Mechanical Sliding Caliper Disc Brake

1.1 Introduction

The brake “**NG 22**” is a new developed one-piston-brake, which is intended for use in commercial vehicles and trailers on front and rear axles for 22,5" wheel rims as service, auxiliary and parking brake. It is actuated mechanically via a diaphragm brake cylinder or a spring brake actuator. This is mounted to the end cover of the brake caliper.

A very compact unit is achieved by the direct mounting of the brake cylinder onto the caliper. This enables optimal utilisation of the installation situations.

The complete disc brake including brake cylinder consists of two assemblies:

- o **Brake caliper (1)**
- o **Brake carrier (2)**

The brake caliper (1) moves axially on guide pins (8, 9) of the brake carrier (2). In the brake carrier the brake pad (36) are guided and supported axially relocatable. The brake pad (35) on the wheel side is reinforced directly in the brake caliper. The fastener of the brake pads works with a hold-down hoop (38) and hold-down springs (37) - see pictures 1 to 3.

The radially open design of the brake caliper allows simple and quick changes of the brake pads.

Brake pads with a large wear volume are used in order to prolong the pad replacement intervals with this brake.

For compensating the pad wear the actuating mechanism of the brake is equipped with an kraftabhängigen, stufenlosen, automatic adjuster mechanism. This maintains a predetermined clearance independent from overall load configuration and different operating conditions. This, together with a stable and stiff construction of the brake caliper, results in a safe control of the pedal travel and increases the distance reserve for emergency braking.

The internal moving components are lubricated for life and all sealing components are maintenance free unless damaged.

The disc brake is equipped with an electrical wear indicator / sensor (40).



Fig. 1

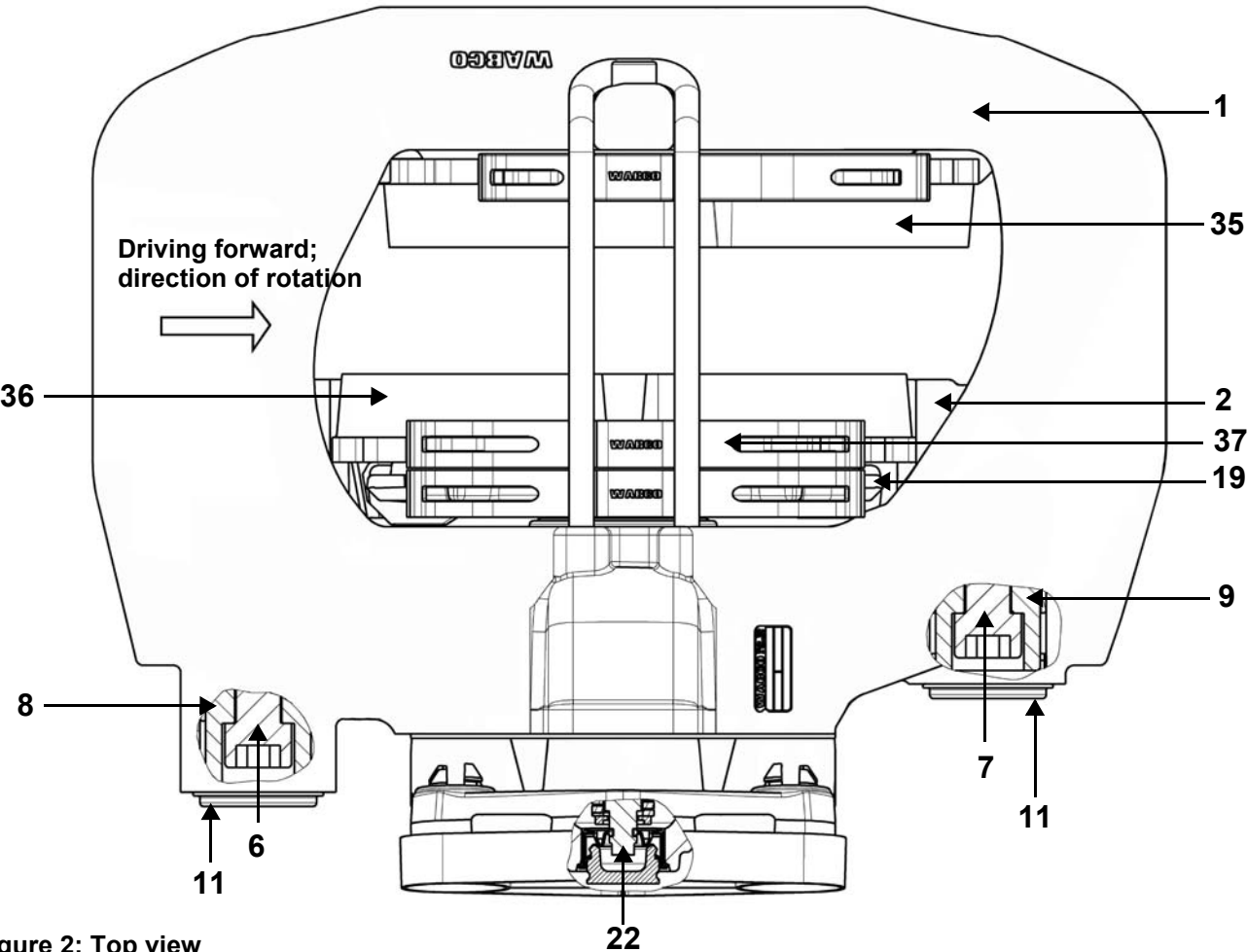


Figure 2: Top view

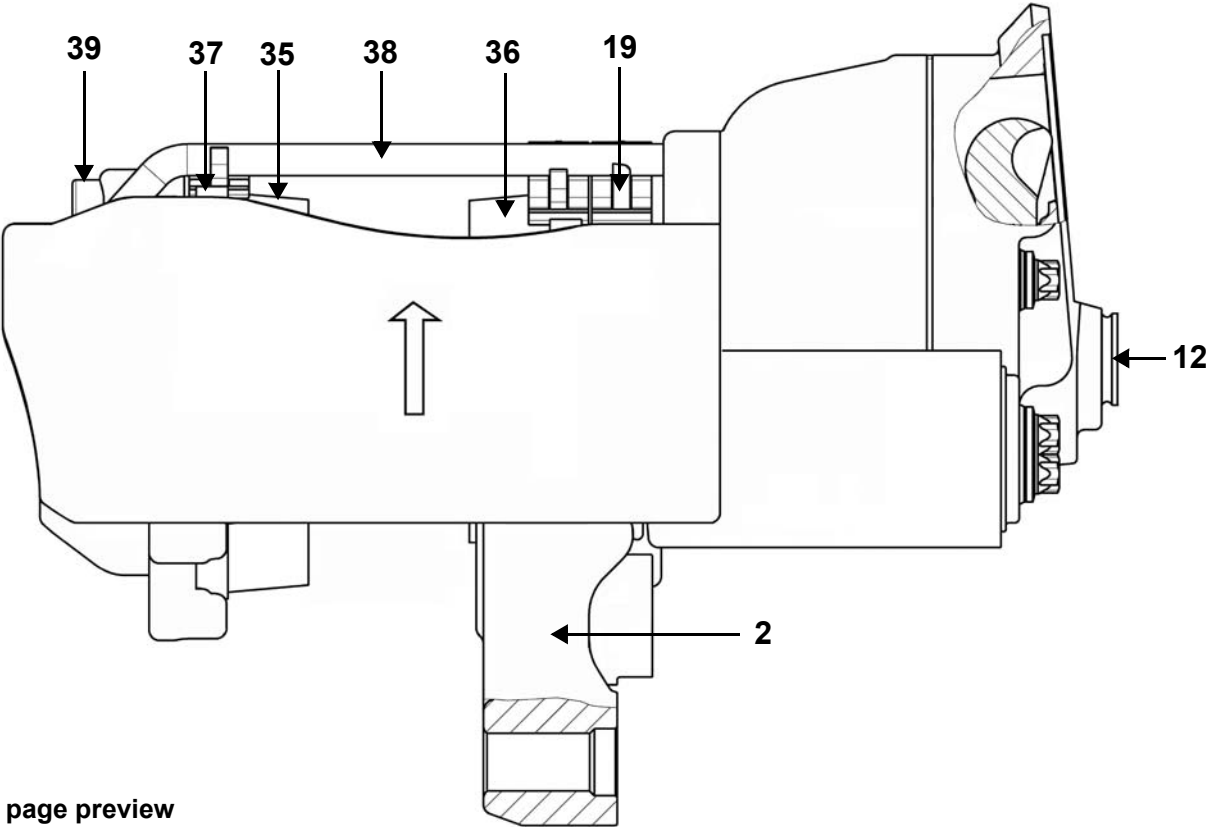


Figure 3: page preview

2. Service Instructions

This instruction with the following pictures contains the required steps and work sequences to replace the available repair kits. The spanner size and the tightening torques in the sequences are listed in table 1 (see page 27).

For lubrication use only the tube of grease supplied with the WABCO brake repair kit.

2.1 Safety tips to be considered during repair

The flawless technical condition of the disc brake is most important to ensure good driving and safe braking characteristics.



Observe brake pad and disc wear limits! Worn-out pads and discs reduce the brake effectiveness and cause brake failure! Danger of accidents! Burned, glazed or oil contaminated brake pads must be replaced immediately.

Always replace brake pads on a per axle basis!



During repairs on the brake the vehicle must be parked on a level surface and blocked to prevent rollaway. Only approved and suitable fixtures are to be used for the lifting and blocking of the vehicle. While working on the brake ensure that the brake cannot be actuated inadvertently.

Do not actuate the brake while the brake pads are removed. Danger of bodily injury!



Do not clean the brake with pressurised air or other high cleaning pressure apparatus. **Danger of bodily injury!** Danger of destruction of rubber parts!



Keep hands and fingers out of the inside of the caliper to avoid injury!



A second technician must assist during removal and installation of the brake. Heavy load - **Danger of bodily injury!**



During repairs outside of the vehicle, the brake must be secured in a fixture, such as a heavy vise as high torque is required during removal and installation of the bolts. Large loosening and tightening torques of the screw connexions - **Danger of bodily injury!**

The brake caliper with clamping unit shall not be opened. Therefore the bolts holding the cover shall not be loosened.

Only original and genuine WABCO Service Parts and approved brake pads are to be used.

During repairs use only recommended tools. Do not use a power-driven socket or tools! Tighten nuts and bolts only to specified torque limits.

With newly installed brake pads during the first 50 km no emergency stops should be made if possible. Also avoid long braking cycles and forced braking.

When wear of the cast brake parts such as cracks or heavy abrasion is noticed replace the entire brake assembly according to the instructions.

Upon completion of repairs the vehicle's braking system must be tested on a roller dynamometer. If no roller dynamometer is available a driving test with brake applications must be performed.

2.2 Checking brake function



Attention:
Do not use a power-driven socket! While working at the brake or moving the brake caliper handle the caliper only from outside to avoid injury!

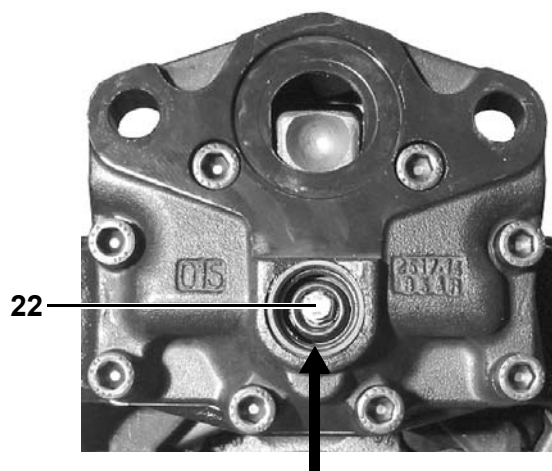
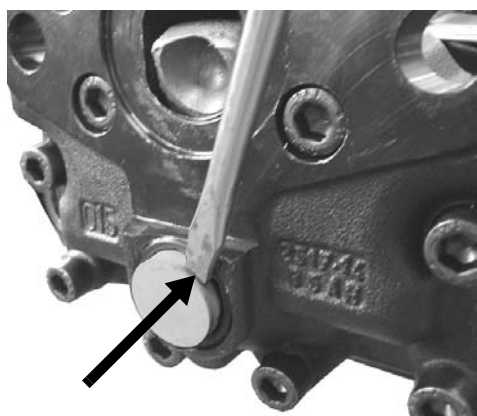


Fig. 4

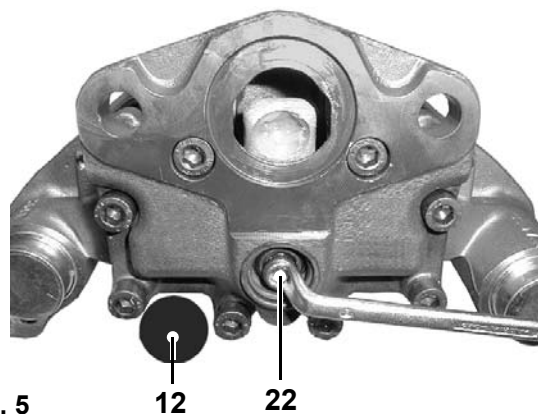


Fig. 5

2.2.1 Checking the adjustment

General note:

The turning directions and the torques for the hexagon on the adjuster nut are given in table 1, position I. The actuation cylinder does not need to be removed for this check.

Work sequences:

- Remove plug (12) for the adjuster from the caliper (22) carefully.

Caution: On disassembly the proper tool position is against the plug (12) set in the annular groove!

Caution: Internal seal with the development do not damage!

- Using a AF 8 ring spanner turn the adjuster (22) hexagon approx. 1/2 turn in the clockwise direction.

Attention: Do not overload the adjuster hexagon (22)! Do not use an open-ended spanner. With the ring spanner mounted on the adjuster nut ensure that there is sufficient such that it will not be prevented from turning during the adjuster check!

- Actuate the brake about approx. 5 times (apprx. 1 bar) The adjuster is functioning when the ring spanner turns anti-clockwise with every brake actuation.

Note: With increasing adjustment increments the angular movement of the attached ring spanner becomes smaller.
The adjuster is in order when the ring spanner rotates as described above.

- Remove ring spanner.
- Refit plug (12) ensure that the plug is placed properly.

Failures that might occur:

If the adjuster (22) respectively the attached ring spanner (arrow)

- does not turn.
- turns only with the first actuation.
- moves back and forth with every actuation, which means the adjustment is not OK.

If so, replace the brake according to section 4!

2.3 Checking brake pads

Note: The brake pad thickness is to be checked regularly depending on operating conditions during maintenance intervals and under applicable local laws and regulations. Burned, glazed or oil contaminated brake pads must be replaced immediately.

Always replace brake pads on a per axle basis!

Work sequences:

Caution: To avoid damage to the brake disc, the brake pads should be replaced at the latest when the thinnest section of the friction material is 2 mm.

The thickness of the residual friction material should not be less than 2 mm.

A = residual friction material thickness 2 mm

B = total friction material thickness 23 mm.

At residual friction material thickness $A < 2 \text{ mm}$, renew brake pads according to section 3.

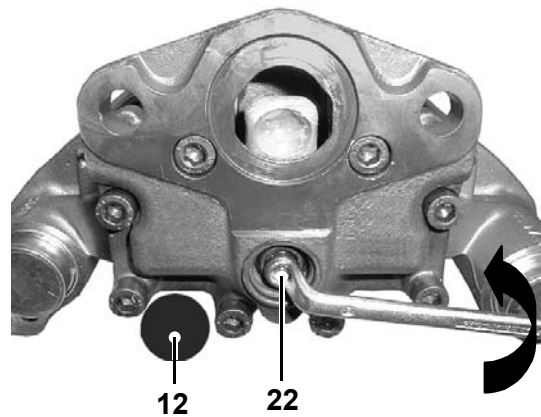


Fig. 6

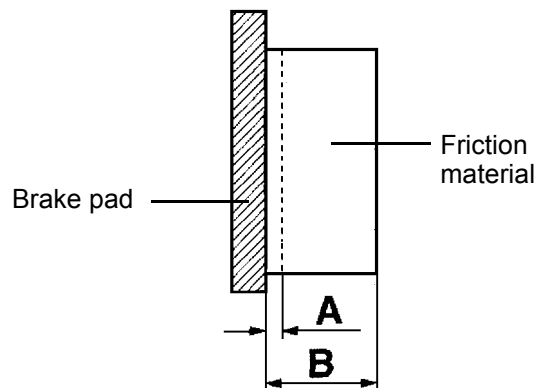


Fig. 7

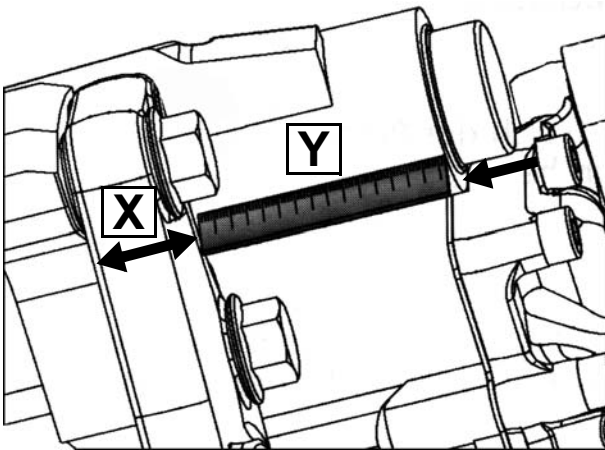


Fig. 8

Measuring of wear

The average brake pad wear can be measured, depending on the access, at the close fit (longer guide pin at the brake disc entry) or at the clearance fit (shorter guide pin at the brake disc exit).

Therefore measure the thickness (X) of the flange of the axle and the distance (Y) between the flange and the edge of the brake caliper of the particular close fit (arrows).

The maximum wear is reached or exceeded with the following values.

Shorter guide pin:

maximum wear $X + Y > 90.5 \text{ mm}$

Change lining

Longer guide pin:

maximum wear $X + Y > 129.5 \text{ mm}$

Change lining

2.4 Checking brake disc

Work sequences:

- Remove brake pads according to section 3.
- Measure disc thickness over the rubbing faces.

C = total disc thickness - new 45 mm

D = wear allowance limit 37 mm, the brake disc must be renewed. The renewal is recommended on a per axle basis.

E = total pad thickness - new 32 mm

F = pad backplate thickness 9 mm

G = minimum residual friction material thickness 2 mm

H = absolute minimum pad and pad backplate thickness 11 mm, the brake pads must be renewed.

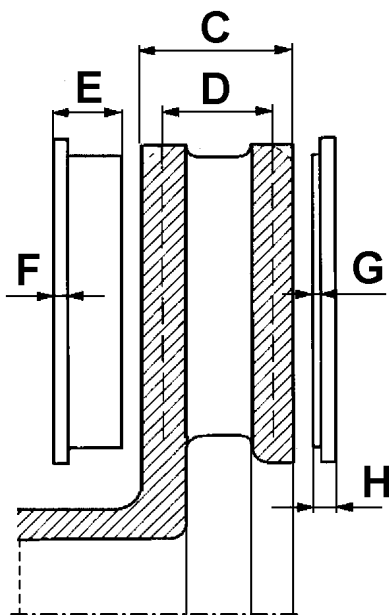


Fig. 9



Attention:

Observe brake pad and disc wear limits! Worn-out pads and discs reduce the brake effectiveness and cause brake failure! Danger of accidents!

3. Renewing brake pads



Attention:
Do not use a power-driven socket. While moving the brake handle the caliper only from outside to avoid injury!

Working sequences for removal of pads:

- Disconnect cable of the wear indicator (40) at the plug (arrow).
- Remove internal hexagon bolt (39) with spanner (table 1, position II) from pad hold-down hoop (38).

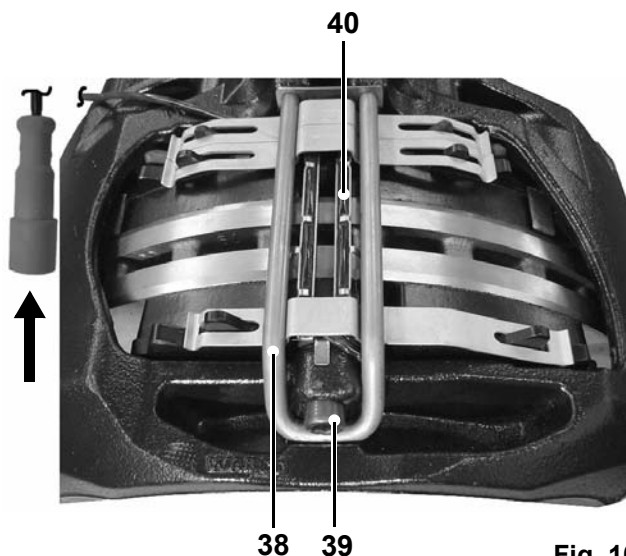


Fig. 10

- Pad hold-down hoop (38) has to be withdrawn from the caliper (1).

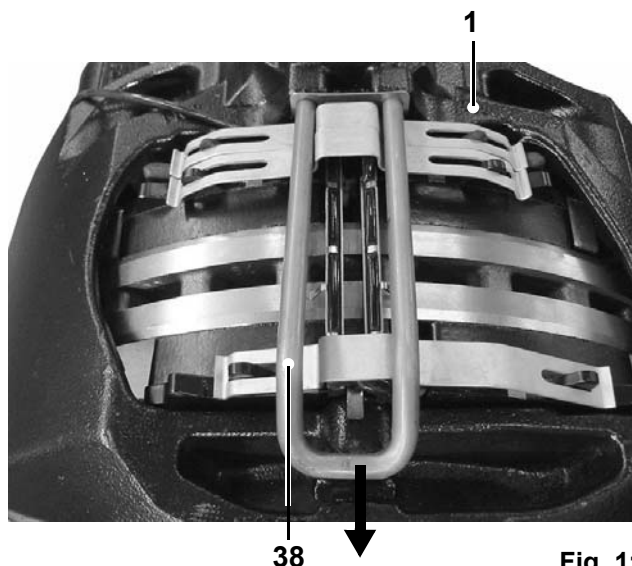


Fig. 11

- Remove three hold-down springs (37) from the brake pads (35 and 36) and the spreader plate (19).
- Remove cable guide (40) and contacts from the brake pads.

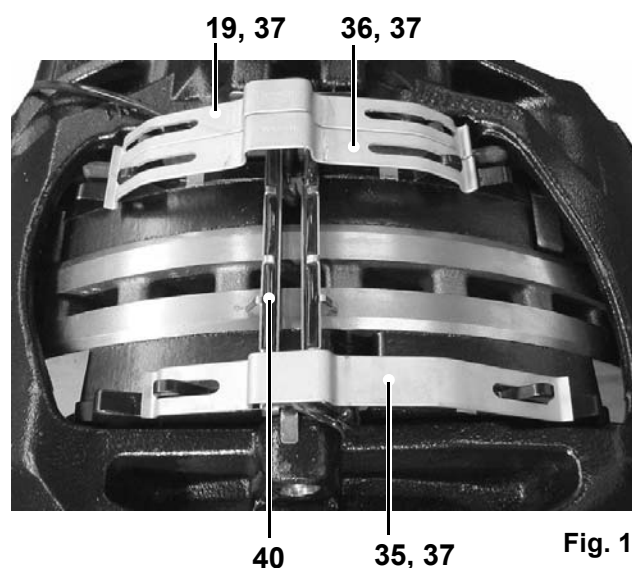


Fig. 12

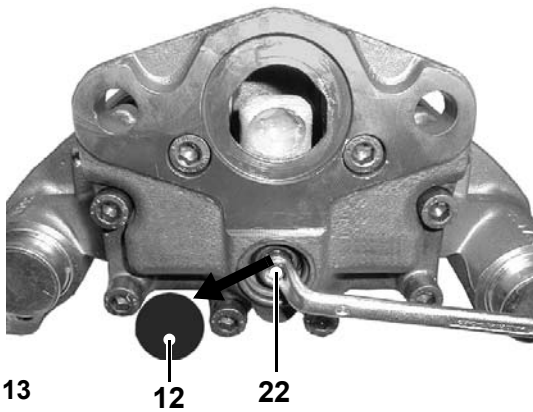


Fig. 13

- Remove plug (12) for the adjuster (22) of the caliper (1).

Attention:

While disassembling plug (12) please note the instructions for fig. 4!

- De-adjust the brake by rotating the hexagon on the adjuster nut (22) with a ring spanner as far as it will go and then release it by approx. 1/4 turn.

Note: The turning direction to de-adjust is to the right, that means clockwise.

Caution:

When re-adjusting push back the spreader plate (19) by hand to ensure (fig. 14, see arrow) that the pin as torsion lock (see fig. 19) for the adjusting screw does not slip out of its groove. Otherwise the adjuster screw will turn and thereby damage its gaiter!

Do not actuate the brake while the brake pads are removed.



Attention: Danger of bodily injury!

- Slide the caliper (1) by hand towards the wheel side and remove the brake pad (35).

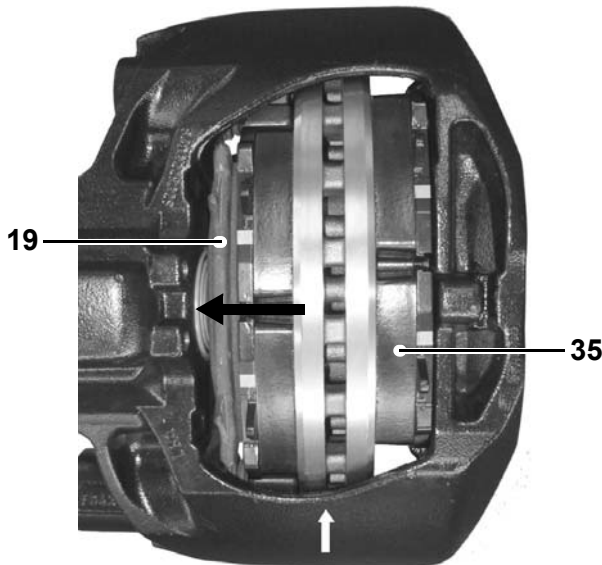


Fig. 14

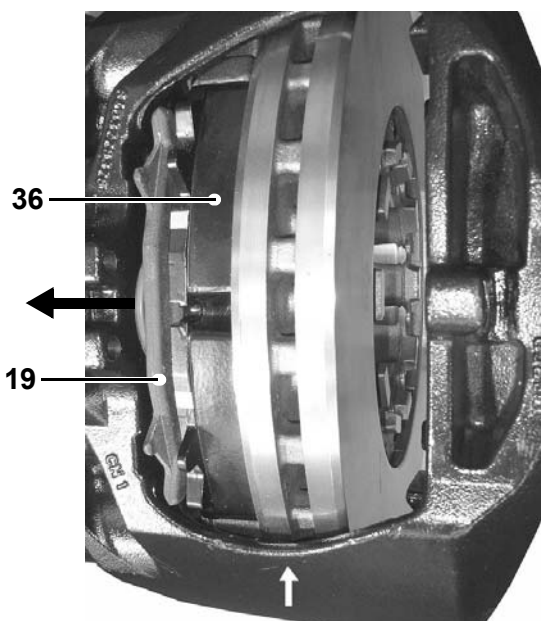


Fig. 15

- Slide the caliper (1) by hand towards the cylinder side (arrow) and remove the brake pad (36) and the spreader plate (19).



Attention:

Do not actuate the brake while the brake pads are removed.
Danger of bodily injury!

- Using a wire brush remove any corrosion from the spreader plate, brake pad slot and brake pads guide surfaces.

Caution:

Take care not to damage the dust caps (5, 10). The guide surfaces must be free of grease!

Checking the dust caps (gaiters) and the brake caliper movement:

- Slide the caliper towards the side to allow examination of the gaiters (5, 10), the guide pins (8, 9) and the adjuster screw (21) for wear and damage. **Renew defective gaiters!** (see section 5.1 and 5.2).

Caution:

In case of a defective the gaiter (10) must be checked if dirt or water has already entered or damaged the inner parts of the brake or the gaiter seat in the caliper by corrosion. In case of doubt the brake must be renewed according to section 4. If the gaiter (10) is damaged while the brake is serviced, the gaiter must be renewed according to section 5.2.

- Slide the caliper on the guide pins by hand over its total displacement and check for freedom of movement. **If the movement is restricted renew the guide pins bushes and gaiters according to section 5.1**

Caution:

Do not squeeze the dust caps of the guide pins against the brake carrier!

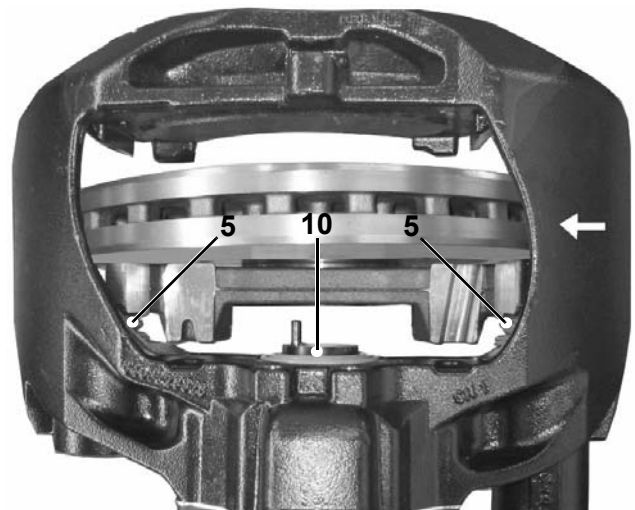


Fig. 16

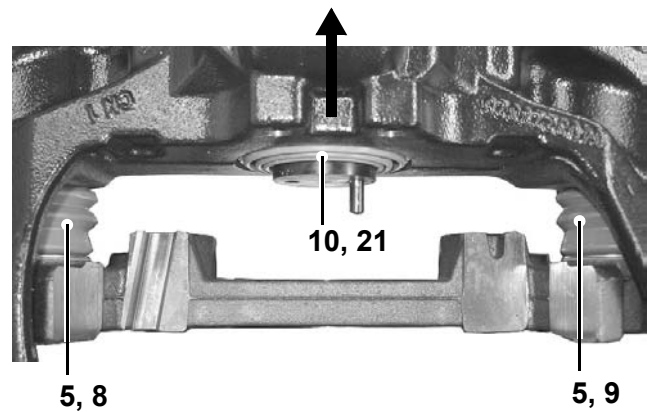


Fig. 17

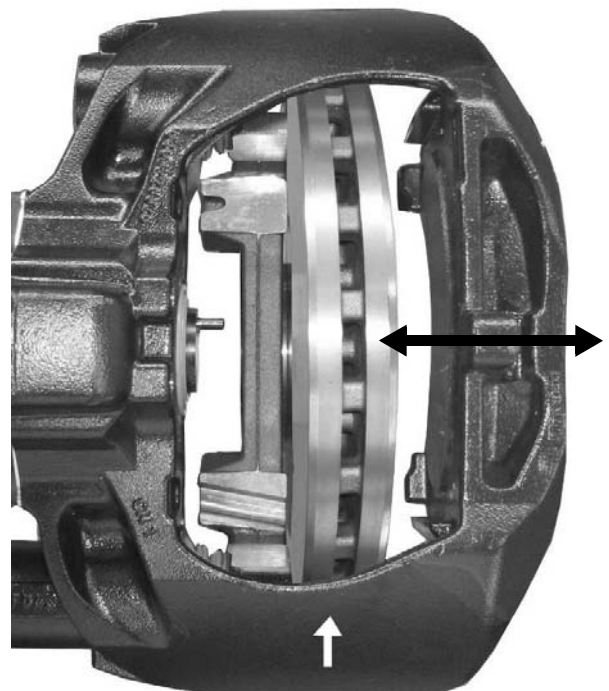


Fig. 18

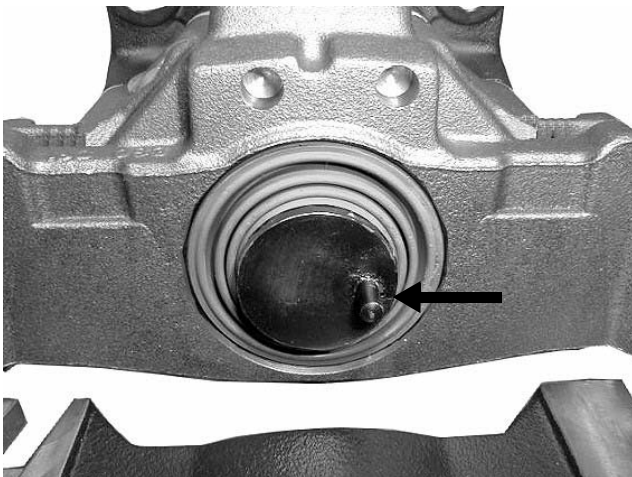


Fig. 19

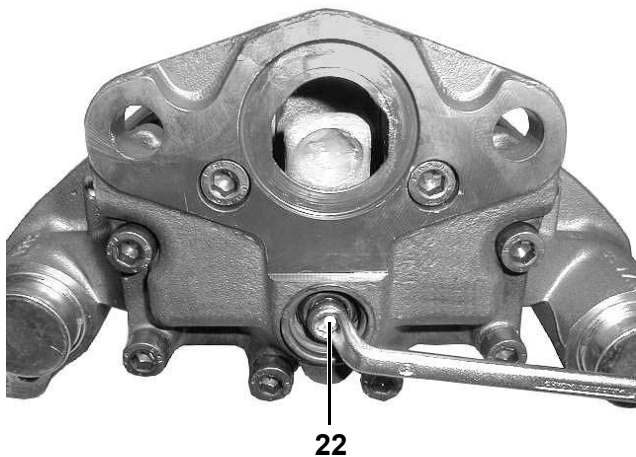


Fig. 20

Checking of the adjuster unit (clamping unit):

- Secure the adjuster nut during checking and turning on the hexagon from twisting, e.g. by holding the pin (see arrow).
- Extend the adjuster (22) towards the brake disc by turning the adjuster hexagon in the anti-clockwise direction with a ring spanner and check for ease of movement.
- After checking the adjuster unit return the adjuster screw completely by turning in the clock-wise direction.

Note: The torque to return the adjuster screw is greater than the torque to turn the torque towards the disc.

Caution:

Do not overload the adjuster hexagon! Do not use an open-ended spanner. With the ring spanner mounted on the adjuster nut ensure that there is sufficient such that it will not be prevented from turning during the adjuster check.

- Actuate the brake lightly several times and check that the adjuster unit automatically adjusts. The ring spanner will turn with every brake actuation.



Attention: Do not touch any part of the brake while testing.

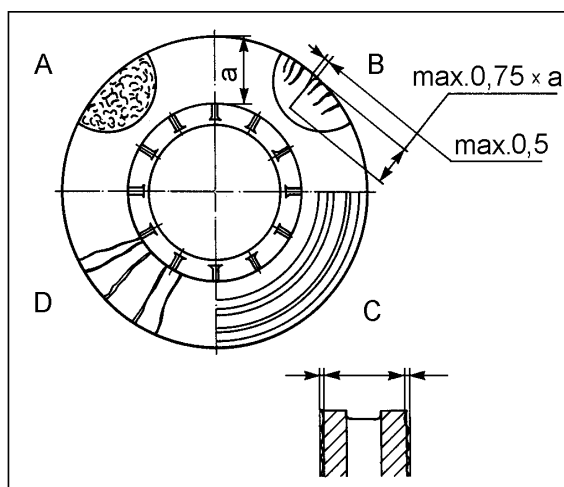


Fig. 21

Brake disc condition inspection:

Check brake disc for cracks, condition of the rubbing faces and maximum wear dimension.

- | | |
|---|-------------------|
| A = crazing | = permissible |
| B = Radial cracks to max: 0.5 mm width | = permissible |
| C = unevenness under 1.5 mm of the plate surface | = permissible |
| D = continuous cracks | = not permissible |
| a = braking surface | |

Checking brake disc runout:

- Mount a dial indicator on the brake carrier.
- With the disc installed measure the runout by rotating the hub as shown in fig. 22. Limit 0.15 mm.

Note: At higher values rework or renew the disc. Installation of cleaned brake discs only. The brake discs must be free of grease!

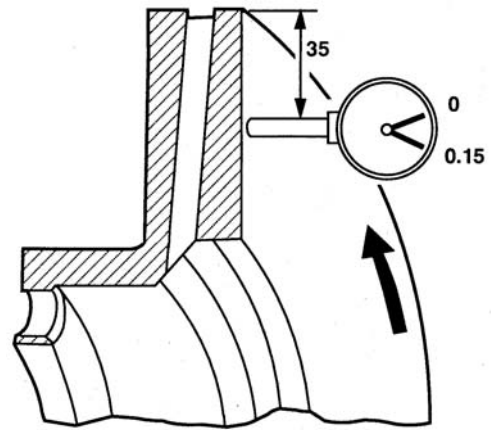


Fig. 22

Working sequence for pad installation:

- Slide the caliper until there is sufficient space between the actuation side and the disc to insert the brake pad.
- Insert spreader plate (19) in the brake carrier and engage with the adjuster screw (21).

Caution:

The spreader plate must be located within the brake carrier abutments and the pin in the adjuster screw must be located in the slot of the spreader plate. Otherwise the function of the adjuster mechanism is not ensured! The adjuster screw can be turned to obtain alignment. The gaiter may not be twisted!

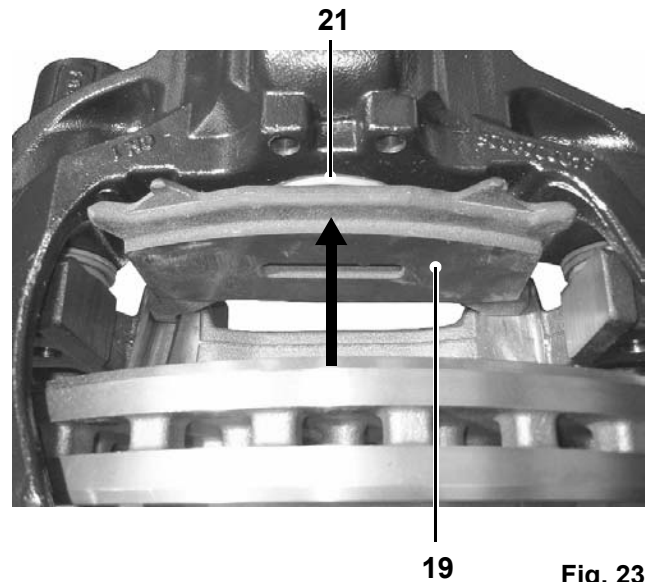


Fig. 23

- **New** brake pad (36) has to be inserted on the actuating side
- Slide the caliper toward the wheel until the brake pad (36) contacts the disc.

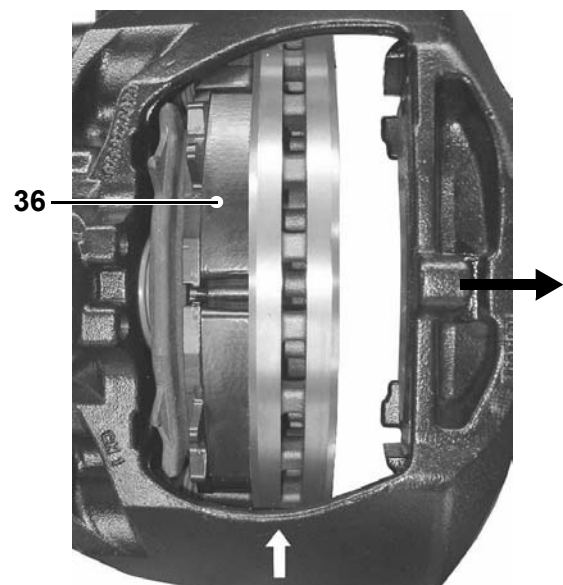


Fig. 24

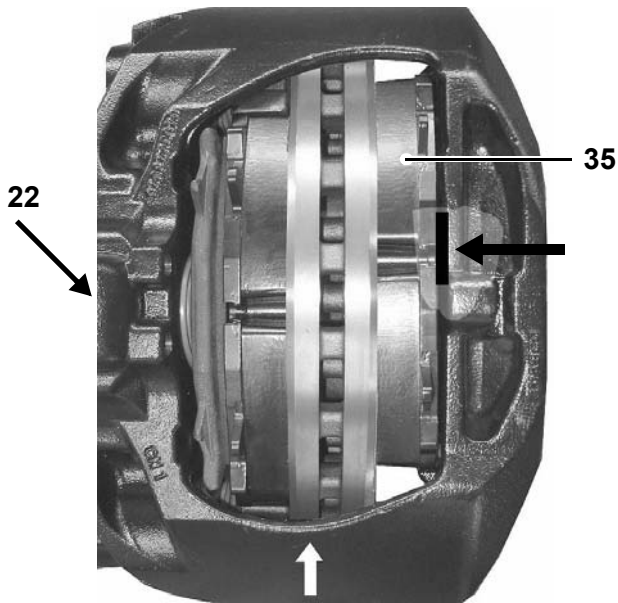


Fig. 25

- **New** brake pad (35) has to be inserted on the wheel side.
- Using a 1 mm thick feeler gauge (arrow) inserted between the contact surface of the backing plate of the brake pad on the wheel side and the brake caliper, turn the hexagon (22) of the adjuster nut with a ring spanner until both brake pads contact the brake disc.

Caution:

Do not overload the adjuster hexagon (22)!

Note: The turning direction to adjust the break is to the left, that means anti-clockwise. Do **not** fit pad hold-down hoop before adjusting air gap.

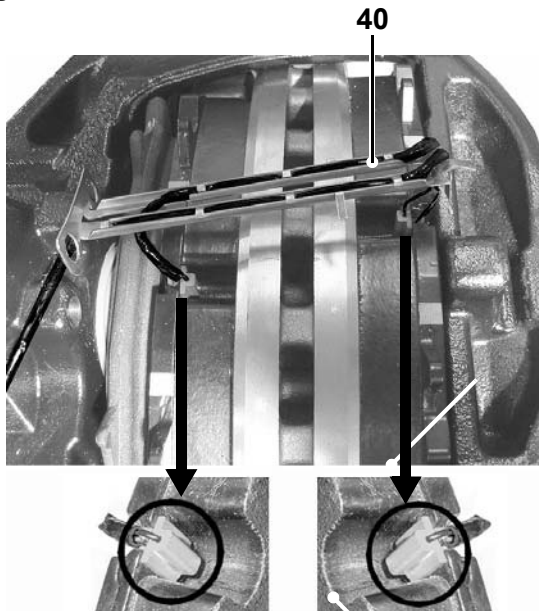


Fig. 26

- Place the **new** pre-assembled wear indicators and the cable guide (40) on the caliper and insert the sensor contact (see arrows) into the brake pads.

Attention:

The cable side of the sensor contacts need to point towards the brake disc and the sensor contact needs to be inserted in the brake pad correctly!



Fig. 27

- Position cable guide (40) and cable exit of the wear indicators on the brake caliper.

Caution:

Lay cables (see arrows) on the actuation side so that they are not located on the brake pad (see cable position in fig. 27).

- Position the **new** hold down springs (37) over the cable guide and on top of the spreader plate (19) and the brake pads (35, 36).

Caution: The hold-down spring (37) is placed with the long side on the brake pad (35). The long side of the hold-down spring points to the brake disc trailing side (arrow).

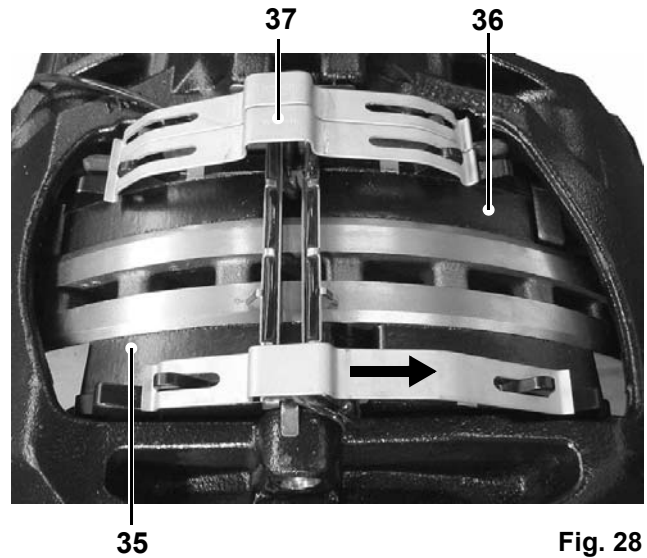


Fig. 28

- Slide **new** hold down hoop 38 through opening in the cable guide and openings in the brake caliper, then push downward so that the radial corners of the hold down springs snap into the hold down hoop.

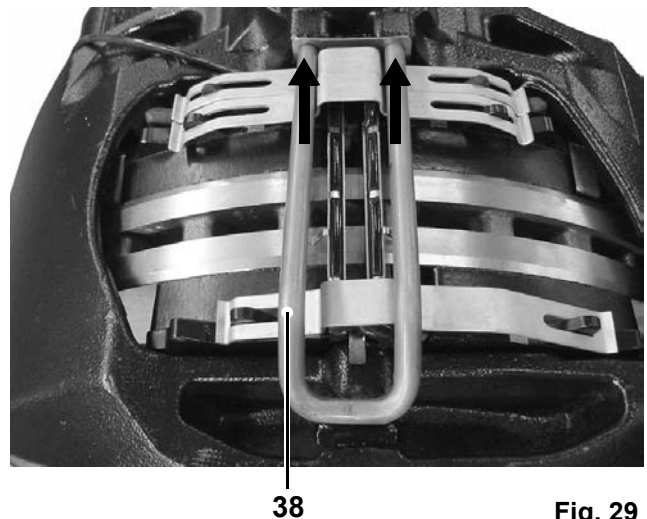


Fig. 29

- Fit **new** internal hexagon bolt (39) to the brake caliper (Table 1 Position II) with required tightening torque.

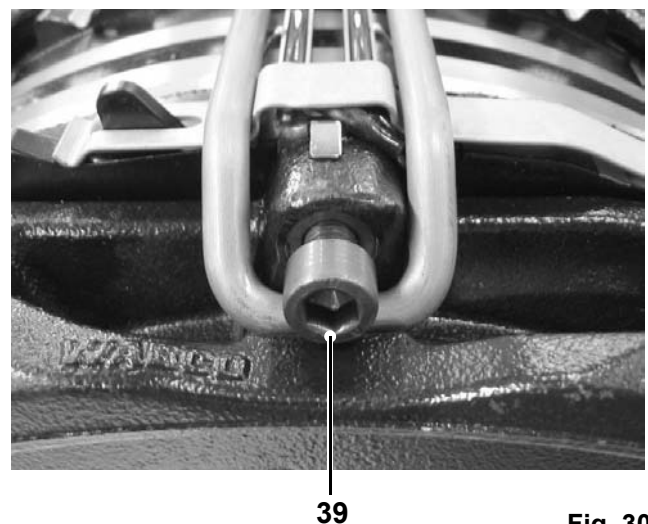


Fig. 30



Fig. 31

- Plug in the plug of the wear indicator in the connector coupling (arrow).
- Check the correct cable position visually.



Fig. 32

12

- Fit new plug (12) to the opening in the brake caliper! Check and make sure the correct seat!
- Ensure that the wheel hub turns freely.

Caution:

Upon completion test the brakes on the roller dynamometer!

4. Renewing brake



Attention:

Do not use a power-driven socket! While working at the brake or moving the brake caliper handle the caliper only from outside to avoid injury!

Note: The new brake is supplied as a pre-assembled unit and may be mounted to the vehicle's axle via the brake carrier. Pay attention to the correct mounting side in the vehicle directed forward (left brake, left vehicle side; right brake, right vehicle side). The removed brake pads must be tested for wear according to section 2.3. If the use of new brake pads is necessary the renewal is recommended on a per axle basis.

Work sequences for brake removal:

- Remove brake pads according to section 3.
- Remove brake cylinder from brake caliper according to section 6.
- Dismantle the caliper with the carrier from the axle (see table 1, position III).
- Check brake disc according to section 2.4.

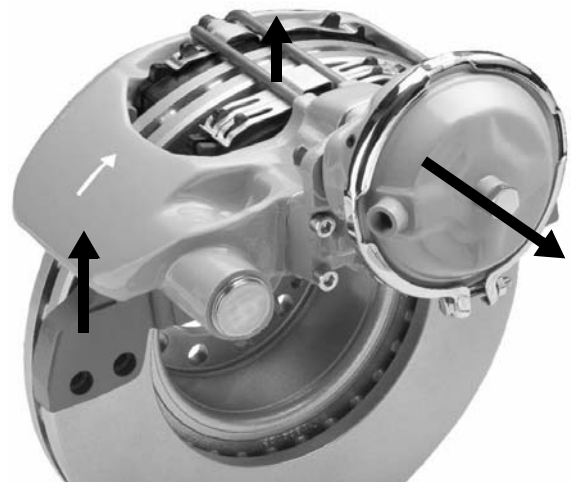


Fig. 33

Work sequences for installing brake:

- Place the **new** brake with the brake carrier over the brake disc and mount on the axle. Tighten hexagon bolts with spanner (table 1, position III).

Note: Observe vehicle manufacturer's special assembly instructions when assembling brakes.

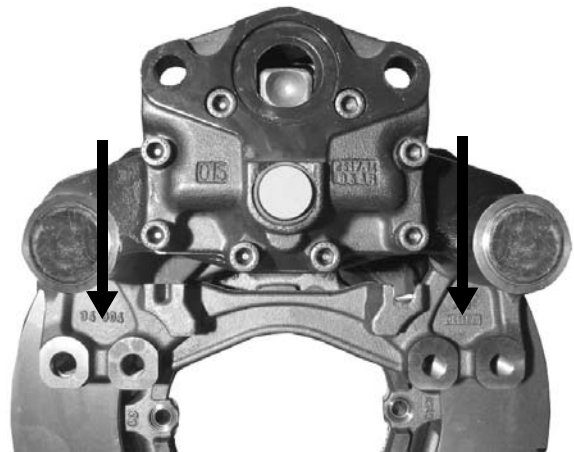


Fig. 34

- Remove the transport protection cap from the cylinder flange on the brake caliper.

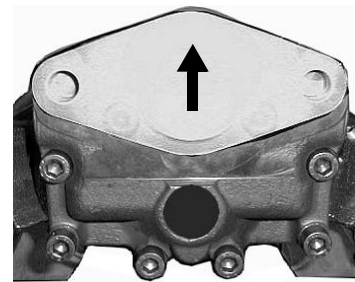


Fig. 35

- Refit brake pads and sprader plate according to section 3.
- Refit the brake cylinder on the caliper according to section 6.

Caution:

With the brake cylinder in its installed position, ensure that the lower drainage hole facing the ground is open! All other holes must be plugged!

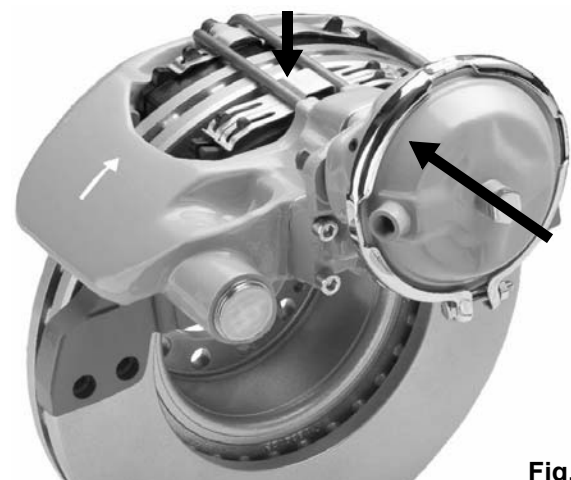


Fig. 36

5. Renewing gaiters



Attention:

Do not use a power-driven socket! While working at the brake or moving the brake caliper handle the caliper only from outside to avoid injury!

Note: When replacing all of the gaiters in the caliper, the work sequences 5.1 and 5.2 are to be combined. In this case work sequences do not need to be repeated several times.

When replacing individual gaiters, follow the corresponding work sequences of the sections 5.1 and 5.2.



Fig. 37

5.1 Renewing guide pin gaiters and bushes

Working sequences for removal:

- Remove brake pads according to section 3.
- Remove brake cylinder from brake caliper according to section 6.
- Dismantle the caliper with the carrier from the axle according to section 4.

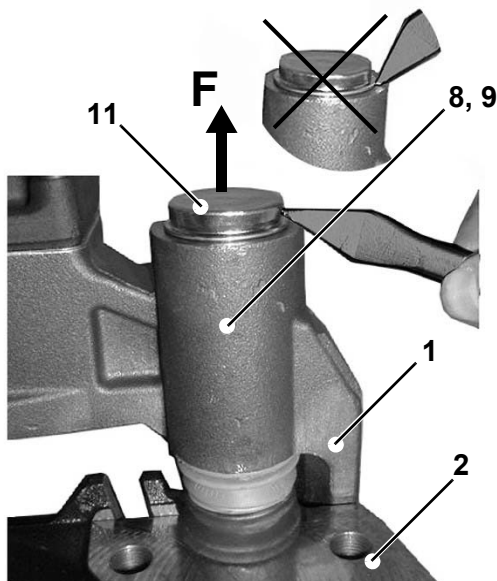


Fig. 38

- Dismantle brake caliper (1) from brake carrier (2) by removing sealing caps (11) of the guide pins (8, 9) from the caliper (1) with a suitable tool, e.g. chisel.

Caution:

Take care not to damage cover bores in housing. Position the proper tool on the cover.

- Release the screws (6, 7) with a spanner (table 1, position IV) and separate the caliper (1) from the carrier (2).



Attention:
Moving brake caliper: danger of bodily injury!

- Clean the mating surfaces (collars) of the carrier (2).

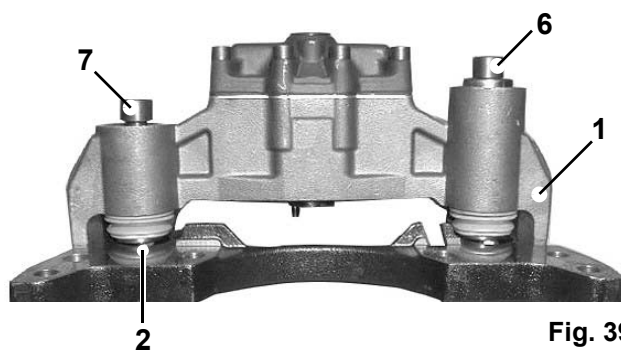


Fig. 39

- Withdraw the guide pins (8, 9) and remove the gaiters (5) from the caliper (1).

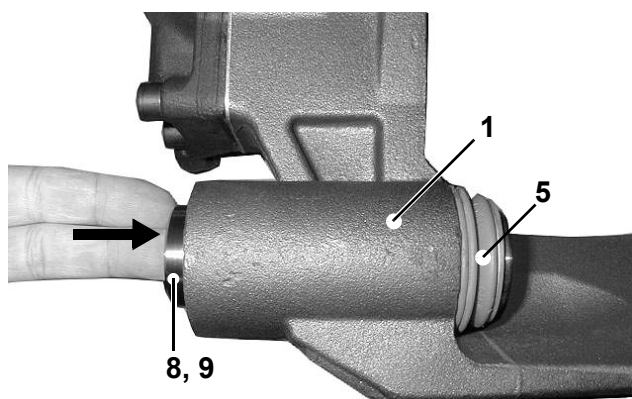


Fig. 40

- Place the caliper (1) on a firm base to push out the bushes (4), so that the caliper opening is facing upwards.



Fig. 41

- Press the bushes (4) out of the caliper (1) using a mandrel.
- Clean the bores in the caliper.

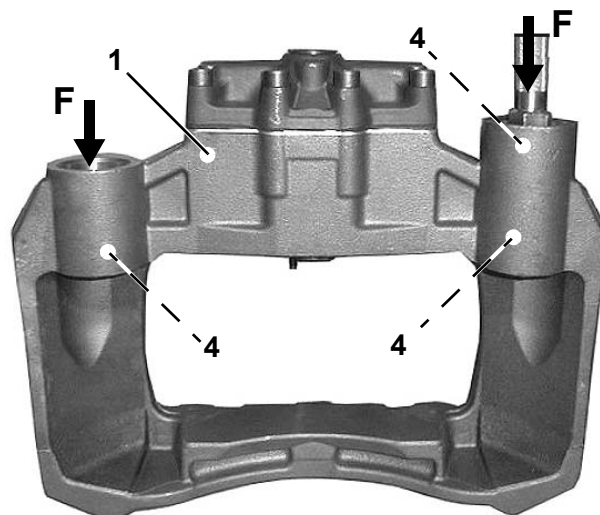


Fig. 42

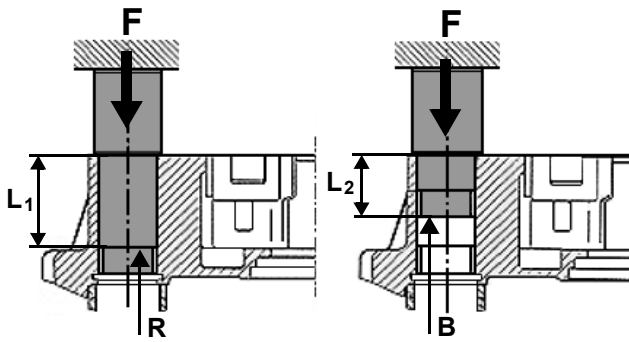


Fig. 43

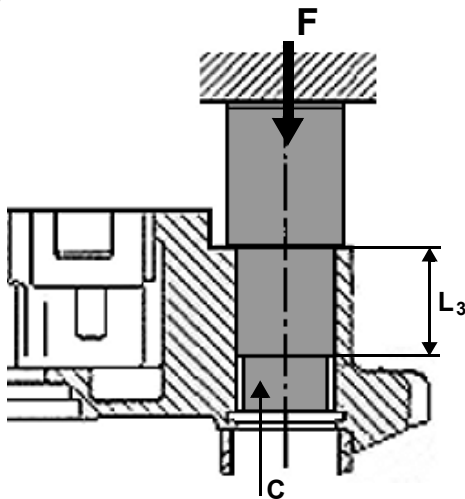


Fig. 44

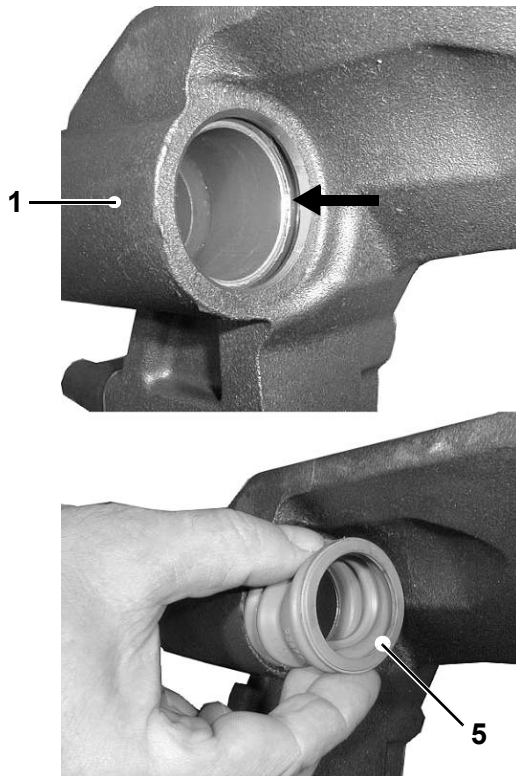


Fig. 45

Working sequence for installation:

Press in two **new** bushes for the longer guide pin.

- Firstly (A) fit the inner bush with the special fitting tool (L_1 = at specifications from WABCO), and secondly (B) the outer bush with the special fitting tool (L_2 = at specifications from WABCO) by pressing in as far as the mandrel will go.
- Check seat of the bushes for burrs, remove them if necessary.
- Grease the bushes and the space between them.
- Press in **new** bush 4 for the shorter guide pin 9.
- Fit the bush (C) with special fitting tool (L_3 = at specifications from WABCO) by pressing in as far as the mandrel will go.
- Check seat of the bush for burrs, remove them if necessary.
- Grease the bush.

- Fit **new** green gaiters 5 in the gaiter seats (ring groove/arrow) in the brake caliper 1.

Note: Clean gaiter seats before fitment. The **sealing seats** must be **free of grease**. It is possible to fit the gaiters by hand. **Ensure that the gaiter lip in the annular groove in the caliper sits free of folds!**

- Grease the sliding surfaces of the guide pins (8, 9) and the inner lip of the gaiters (5).
- Insert the **new** guide pins from the cylinder side into the caliper (1).
- Mantle guide pins with gaiters (5) and insert them into the guide pin seat (8, 9).
- Move guide pins backwards and forwards as shown in fig. 46 several times.

Caution:

The longer guide pin 8 is a close fit and is located at the brake disc leading side. The shorter guide pin (9) is a clearance fit and is located at the brake disc trailing side.

Remove all excess grease. The brake carrier end of the guide pins (arrow) and the mating surfaces of the carrier must be free of grease!

Do not lose the metal-ring on gaiter (5) and check for proper seat (right side in fig. 46)!

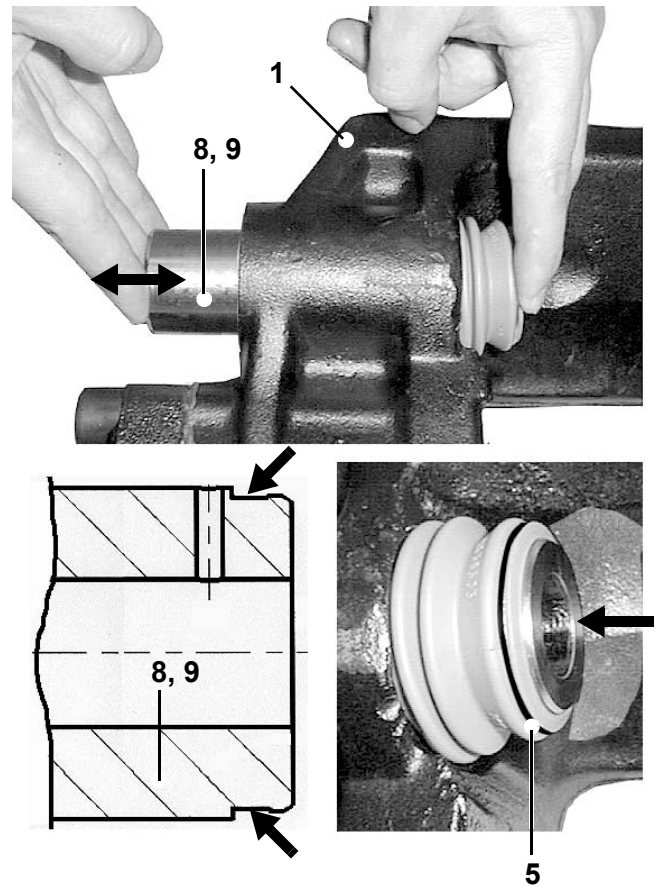


Fig. 46

- Place the caliper (1) on the carrier (2) and insert the guide pins (8, 9) into the collars in the carrier.
- Insert **new** bolts (6) (long for close fit pin 8), (7) (short for clearance fit pin 9) into the guide pins in the brake caliper (1) and screw with spanner (see table 1, position IV) on the carrier (2).

Caution:

On assembly ensure that the gaiters 5 are not damaged or twisted during tightening the bolts.

Firstly, always tighten the bolt for the close fit longer pin (8), followed by the bolt for the clearance fit shorter pin (9).

If during the maintenance work the guide pin (8 and 9) fastening to the carrier (2) is loosened, then new bolts (6 and 7) must be used when reassembling!

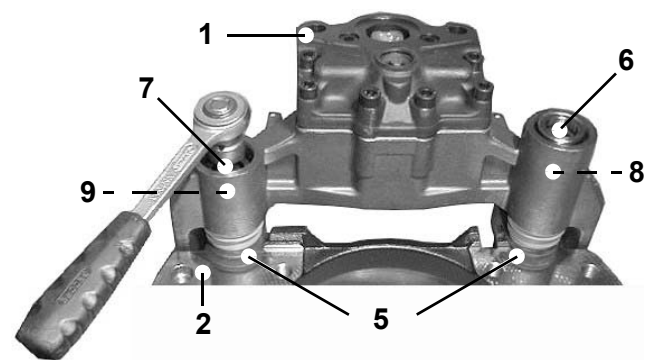


Fig. 47

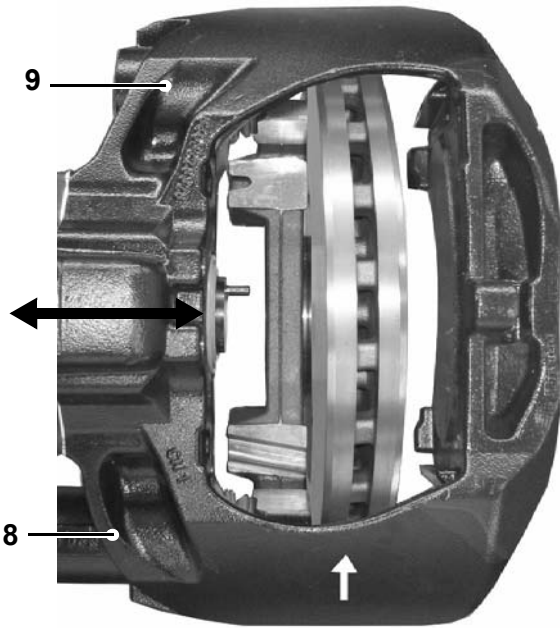


Fig. 48

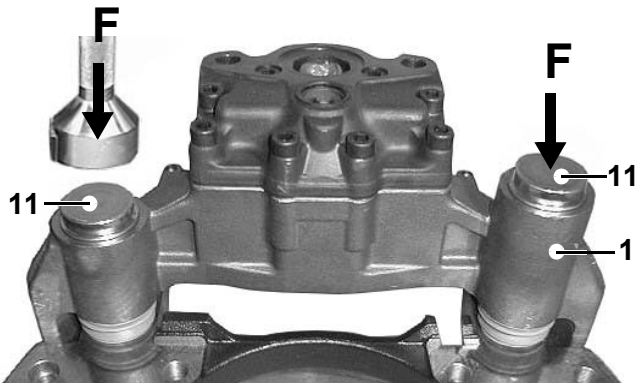


Fig. 49



Fig. 53

- Move brake caliper backwards and forwards on guide pins (8, 9) several times. Check for ease of movement.

Caution:

Do not squeeze the dust caps of the guide pins against the brake carrier!

- Grease the bore holes for the covers (11) in the brake calipers (1).
- Place **new** caps (11) in the bores in the brake caliper 1 and press home with a suitable tool.

Note: Take care to avoid damaging the covers.

- Mount brake over the brake disc on the axle according to section 4.

Note: Observe vehicle manufacturer's special assembly instructions when assembling brakes.

- Install brake pads and set clearance. Carry out according to section 3 and pay attention to notes.
- Before refitting the brake cylinder clean the sealing surface on the caliper and grease the concave seat (arrow) in the brake lever.
- Refit the brake cylinder on the caliper according to section 6.

Caution:

With the brake cylinder in its installed position, ensure that the lower drainage hole facing the ground is open! All other holes must be plugged!

5.2 Renewing adjuster screw gaiter

Note: If the gaiter only is to be renewed it is not necessary to dismantle the brake caliper and cylinder.

Working sequences for removal:

- Remove brake pads and spreader plate according to section 3.



Fig. 51

- Pull brake caliper to actuation / cylinder side by hand.
- Pull the gaiter (10) out the annular groove in the adjuster screw (21).
- Remove the gaiter from the seat in the brake caliper by means of a screwdriver.

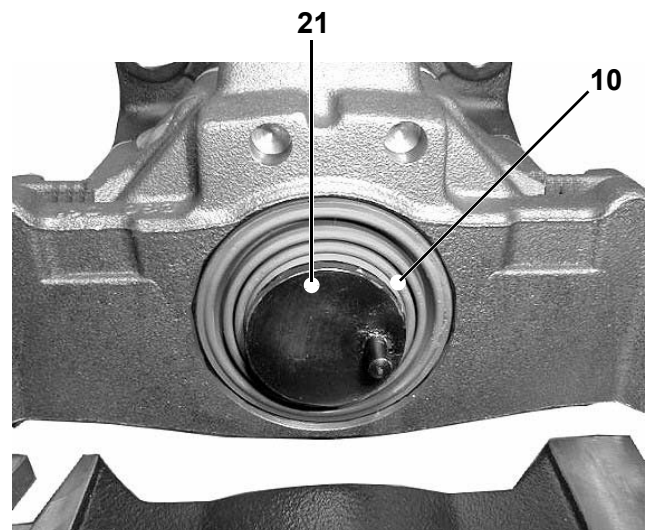


Fig. 52

- Check the adjuster screw thread (21).

Note: For this purpose refit the wheel side brake pad so that the adjuster screw cannot be screwed completely out of the adjuster. **After the thread check remove the brake pad.**

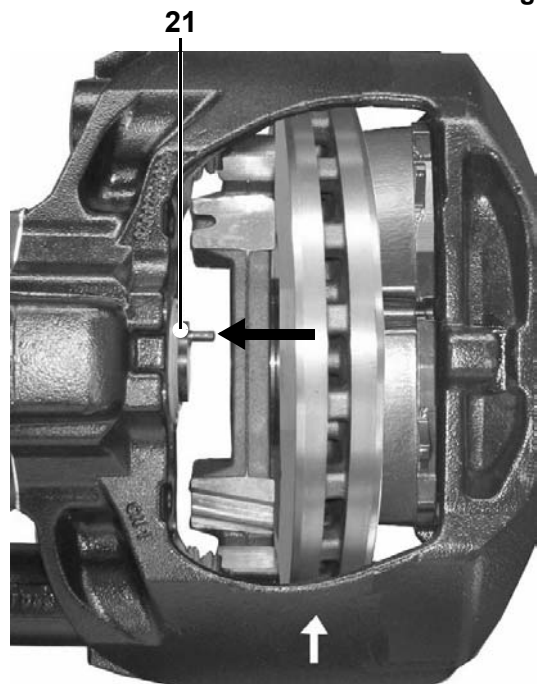


Fig. 53

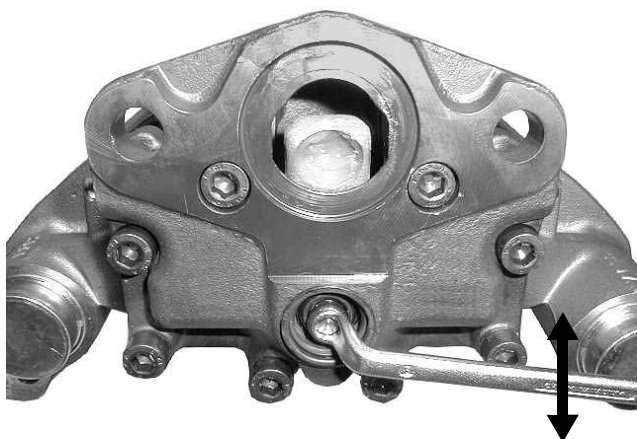


Fig. 54

- Secure adjuster screw (21) against turning (arrow Fig. 53) and screw out the adjuster screw c. 30 mm by turning the adjuster hexagon in the anti-clockwise direction with a ring spanner.
- Examine the thread for corrosion and damage whilst screwing out.

Caution:

The gaiter (10) can be renewed, if definitely no dirt or water has penetrated into the brake caliper, or if the gaiter has been directly damaged during servicing the brake. In case of doubt the brake must be replaced according to section 4, if internal parts are corroded.

- After examination grease the thread and partly screw back the adjuster screw clockwise.



Fig. 55

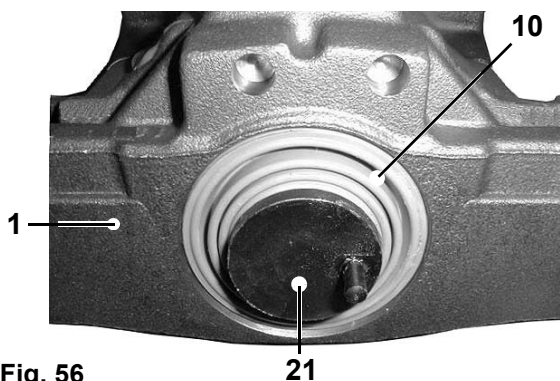


Fig. 56

Working sequence for installation:

- Clean the gaiter seat (10) (arrow) in the caliper.
- Push **new** gaiter (10) over the adjuster screw, centre it and push down the gaiter into the seat of the caliper (1) manually.
- Grease the gaiter lips (10) and insert the gaiter (10) into the seat of the adjuster screw (21).

Note: Ensure that the gaiter lip in the annular groove in the adjuster screw sits free of folds!



Fig. 57

- Install brake pads and set clearance. Carry out according to section 3 and pay attention to notes.

6. Renewing brake cylinder



Attention:

Do not use a power-driven socket! While working at the brake or moving the brake caliper handle the caliper only from outside to avoid injury!

Note: Only use cylinders as specified by vehicle manufacturer. The following work sequences onla inform in principle about the assembly and disassembly of the brake cylinder on the axles.

Detailed assembly and check instructions have to be used according to the cylinder type and the instructions of the cylinder manufacturer.

Working sequences for removal:

- Make sure that the brake hoses are pressureless.
- Disconnect air line to cylinder (according to cylinder manufacturer's data).
- Remove brake cylinder from caliper by releasing cylinder nuts (table 1, position V).



Fig. 58

Working sequence for installation:

Caution:

With the brake cylinder in its installed position, ensure that the lower drainage hole facing the ground is open! All other holes must be plugged!

- Before refitting the brake cylinder clean the sealing surface on the caliper and grease the concave seat (arrow) in the brake lever.
- Fit brake cylinder to the caliper and tighten nuts crossed using a spanner (table 1, position V).
- Screw brake hose to brake cylinder (according to cylinder manufacturer's data).

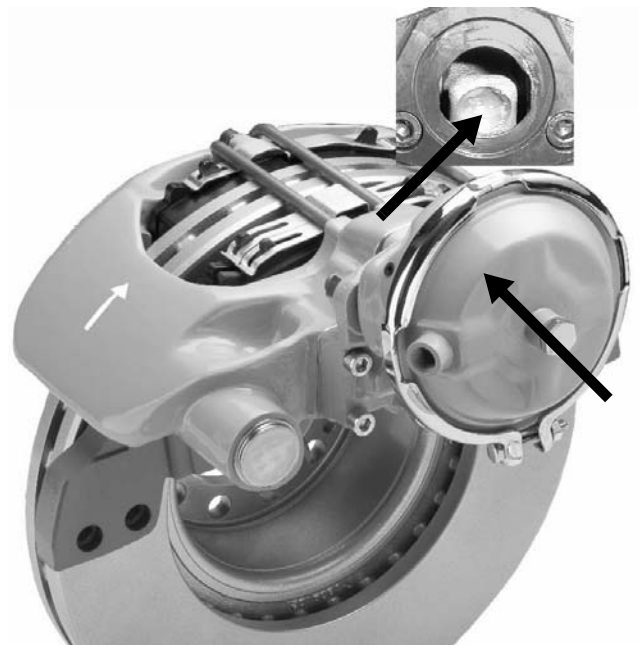


Fig. 59

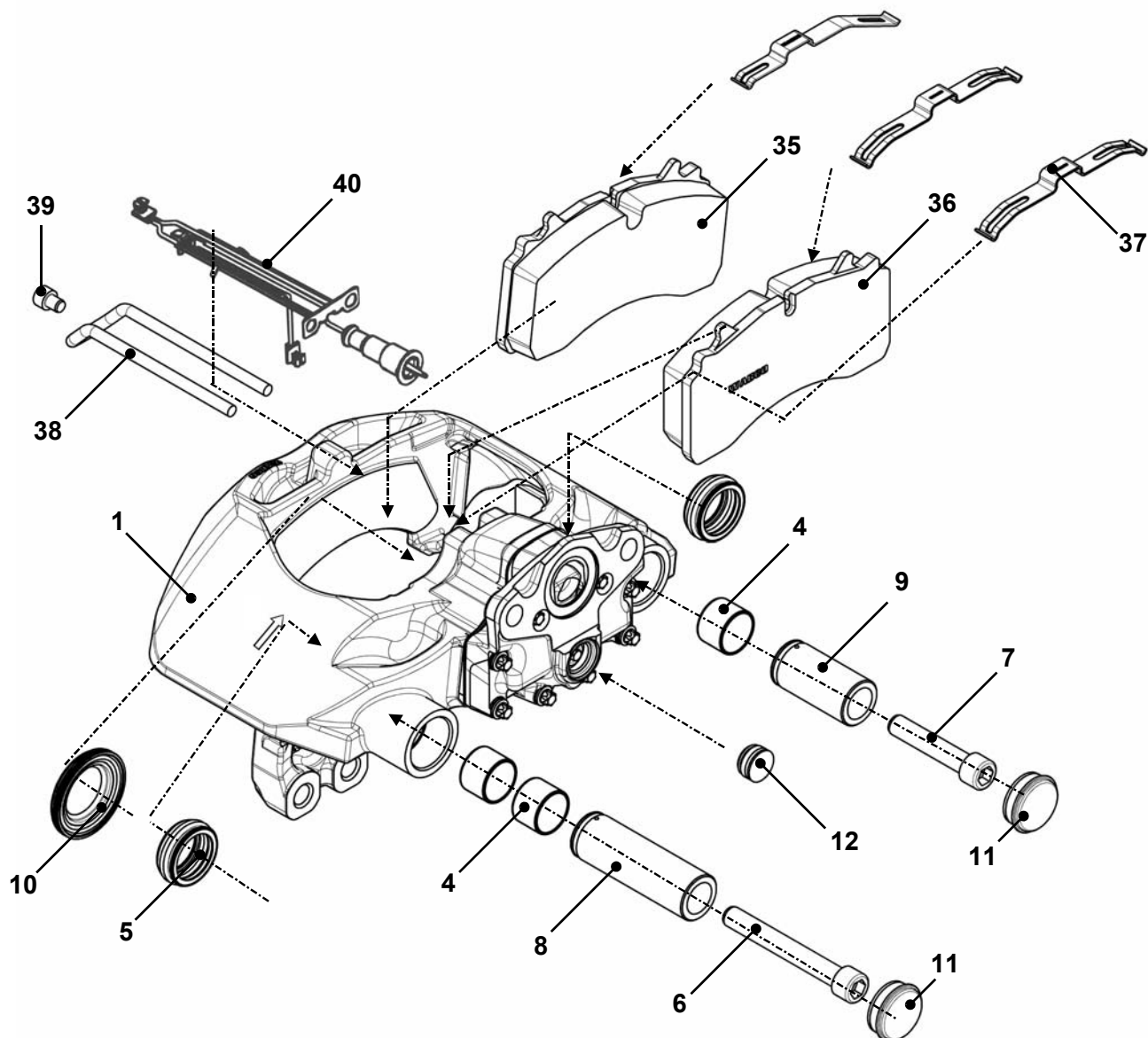
Note: The brake hose must not be twisted or located such that it will rub against anything! The brake hose of the air supply is not allowed to have an influence on the movability of the brake caliper.

- Test air connection for leaks (according to cylinder manufacturer's data).
- Carry out function and effectiveness check. Pay attention to the regulations of the cylinder manufacturer!

Table 1: Tightening torques

Position	Name	Spanner width [AF]	hexagon		Tightening torque: [Nm]
			External	Internal	
I	Hexagon Adjuster	8	X	–	Turning direction of the hexagon: • Adjust, anti-clockwise (left) maximum 3, clearance decreases. • De-adjust, clockwise (right), maximum 12, clearance increases. Caution: Do not use a power-driven socket!
II	Internal hexagon bolt / Pad hold down pin	8	–	X	30 + 15
III	Brake fixation	27	X	–	450 ± 30 recommended. Please pay attention to special assembly instructions and if applicable to wrench size of the vehicle manufacturer!
IV	Coupling guide pin	14	–	X	310 ± 30 Tightening order for guide pins: 1. Close fit pin (long internal hexagon bolt) 2. Clearance fit pin (short internal hexagon bolt)
V	Coupling brake cylinder	24	X	–	210 - 30 Please pay attention to special assembly instructions and if applicable to wrench size of the cylinder manufacturer!

Exploded view of the exchange units:



Key:

1	Brake caliper with brake carrier	11	Closing cover
4	Bushes for guide pins	12	sealing plugs
5	Gaiters for guide pins	35	Brake pad wheel side with wear indicator
6	Internal hexagon bolt (long)	36	Brake pad actuation side with wear indicator
7	Internal hexagon bolt (short)	37	Hold-down springs
8	Guide pin (long)	38	Pad hold down pin
9	Guide pin (short)	39	Internal hexagon bolt
10	Gaiter for adjuster screw	40	Cable guide with wear indicator (pre-assembled)