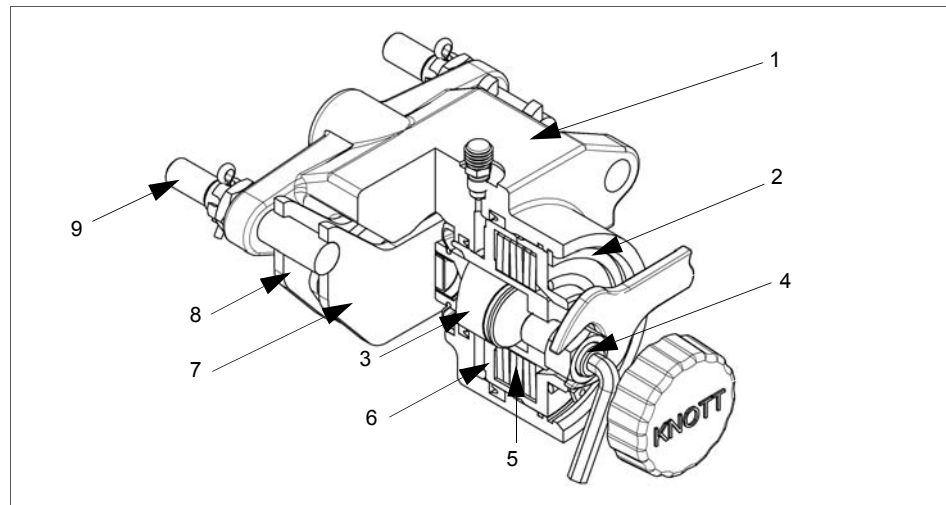


1. Construction and funktion

Bild 1-1:

Parts of the brake

- 1 housing
- 2 pressure ring
- 3 thrust bolt
- 4 adjusting screw
- 5 bank of cup springs
- 6 piston
- 7 lining pad
- 8 lining pad
- 9 gliding bolt



The two identical brake pads and slide freely on the guide bolt, which is fastened in the housing. The guide bolts are guided in an additional brake anchor plate which in turn is screwed onto the vehicle, i.e. its axle.

On actuation, the brake generates a clamping force at the brake lining pads, which cause a tangential force/braking moment to be generated at the brake disk, the extent of which depends on the coefficients of friction generated by the linings.

The clamping force is generated by the bank of cup springs, during which the piston is moved together with the adjusting screw, the thrust bolt and the brake pad towards the brake disk.

When the brake pad comes into contact with the brake disk, the reaction force shifts the housing onto the guide bolts until the brake pad) is also pressed against the brake disk.

The brake is released by complete pre-tensioning of the bank of cup springs. During this process, through application of the necessary release pressure after overcoming the cup spring force, the piston must move back until it comes to rest against the pressure ring.

The clamping force diminishes with wear of the brake lining and brake disk. The brake must be adjusted at the latest at the times indicated by the adjusting specification below.

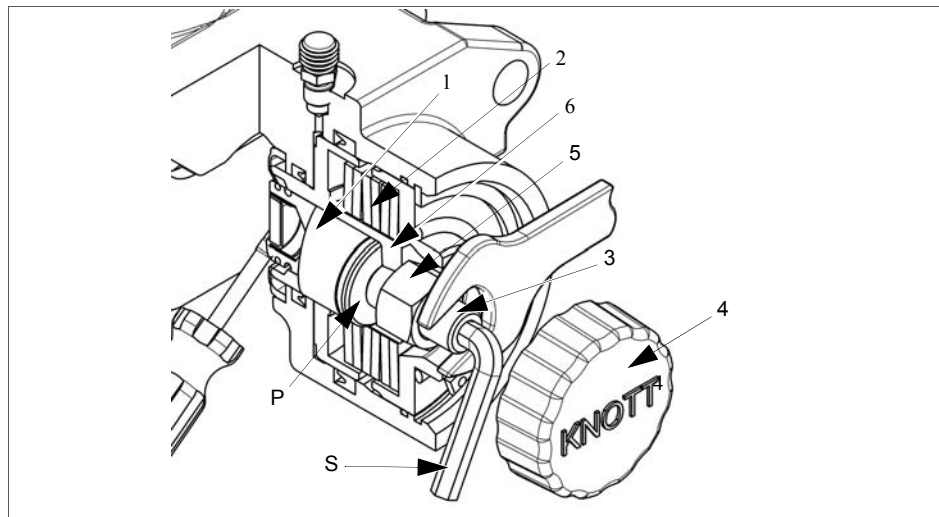
2. Mounting and basic setting regulations

Basic brake setting is required after mounting new brake lining plates or brake disks, as well as during all repair stages and in the event of insufficient braking performance.

Bild 2-1:

Adjusting and assembly possibilities

- 1 thrust bolt
- 2 bank of cup springs
- 3 adjusting screw
- 4 screw cap
- 5 lock nut
- 6 piston
- P even surface
- S socket wrench



Note:

All mounting and basic setting work must be carried out on the brake when cold.

2.1. Mounting the brake

1. Stand the vehicle on an even surface and secure against rolling away.
2. Release the screw cap.
3. Release the lock nut (size 24 or 30) and turn the adjusting screw anticlockwise using a size 8 or 10 socket wrench until the pressure bolt comes to rest against the even surface of the piston. In this status, the brake can be mounted onto the brake disk and fastened.
4. Mount the pressure connection again.

Apply the necessary release pressure to the brake until the bank of cup springs is completely pre-tensioned

Following carry out the below described basic setting regulation.

2.2. Basic setting regulation

1. Turn the adjusting screw manually clockwise until both brake pads make contact with the brake disk. Then it is not longer possible to turn the adjusting screw without exerting a major amount of force.
2. Turn the adjusting screw anticlockwise in order to set the following rated clearances:

type	adjusting screw	clearance (mm)		turns
FSG90	M16 (SW 8)	min.	0,5	1/4
		clearance	1,0	1/2
		max.	1,5	3/4
FSG110	M20 (SW 10)	min.	1,0	2/5
		clearance	2,0	4/5
		max.	3,0	1 1/5

3. Hold the adjusting screw in position with a hexagonal socket wrench and lock with lock nut.
4. Mount the screw cap and tighten as far as possible manually.
5. Stellen Sie den Druckanschluß gemäß der Vorschrift der Achs- bzw. Getriebehersteller her. Mount the pressure connection in accordance with the instructions of the axle / gear manufacturer.

For bleeding the piston chamber use the socket spanner size 13 for the bleeding valve.

2.3. Adjusting regulations

During this adjusting process, the parking brake must be released, i.e. the bank of cup springs must be completely pre-tensioned.

1. Stand the vehicle on an even surface and secure against rolling away.
2. Release the parking brake by using the required release pressure.
3. Release the screw cap and unscrew.
4. Release the lock nut (size 24 or 30) and turn the adjusting screw with socket wrench size 8 or 10 manually clockwise until the two brake pads make contact with the brake disk.
5. Turn the adjusting screw anti-clockwise and set the clearance specified in the above table.
6. Hold the adjusting screw in position with the hexagonal socket wrench and lock with the lock nut.
7. Mount the screw cap and tighten as far as possible manually.

Actuate the brake valve several times and check the braking efficiency of the parking brake on a slope.

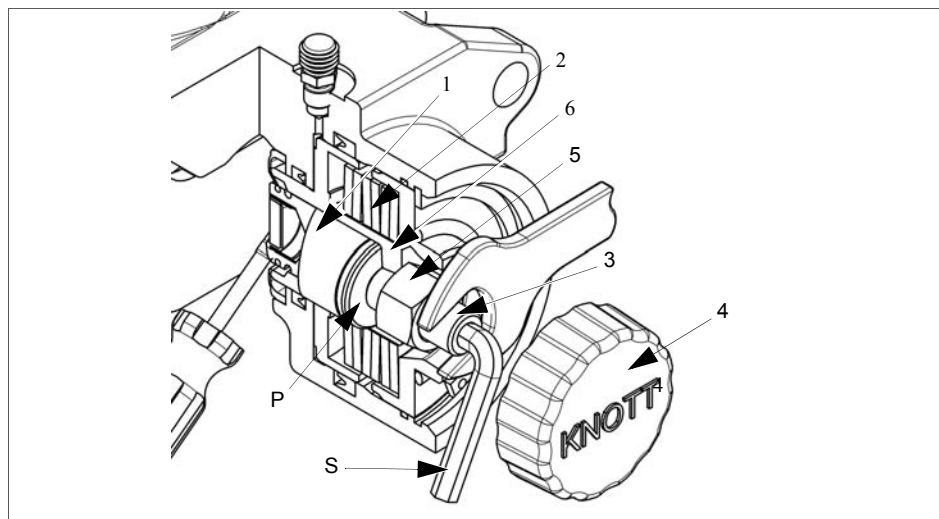
3. Emergency release of the parking brake

After the failure of the pressure release the parking brake by using following manual procedure:

Bild 3-1:

Adjusting and assembly possibilities

- 1 thrust bolt
- 2 bank of cup springs
- 3 adjusting screw
- 4 screw cap
- 5 lock nut
- 6 piston
- P even surface
- S socket wrench



1. The vehicle has to be secured against rolling away.
2. Release the screw cap and unscrew.
3. Release the lock nut (size 24 or 30) and turn the adjusting screw with socket wrench size 8 or 10 manually counter-clockwise until the brake disc is free.



Caution!

For the emergency release is an actuation torque of 40 Nm respectively 70 Nm required .

4. Mount the lock nut and the screw cap and tighten both as far as possible manually. (Protection against dirt



Caution!

Now, the vehicle do not have any brake function. The vehicle must be secured against moving away with proper means. Before putting the vehicle into operation again, the brake has to be adjusted again. Res. „Assembly and basic setting regulations“.

4. Maintenance and repair work

4.1. Maintenance and exchange of brake pads

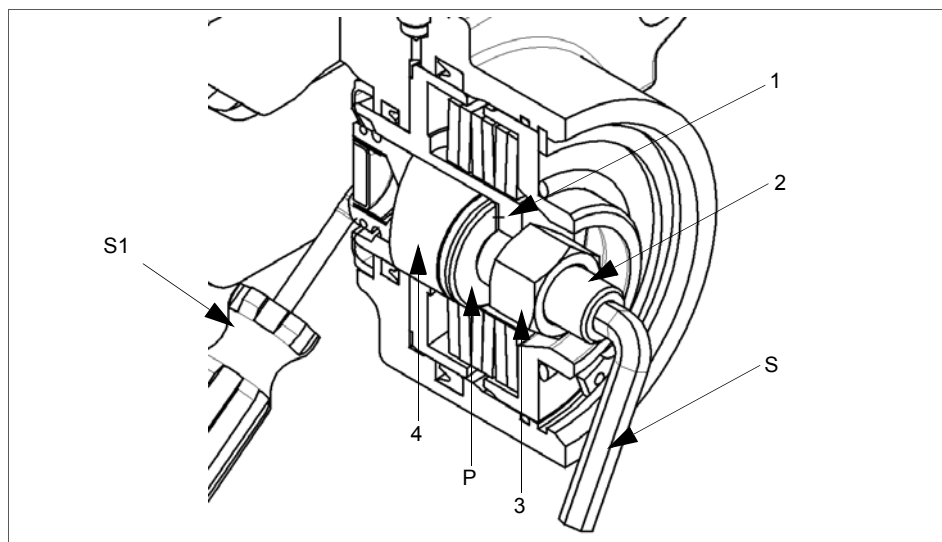
The brake pads themselves are maintenance free. All that is required here is a check for damaged parts, as well as inspection to ensure that the brake disk remains easy running.

The thickness of the brake lining must be subjected to a visual inspection at regular intervals, which depend on vehicle usage, but every six months at the latest. In the event of a minimal residual lining thickness, these intervals must be reduced accordingly in order to avoid major damage to the brake or disk:

- FSG 90:
min. residual thickness 1,0 mm per lining pad (6 mm carrier plate thickness).
- FSG 100:
min. residual thickness 2.0 mm per lining pad (8 mm carrier plate thickness).

Bild 4-1:
Extending the lining pads

- 1 piston
- 2 adjusting screw
- 3 lock nut
- 4 thrust bolt
- S socket wrench
- S1 screwdriver
- P inside of the piston



Note:

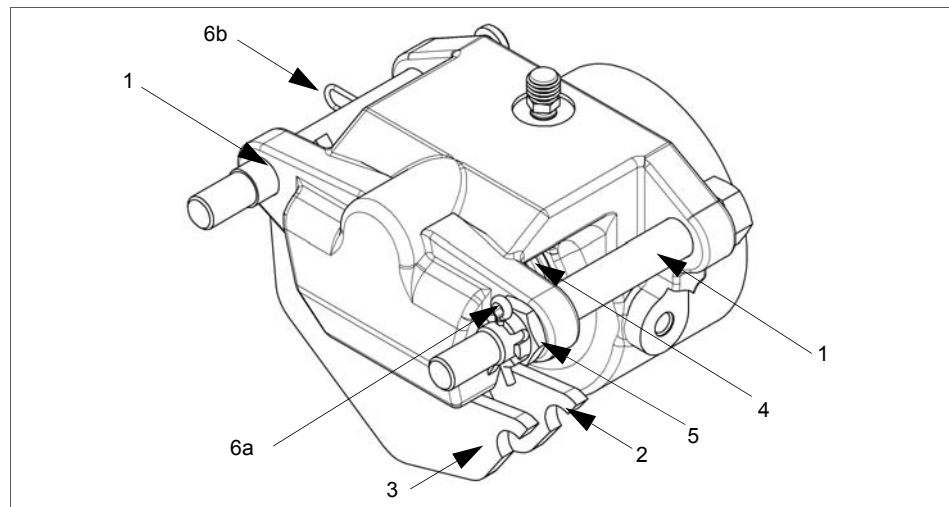
Only Knott original spare lining plates may be used. If any other spare parts are used, no warranty claims will be accepted either for the brakes or their functional characteristics

1. Stand the vehicle on an even surface and secure against rolling away.
2. Release the parking brake by applying the required release pressure
3. Release the screw cap and unscrew.
4. Release the lock nut (size 24 or 30) and turn the adjusting screw with socket wrench size 8 or 10 manually clockwise until it lies flush with the inside of the piston.
5. Press back the thrust bolt using a suitable screwdriver until it has contact with the piston.

Bild 4-2:

Exchanging the lining pads

- 1 guide bolt
- 2 lining pad
- 3 lining pad
- 4 permanent magnet
- 5 castellated nut
- 6a safety splint
- 6b safety clip



6. Depending on the free space available, release one of the two guide bolts, removing the safety splint, unscrewing the castellated nut and pulling the guide bolt out of the brake anchor plate. Now, the brake lining pads can be removed tangentially to the brake disk.



Note:

In the event of minimal clearance, i.e. it is not possible for space reasons to exchange the brake lining plate in accordance with these instructions, the brake must be removed completely. To do this, pull both guide bolts out of the brake anchor plate.



Caution!

Check the pressure hose. If the pressure hose is too short, it must be unscrewed to remove the brake. Before the pressure hose can be released the brake must be emergency released.

7. Wechseln Sie die Bremsbelagträger und führen Sie den Führungsbolzen in den Bremsträger wieder ein.
Haben Sie wegen zu geringen Freiraumes die Bremse komplett entfernt, müssen Sie diese jetzt wieder einbauen und beide Führungsbolzen einführen. Exchange the brake pads and insert the guide bolts into the brake anchor plate. If you have removed the complete brake you have to amount the brake on both guide bolt again, now.
8. Check both permanent magnets if they still have sufficient magnetic force to hold the brake lining plates.
Should this not be the case, the permanent magnets must also be changed by using a suitable screw driver.
9. Secure the guide bolt with the castellated nut and the safety splint res. safety clip.



Note:

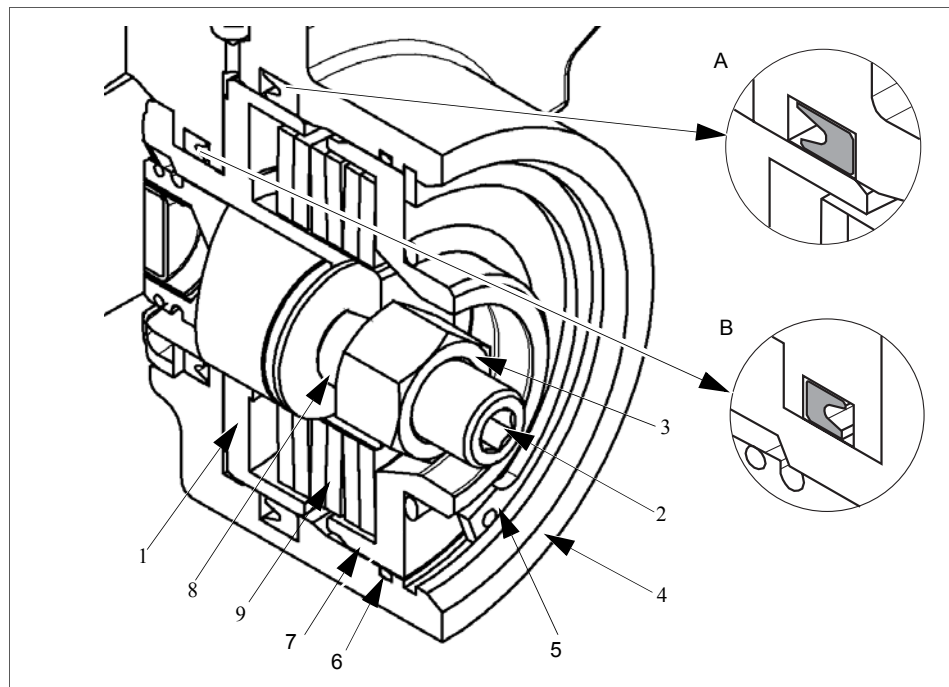
After mounting new brake lining plates or their repair, the brake must be correctly set in accordance with the instructions „Adjusting regulations“.

4.2. Changing the seal

Bild 4-3:

Change of the seals!

- 1 piston
- 2 adjusting screw
- 3 lock nut
- 4 housing
- 5 circlip
- 6 seal
- 7 guide bolt
- 8 thrust bolt
- 9 bank of cup spring
- A detail of the seal
- B detail of the seal



Faulty seals must be exchanged in accordance with the instructions below:

1. Stand the vehicle on an even surface and secure against rolling away.
2. Release the parking brake by applying the necessary release pressure.
3. Release the screw cap and unscrew.
4. Release the lock nut (size 24 or 30) and turn the adjusting screw with socket wrench size 8 or 10 manually counter clockwise until the adjuster screw is flush with the inner side of the piston.
5. Push back the thrust bolt until it has contact with the piston. Following actuate the hand brake valve. (no pressure must be in the piston chamber). The bank of cup springs is now completely depressurized.
6. Unscrew the pressure hose and remove the brake.
7. Release the circlip and remove the pressure ring of the housing.
8. Release the bank of cup springs and the piston.



Caution!

Pay attention to the mounting direction of the seal rings, otherwise leaks can occur.

Use for mounting the new seal rings a suitable mounting needle with rounded edge. Be careful,

9. Change all seals and mount the parts of the brake in other way round order. By mounting the piston, the sliding and sealing surfaces must be greased lightly using lubricating grease to DIN 51825.

The dust protection cap is fitted with a vulcanized-in steel ring which is used to press it through the locating hole. For exchanging, "lever out" the ring using a suitable tool. The new dust protection cap must be pressed in with the aid of a suitable mounting ring and screw clamps or a lever press.

Mount the brake in accordance with the above procedure into the vehicle / at the axle.

4.3. General

Any discovered defects or damage to parts not listed here must naturally be repaired or replaced using original parts.

For any other information not contained in these instructions or for more detailed instructions, please contact the vehicle or brake manufacturer