

Maintenance and Repair Manual for SAF Disc Brakes

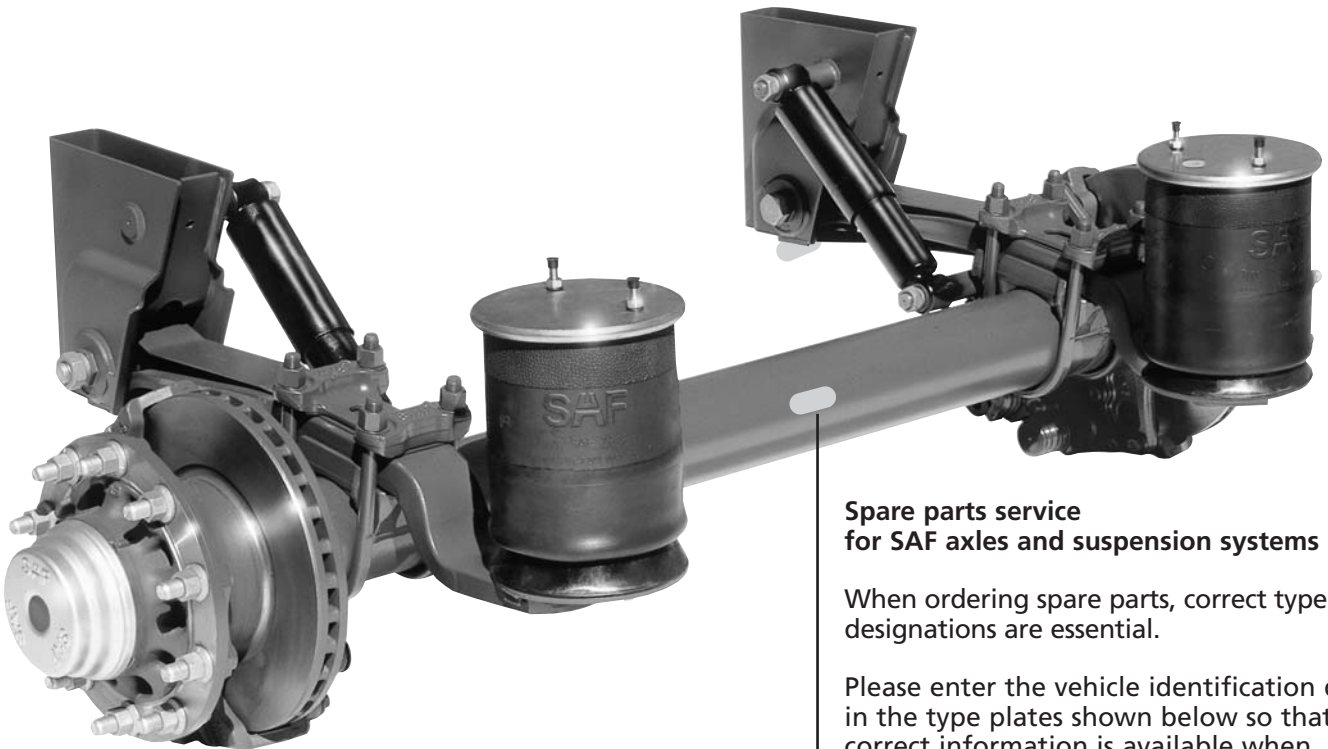
SK RS 9022 K – SK 1000 ET 0



Edition 01/2006



Manufacturer.....
Address.....
Body type.....
Chassis no.....
Year of manufacture
Registration date.....

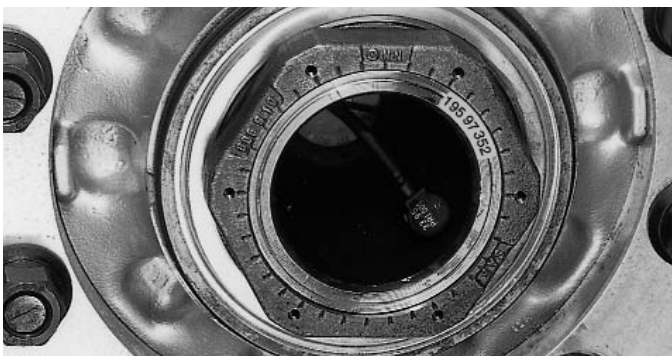


**Spare parts service
for SAF axles and suspension systems**

When ordering spare parts, correct type designations are essential.

Please enter the vehicle identification data in the type plates shown below so that correct information is available when required.

Type plate for axle beam assembly



Identification of axles without type plate
Production No. of axle on right of axle tube as seen in direction of forward travel.

SAF OTTO SAUER ACHSENFABRIK KEILBERG D-63854 BESSENBACH / G E R M A N Y	
TYP	
Ident.-No. /Prod.-No.	
zul. Last kg perm. cap. charge adm.	STAT. TECH. v max. km/h max. speed vitesse maxi.
TDB-No.	Grundtyp

This manual is intended for the technical workshop personnel responsible for maintenance and repair.

	Page
SAF axle identification.....	2
Notes.....	4
A) General safety instructions	5
B) Maintenance instruction	
Maintenance instructions for SAF axles SK RS 9022 K – SK 1000 ET 0	6
Maintenance schedule for SAF axles SK RS 9022 K – SK 1000 ET 0	7
Brake testing (fault-finding procedure).....	8
Adjuster check	9
Brake pad check.....	10
Special notes.....	11
C) Spare part illustrations/spare part designation	
Spare part illustration and spare part designation SK RS 9022 K – SK 1000 ET 0	12-13
D) Installation instructions	
Repairing the brakes.....	14-19
Replacing the tappets with tappet boots.....	20
Inspecting the adjuster thread	20
Installing the tappets with tappet boots.....	21
Sealing the brake calliper bearing with "seal kit for sliding guide".....	22
Repairing the brake calliper bearing with "guide and seal kit".....	23
Replacing the rubber guide sleeve.....	23-24
Replacing the brake calliper.....	24
Installing the brake calliper.....	25
Replacing the brake calliper carrier.....	26
E) Service tools	27-29
F) Bolt / Nut torque values	30

The item numbers indicated are given only for identification and to distinguish between different versions.

Use the part numbers from the valid spare parts documents for identification of spare parts.

SAF axles and suspension units are subject to continuous further development; the data and drawings contained in the manual may therefore differ from the details given in the operating permit.

The contents of the manual does not constitute the basis for a legal claim.

Reprinting, reproduction or translation in whole or in part is not permitted.

The issue of this publication invalidates all earlier maintenance and repair manuals.

Note: We wish to thank KNORR-BREMSE for providing various illustrations!

Please observe the following safety instructions in order to maintain the operational and road safety of your SAF axles and suspension systems:

1. The wheel contact surfaces between the wheel disc and wheel hub and the wheel nut contact surface at the wheel disc must not be additionally painted. The contact surfaces must be clean, smooth and free from grease. Failure to observe this may result in the wheel coming loose. Any additional instructions of the wheel manufacturer must also be observed.
2. Only the wheel and tyre sizes approved by the trailer builder may be used. The tyres must always have the specified inflation pressure.
3. The brake systems of the tractor and the trailer/semi-trailer must be synchronised by means of a tractor/trailer brake synchronisation not later than 5,000 km after the initial start of operation of the trailer/semi-trailer in order to ensure a safe and uniform braking behaviour and uniform brake pad wear. Tractor/trailer brake synchronisations should be carried out by appropriately qualified and equipped brake workshops.

The use of an additional braking system, such as a trailer anti-jackknife brake is forbidden by law on vehicles with type approval after January 1999.

4. Before starting a journey, ensure that the maximum permissible axle load is not exceeded and that the load is distributed equally and uniformly.
5. On trailers with air suspension, ensure that the air bags are completely filled with air before starting the journey. Incompletely filled air bags may result in damage to axles, suspension, frame and superstructure and impair road safety.
6. Ensure that the brakes are not overheated by continuous operation.

With drum brakes, overheating can result in a hazardous deterioration in the braking efficiency.

With disc brakes, overheating can result in damage to surrounding components – in particular the wheel bearings. This can result in a significant deterioration in road safety, e.g. failure of wheel bearings.

7. The parking brake must not be immediately applied when the brakes are hot, as the brake discs and brake drums may be damaged by different stress fields during cooling.
8. Use the supports provided when loading and unloading in order to avoid damage to the axle.
9. Observe the operating recommendation of the trailer builder for off-road operation of the installed axles and suspension systems.

The SAF definition of OFF-ROAD means driving on non-asphalted / non-concreted routes, such as e.g. gravel roads, agricultural and forestry tracks, on construction sites and in gravel pits.

Off-road operation of SAF axles and suspension systems not designed for the purpose may result in damage and hence to an impairment of road safety.

10. SAF axles and suspension systems require continuous care, service and maintenance in order to maintain operational and road safety and to be able to recognise natural wear and defects in good time.

The daily inspection of the trailer for road safety before starting the journey is one of the driver's obligations.

SAF recommends that at least the inspections and maintenance operations described on page 6 should be carried out.

We recommend the use of original SAF spare parts.

A close-knit service network of SAF partner companies is available for the technical support of the SAF axle and suspension systems and for the supply of original SAF spare parts (see rear cover or on the Internet under www.saf-axles.com).

Updates will be published as necessary on the Internet under www.saf-axles.com.

for SAF axles with disc brakes SK RS 9022 K – SK 1000 ET 0

Maintenance intervals		After first 5,000 km or	Periodic checks		
			every 30,000 km	every 75,000 km	every 150,000 km
whichever comes first	Mileage intervals >				
	Time intervals >	After first month	every 3 months	every 6 months	every 12 months

Mechanical check

Note: Be sure to retighten wheel nuts to the prescribed torque after the first 50 km and 150 km (and after every wheel removal).

Visual and safety inspection

Hub unit maintenance-free. Visual inspection for grease leaks.				●
Inspect the brake calliper guide system. Check for free movement and sliding action.				●
Check rubber dust covers for cracks and damages. Check adjuster cap for correct seating.				●
Inspect the brake pad thickness at regular intervals (e.g. when ever tyre pressure is checked) but at least every 3 months.		●		
Inspect the brake disc for cracks.			●	
– Perform general annual inspection (brakes, air bags, tyres, etc.)				●
– Perform general annual safety check (tractor/ (semi-) trailer brake compatibility, ABS etc.)				●

Special service conditions

Vehicles with long standing periods:

service at specified time intervals

Vehicles used under extreme conditions:
e.g. construction site operation, multi-shift operation

shorten the service interval to 6 months /
75,000 km

Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

NOTE!

If the sealmark on the hub nut is broken before the end of the 1,000,000 km this will invalidate all warranty coverage unless the repair works have been carried out in an SAF-authorized workshop.

for SAF axles with disc brakes SK RS 9022 K – SK 1000 ET 0

Hub Unit

Hub Unit maintenance-free.

Inspect for signs of wear at each brake disc change (e.g. escape of grease).

After brake relining, observe the following points:

Inspect the seals on the brake calliper.

Do not dismantle the wheel bearing assembly.

Never use high-pressure cleaners or cleaning fluids on the brake disc or wheel hub.

Clean stub axle of any old grease and apply fresh SAF fitting paste.

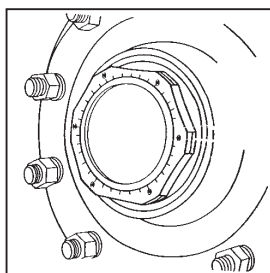
Lubricant specifications:

Tappet boots and brass bushes:
SAF Part No. 4 387 0016 00

Rubber guide bush (70.3):
SAF Part No. 4 387 0017 00

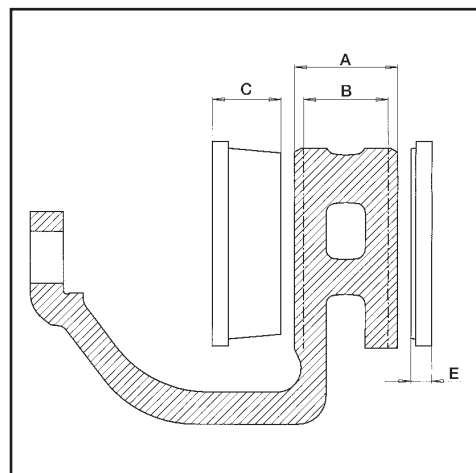
Stub axle:
SAF Part No. 4 387 0015 06
SAF fitting paste

Tightening the hub nut



On LH side as seen in direction of travel – LH thread
On RH side as seen in direction of travel – RH thread
Tightening torque 900 Nm. Each hub unit must be rotated smoothly at least twice while tightening the bolts.

Hub nuts with LH thread are marked with a groove milled into the outside of the hexagon.



NOTE!

Failure to observe these instructions may result in an accident risk!
Worn brake linings or excessively worn brake discs result in a reduction in the braking efficiency or in a complete failure of the brake system.

Brake type	Thickness of brake disc "A"	Wear limit of brake disc "B"	Thickness of linings "C"	Lining wear "E"	Disc diameter in mm	No. of brake pads per axle
SB7 22.5"	45	≤37	30	11	430	4

Item No.		Tightening torque (Nm)	Spanner size (W.A.F.)	Hexagon	
				outside	inside
70.1/80.1/81.1	Guide bearing on brake calliper 2 hex. socket head screws M16 x 1.5 - 10,9	290	14	–	X
	Diaphragm/combination cylinder 2 hex. nuts M16 x 1.5	210	24	X	–
	Brake calliper mounting on axle body M16 x 1.5 x 55	290	24	X	–

Assembly tools

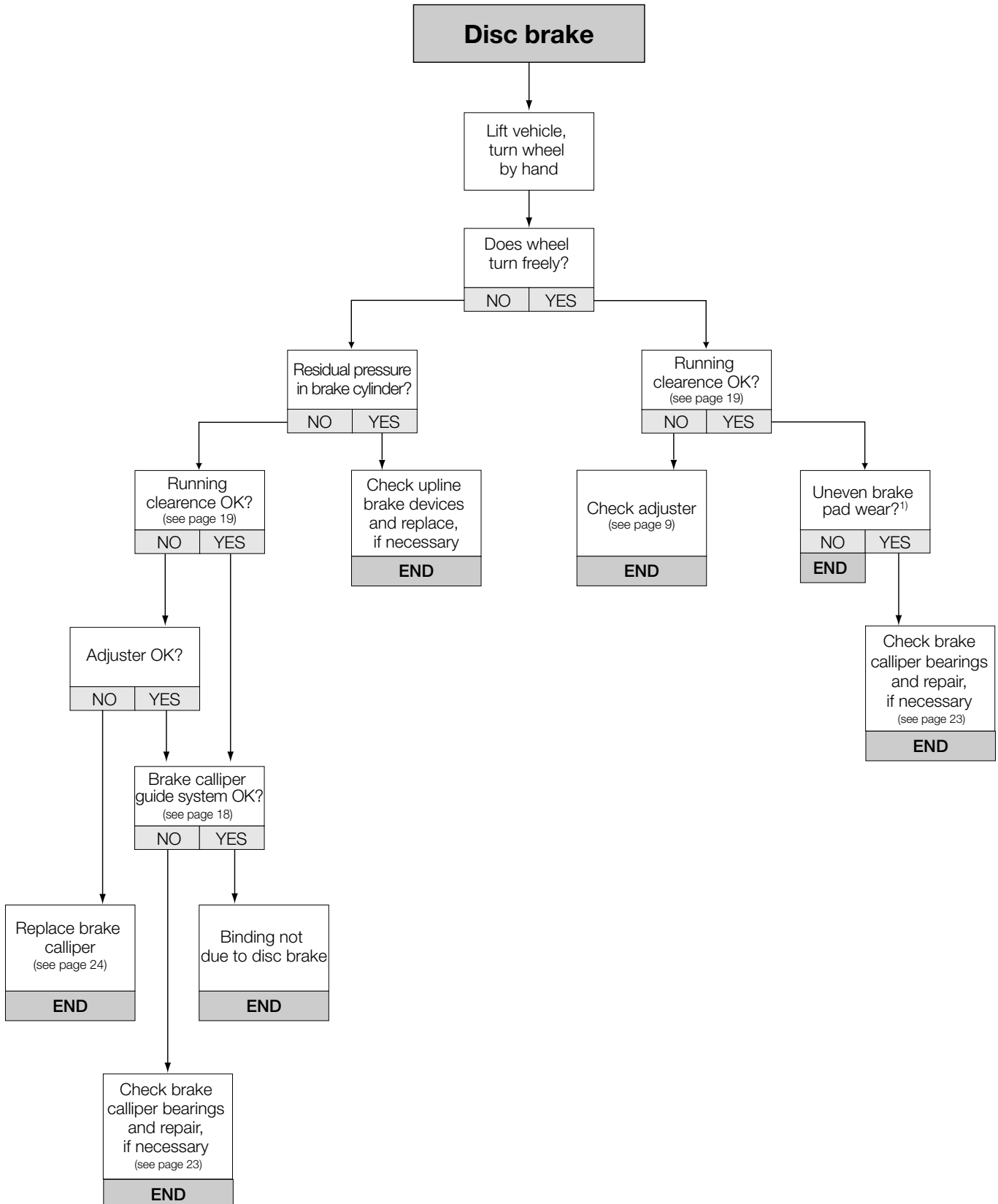
Hub nut wrench
Puller for wheel hub
Lever for wheel hub
Assembly pin steel cap

SAF Part No.

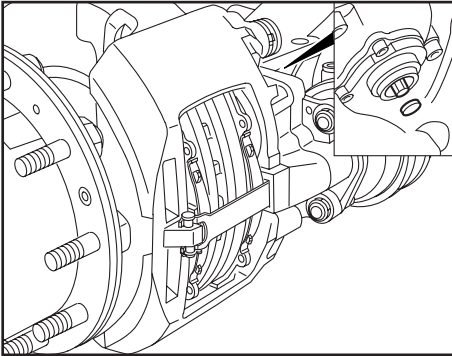
1 012 0024 00
4 434 3822 00
1 434 1041 00
(see sketch on page 29)

Brake testing

Fault-finding procedure



¹⁾ Difference between wear of inboard and outboard pad, and diagonal wear ≤ 2 mm.

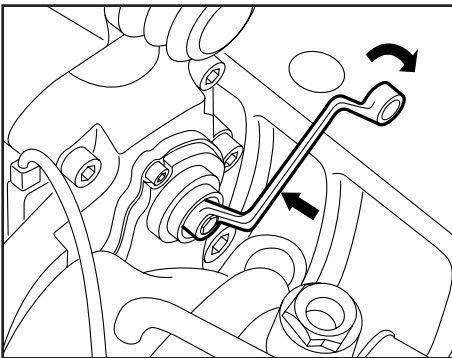


Adjuster check

Remove cap.

Caution!

Do not overload or damage the hexagon drive (8 mm) of the adjuster. Do not use an open-ended spanner.



With an SAF ratchet wrench on the hexagon drive of the adjuster, turn the drive in anti-clockwise direction for 2 or 3 clicks.

Apply the brakes 5-10 times (approx. 2 bar).

If the adjuster is functioning correctly, the SAF ratchet wrench (arrow) should rotate in clockwise direction in small steps.

Caution!

Ensure that there is sufficient room for the SAF ratchet wrench to rotate freely during adjustment.

Note:

As the number of rotation steps of the ring spanner increases, the turn angle or movement of the SAF ratchet wrench becomes smaller.

If the SAF ratchet wrench rotates as described above, the adjuster is functioning correctly.

If the following faults occur:

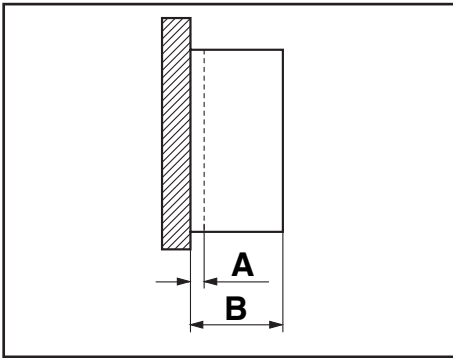
The adjuster or SAF ratchet wrench

- a) does not turn,
- b) turns only with the first application of the brakes,
- c) turns forward and then back again at each application of the brakes,

the adjuster is not functioning correctly and the brake calliper has to be replaced.

Remove the SAF ratchet wrench (arrow).

Coat the cap with white grease (SAF Part No. 4 387 0016 00) in the snap-fit area, then push on the cap and ensure that it is fitting tightly.



Brake pad check

Caution!

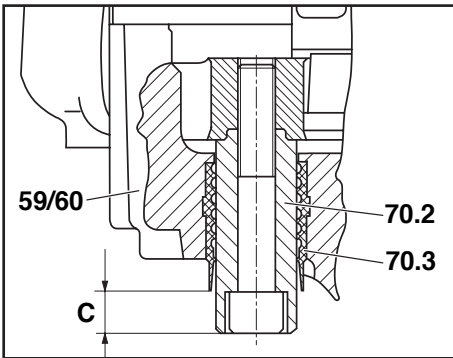
Observe the wear limits of the brake pads.

Check the thickness of the brake pads for compliance with the legal requirements at regular intervals, but at least every three months, depending on the operation of the vehicle.

A = Minimum residual lining thickness 2 mm

B = Total lining thickness of new pads 21 mm

When the residual lining thickness is $A \leq 2$ mm, replace the brake pads.



Wear indicators

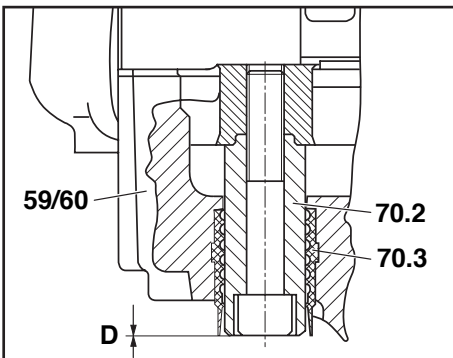
At the point on the brake calliper (59/60) opposite the fixed sleeve (70.2), the brake pad thickness can be measured without removing the wheels.

When the end of the guide sleeve (70.3) is level with the fixed sleeve (70.2), the brake pad thickness has to be checked with the wheels removed.

Replace the brake pads, if necessary.

C = Condition with new brake pads.

D = Brake pad and brake disc inspection necessary with wheels removed.



Special notes

Storage instructions

During storage outdoors, ensure that moisture cannot enter the inside of the brake caliper through the brake cylinder connection.

Painting instructions

During painting work, all rubber parts must be covered as otherwise the rubber will become brittle and thus be damaged.

**Only brake cylinders approved by the brake
or axle manufacturer may be used**

SK RS 9022 K – SK 1000 ET 0

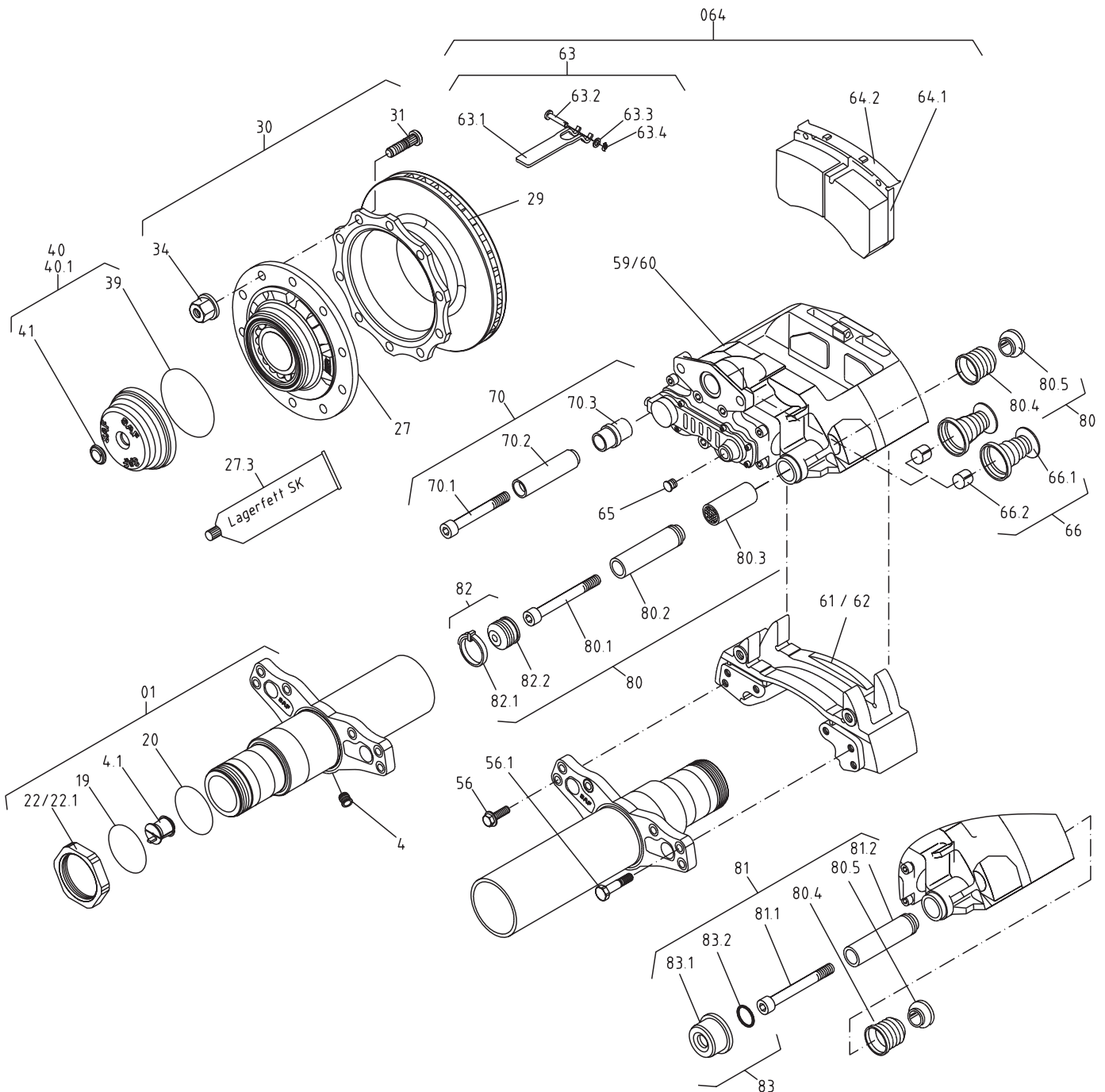
Torque wrench settings

Use a torque wrench.
The use of impact wrenches is strictly forbidden.

Wheel nuts:
Hub-centred fixing:
M 22 x 1.5/600 Nm

U-bolts:
(diagonally in three stages)
M 22/650 Nm

Shock absorber:
M 24/400 Nm



SK RS 9022 K – SK 1000 ET 0

Item	Parts designation	Item	Parts designation
01	Axle beam assembly	59/60	Brake calliper assembly including items 61/62, 65, 66, 70, 81
4	Protective plug for ABS		
4.1	Protective plug in axle tube	064	Brake pad set including items 63, 64.1, 64.2
19	O-ring		
20	O-ring		
22	Axle nut, RH, W.A.F. 140	66	Tappet with boot including items 66.1 - 66.2
22.1	Axle nut, LH, W.A.F. 140		
27	Hub Unit	70	Guide pin group including items 70.1 - 70.3
27.3	Bearing grease		
29	Brake disc	80	Guide pin group (folding bellows) including items 80.1 - 80.3, 82
30	Wheel bolt assembly		
31	Wheel bolt		
34	Wheel nut with thrust washer	81	Guide pin group (steel cap) including items 80.4 - 80.5, 81.1 - 81.2, 83
39	O-ring		
40	Wheel cap assembly without exciter including items 39 - 41		
40.1	Wheel cap assembly with exciter including items 39 - 41		This guide pin group should, where possible, be used for repairs.
41	Plug		
56	Hexagon head bolt		
56.1	Shoulder bolt		

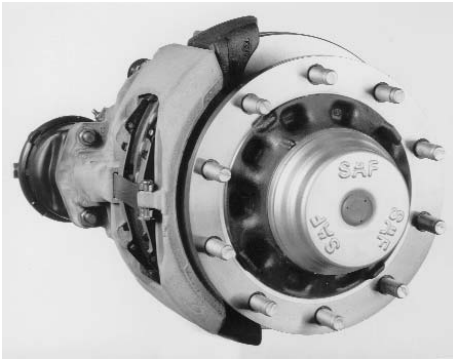
Repair kits for SAF disc brakes SBK 2243

The following repair kits are available:

Designation	Content (Item No.)
AT brake calliper, RH	incl. pads
AT brake calliper, LH	incl. pads
AT brake calliper, RH	without pads
AT brake calliper, LH	without pads
Brake calliper carrier with guide kit, RH	61, 70, 81
Brake calliper carrier with guide kit, LH	62, 70, 81
Guide pin group (folding bellows)	80
Guide pin group (steel cap)	81
Guide pin group	70
Tappet with boot	66.1 and 66.2
Brake pad (per axle)	064
Cap for clearance adjuster (4 caps)	65

All kits available only as complete sets!

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.



Repairing the brakes

Remove the brake calliper.

Park the vehicle on level, solid ground and chock the wheels to prevent the vehicle from rolling away.

Lift the axle using a jack.

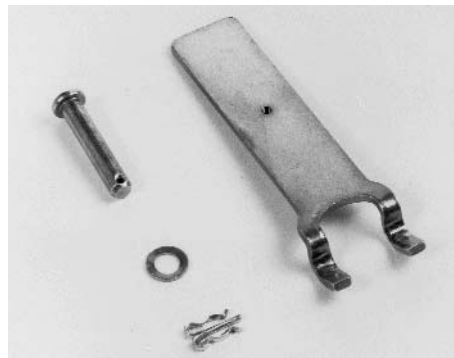
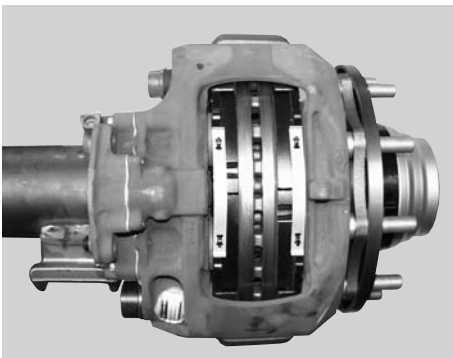
Loosen the wheel nuts and remove the wheel.



Remove the cap.

Turn the adjuster in anti-clockwise direction up to the stop until it clicks 2 - 3 times.

Unbolt the diaphragm cylinder, if necessary.



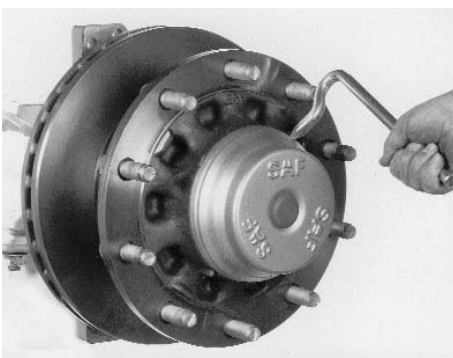
Remove the locking pin and washer.

Press out the stud.

Remove the bracket.

Remove the brake pads.

Unbolt the brake calliper.

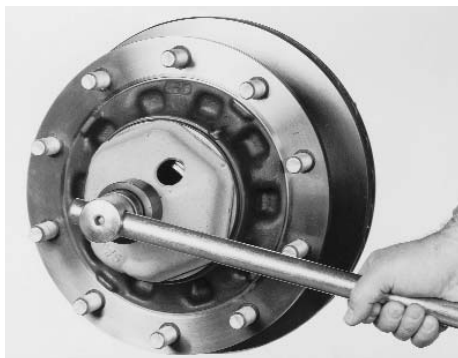


Lever the hub cap off the hub unit by inserting a tyre lever into one of the recesses around the circumference of the hub cap.



Press the ABS sensor completely out of the sensor mounting block and place inside the axle tube.

The sensor holder can remain on the axle nut.



Loosen the axle nut and unscrew from the stub axle.
Axle nut wrench: SAF Part No. 1 012 0024 00.

Note:

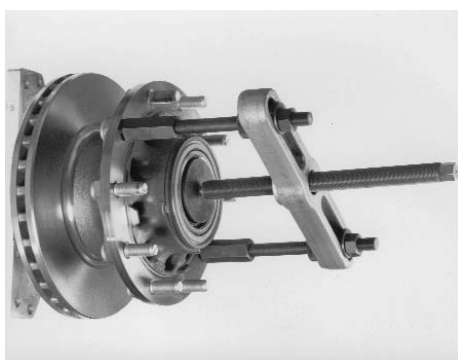
Axle nut: W.A.F. 140

On left-hand side of vehicle

(as seen in direction of forward travel) – **left-hand thread**.

Identification of axle nut with left-hand thread:

Milled groove on outside of hexagonal head.



The complete hub unit with brake disc can be easily pulled off the stub axle.

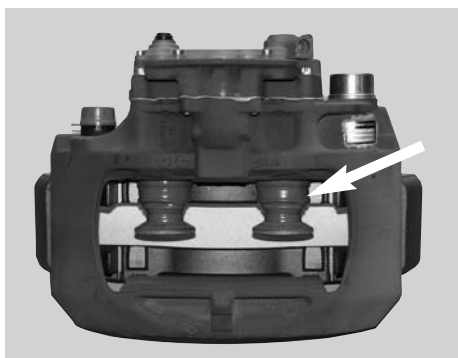
If the bearing inner races tilt on the stub shaft, the hub unit can be pulled off using a normal workshop puller or SAF Part No. 4 434 3822 00.

Note:

Do not disassemble the compact wheel bearing unit!

The wheel bearings have a long-life grease packing.

Grease change intervals, see chapter "Maintenance instructions".

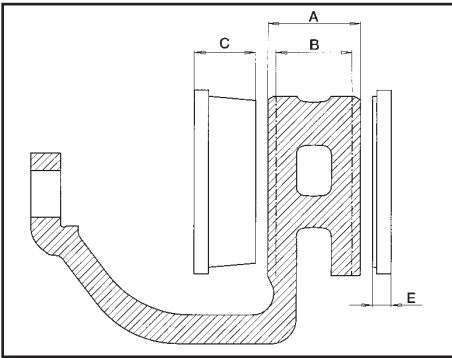


Check the brake calliper for free and easy movement.

Back off the tappets on the adjuster until the boots are visible.

Perform a visual inspection of the boots and all seals.

Screw in the tappets again completely.

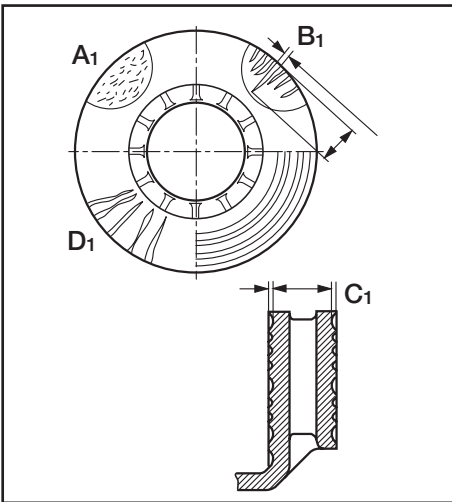


Brake disc

Brake disc diameter

Permissible wear, see table in chapter "Maintenance instructions".

The brake disc may only be cleaned using a dry cleaning agent.



Inspecting the brake disc

Inspect the braking surface of the brake disc carefully for serviceability.

A₁ – Network-like cracks are permissible.

B₁ – Cracks up to max. 1.5 mm (width and depth) running towards the middle of the hub are permissible.

C₁ – Unevenness in the disc surface up to 1.5 mm is permissible.

D₁ – Cracks going right through the disc are not permissible.

Check the brake disc thickness and turn down, if necessary. For safety reasons, the minimum thickness for turning down the brake discs is 39 - 40 mm.

Permissible wear, see table in chapter "Maintenance instructions".

Note:

The compact wheel bearing unit and the brake calliper are not removed for turning down the brake disc.



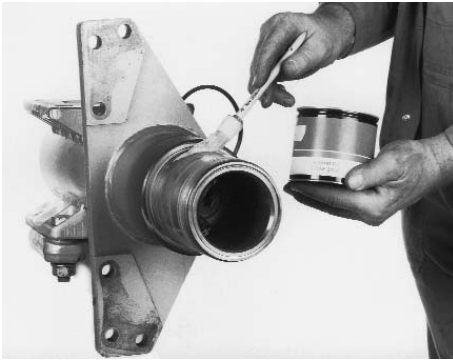
Replacing the brake disc

To remove the brake disc from the hub unit, drive all the wheel bolts out of the hub unit using a hammer. Removal of the circlips is not necessary. Before reassembling wheel hub and brake disc, remove any corrosion from the contact surfaces.



Insert the wheel bolts at an angle from below and hammer into place (observe twist lock).

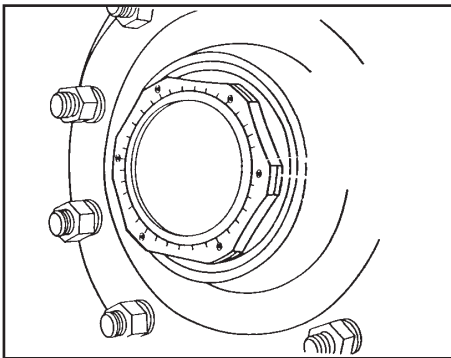
Draw the bolts completely into the hub unit using a wheel nut and an impact wrench.



Installing the hub unit with brake disc

Completely coat the wheel bearing seats on the stub shaft and in the hub unit with SAF fitting paste (SAF Part No. 4 387 0015 06).

See chapter "Maintenance instructions" for recommended media.



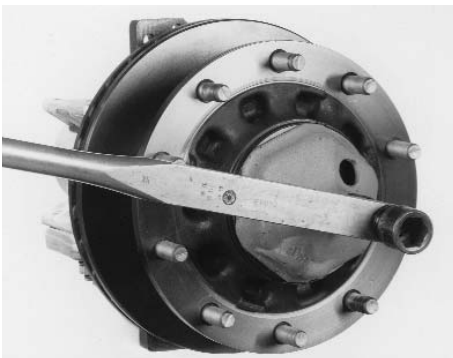
Replace the rear O-ring on the stub shaft.

Inspect the O-ring on the axle nut and replace, if necessary.

Push the brake disc with hub unit onto the stub shaft.

Screw on the axle nut.

Tightening torque 900 Nm. Each hub unit must be rotated smoothly at least twice while tightening the bolts.



Axle nut W.A.F. 140:

On left-hand side of vehicle (as seen in direction of forward travel) – left-hand thread.

Identification of axle nut with left-hand thread: Milled groove on outside of hexagonal head.

Tighten the axle nut.

Axle nut wrench: SAF Part No. 1 012 0024 00

Tightening torque 900 Nm. Each hub unit must be rotated smoothly at least twice while tightening the bolts.

Special locking of the axle nut is not necessary.

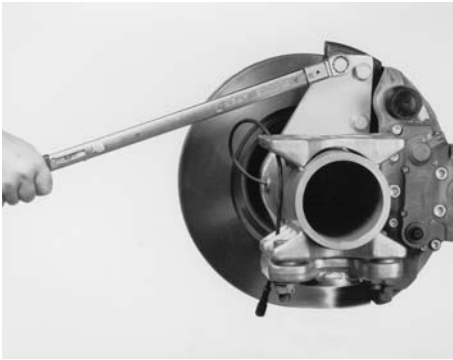


Completely coat the ABS sensor with copper paste and install in the sensor holder.

Inspect the O-ring on the hub unit for the snap fastening of the hub cap; replace, if necessary. Push on the hub cap and check that it is securely seated.

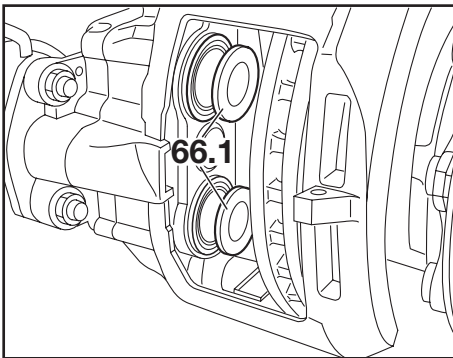
Remove the plug from the hub cap and adjust the ABS sensor until it is just contacting the exciter ring. Insert the plug into the hub cap again.

Measure the voltage output on the ABS sensor cable using a voltmeter (approx. 100 mV) whilst turning the brake disc. Check the sensor, if necessary.



Bolting on the brake calliper

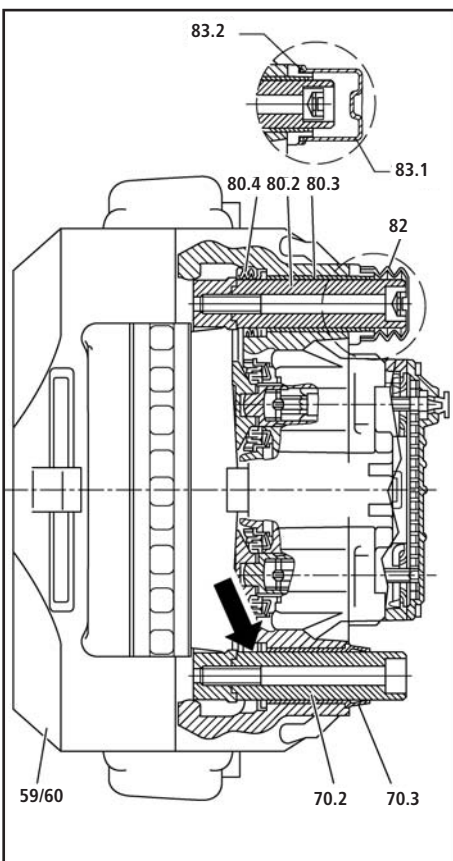
Position the brake calliper and screw in the bolts M 16 x 1.5 x 55 with washers (tightening torque 290 Nm).



Examining the boots on the tappets

The boots on the tappets (66.1) and caps must have no cracks or other damage.

Check that the tappets and boots fit correctly and replace the tappets with boots, if necessary.



Examining the brake calliper guide system

The brake calliper (59/60) must move smoothly and easily over the full travel distance > 30 mm on the guide elements (80.2) and (80.3) or (70.2) and (70.3) when pushed by hand (use no tools).

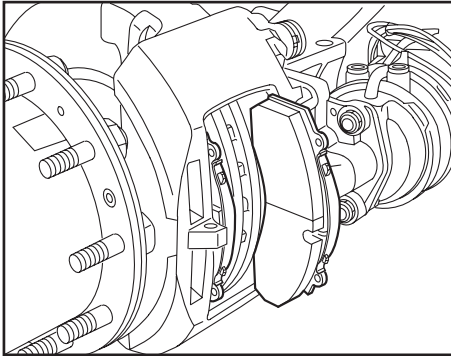
The guide bush (80.2) is sealed with boot (80.4) and boot cap (82). Parts (80.4) and (82) must not be cracked or damaged.

Check that these parts are seated correctly.

Boot and boot cap must not be cracked or damaged. If necessary, reseal or repair.

New type steel cap:

Check for correct seating of the steel cap item 83.1, renew if necessary.



Installing the brake pads

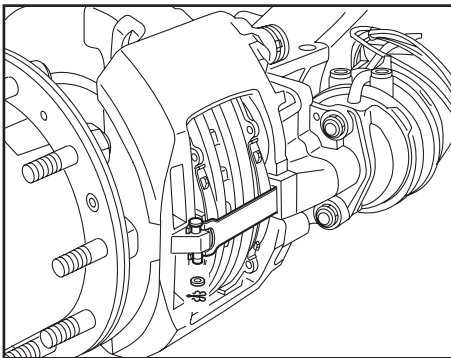
Note:

Before installing the brake pads, the brakes must be completely backed off with the SAF ratchet wrench (SAF Part No. 3 434 3327 00).

Clean the brake pad slots.

Push the brake calliper towards the outside of the vehicle and insert the outer brake pad.

Then push the brake calliper towards the middle of the vehicle and insert the inner brake pad (connect the wear indicator, where applicable).



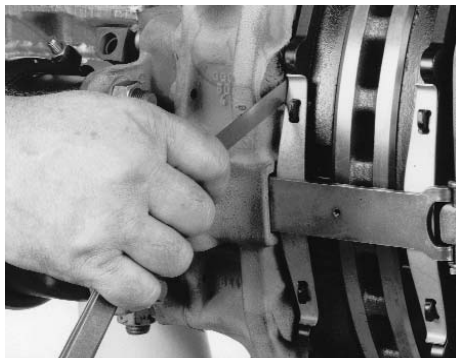
Inserting the pad retainer

Insert the pad retainer into the groove in the brake calliper and press down with a screwdriver until the pin can be inserted into the bore.

Insert locking pin and washer and secure with spring clip.

Note:

After operating the service brake system, it must be possible to turn the wheel hub by hand (correct running clearance, if necessary).

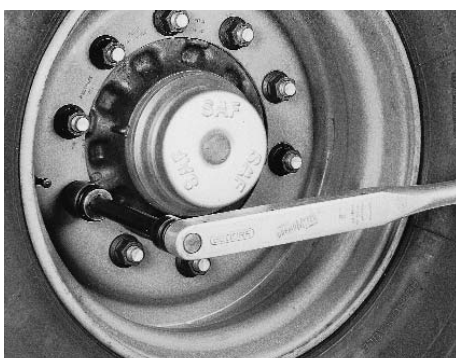


Checking and adjusting the running clearance

Use a suitable tool to press the brake pad away from the tappets in the brake calliper slot.

Insert a feeler gauge between tappet and brake pad backplate and adjust the running clearance to 0.7 mm by turning the hexagon drive on the adjuster.

Push on the cap.

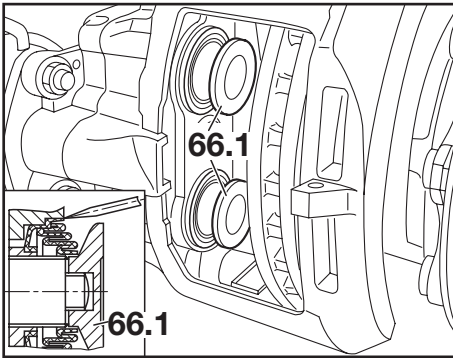


Fit the wheels.

Tighten the wheel nuts using a torque wrench.

Caution!

Tighten the wheel nuts using a torque wrench again after driving 50 km and 150 km!



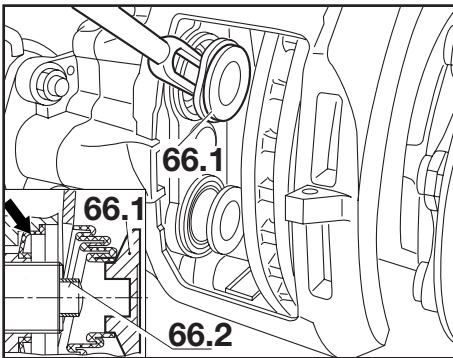
Replacing the tappets with tappet boots

Note:

Depending on the space available for installation, it may be easier to remove the brake calliper for replacement of the tappets.

Back off the tappets (66.1) with the adjuster until the boot can be reached.

Drive in the screwdriver only **approx. 4 mm** so that the inner sealing cap is not damaged. Deform the mounting ring of the boot and lever out of the bore.



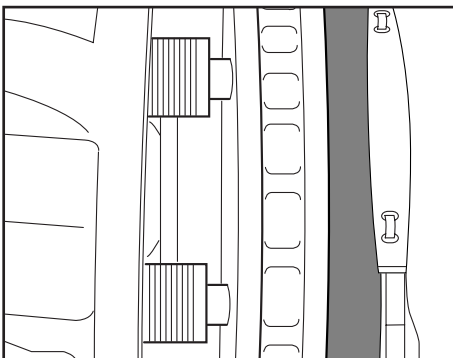
Use the wedge fork, SAF Part No. 4 434 1065 00, to push the tappets (66.1) off the bush at the end of the threaded tubes.

If necessary, remove the old tappet bush (66.2).

Note:

Driving in the wedge fork between the tappet and the end of the threaded tube has a wedge effect.

Inspect the inner sealing cap (arrow). If the cap is damaged, the brake calliper must be replaced.



Inspecting the adjuster thread

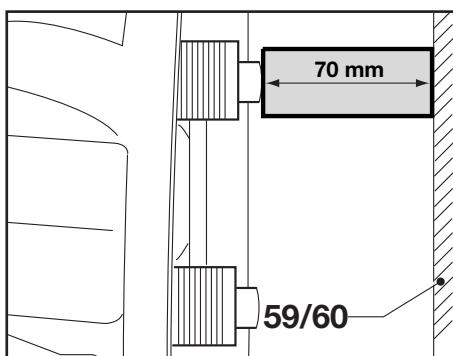
Install a new brake pad in the outer calliper slot so that the threaded tubes cannot be twisted out of the bridge.

The two threaded tubes are synchronised.

Caution!

Do not unscrew the threaded tubes completely out of the bridge, otherwise the brake calliper will have to be replaced.

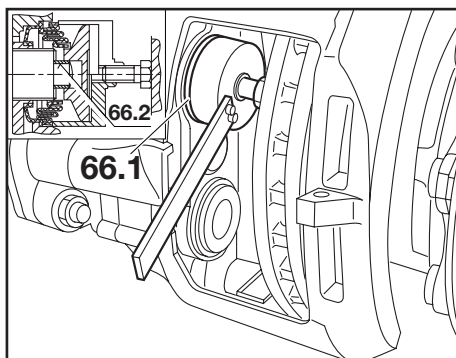
Screw the threaded tubes in towards the brake disc by turning the hexagonal drive (W.A.F. 8) of the adjuster in clockwise direction (do not back off by more than 30 mm).



If the brake calliper is not installed on the axle or is lying on the workbench, insert a spacer (= 70 mm) into brake calliper (59/60) during unscrewing of the threaded tubes so that the threaded tubes cannot be completely unscrewed (see illustration).

During screwing, the threads of the threaded tubes can be inspected for corrosion.

If an ingress of water or corrosion is discovered, the brake calliper must be replaced.



Installing the tappets with tappet boots

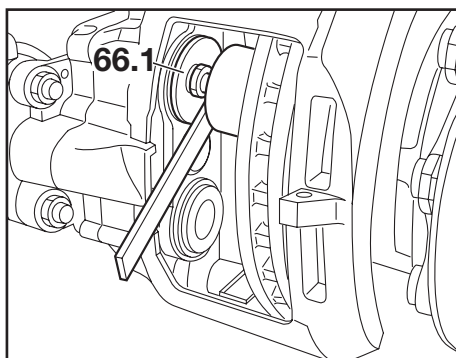
With brake calliper installed on axle:

Grease threads with white grease (SAF Part No. 4 387 0016 00).
Back off the threaded tubes.

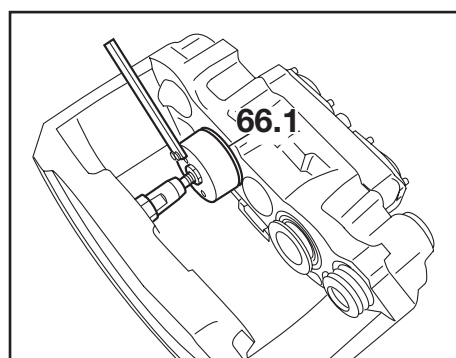
Install a new tappet bush (66.2) on the threaded tube.

Push tappet with boot (66.1) onto the end of the threaded tube.

Centre the push-in tool, SAF Part No. 4 434 1062 00, with short tappet on boot (66.1) and press in the boot.



Turn over the push-in tool and press in tappet (66.1).



With brake calliper not installed on axle:

Grease threads with white grease (SAF Part No. 4 387 0016 00).

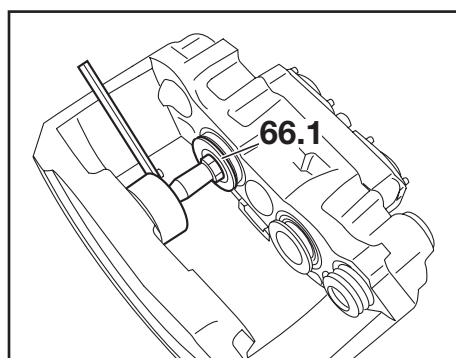
Back off the threaded tubes.

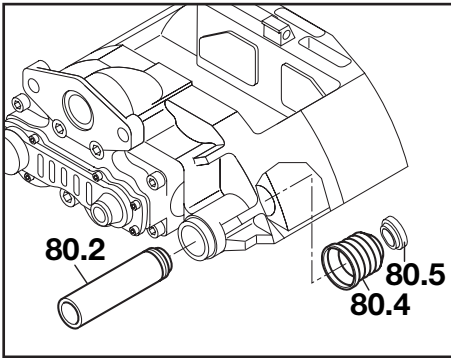
Install a new tappet bush (66.2) on the threaded tube.

Push tappet with boot (66.1) with long tappet onto the end of the threaded tube.

Centre the push-in tool on boot (66.1) and press in the boot.

Turn over the push-in tool and press in tappet (66.1).





Sealing the brake calliper bearing with "seal kit for sliding guide"

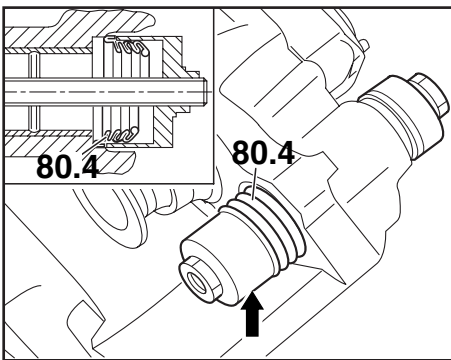
Remove the brake calliper.

Remove ring (80.5).

Pull out guide bush (80.2).

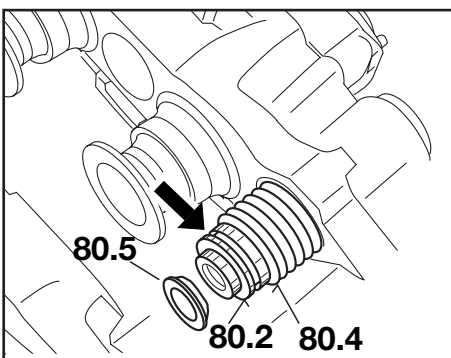
Lever out boot (80.4) with a screwdriver.

Clean the boot and inspect for corrosion.



Insert a new boot (80.4) into the sleeve (arrow) of the puller, SAF Part No. 4 434 1063 00.

Insert sleeve with boot (80.4) into the bore and pull in with the puller.



Install guide bush (80.2).

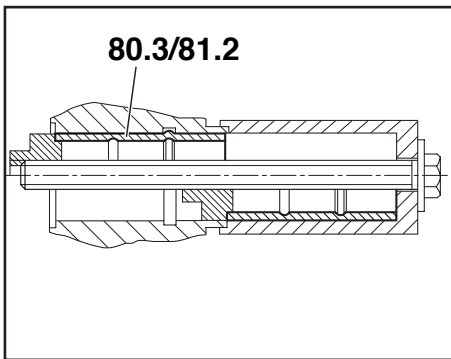
Insert boot (80.4) into the groove (arrow) and secure with ring (80.5).

Push in ring (80.5) until it engages.

Note:

Before installing the brake calliper, inspect guide bush with rubber guide sleeve for free movement.

Install the brake calliper.



Repairing the brake calliper bearing with "guide and seal kit"

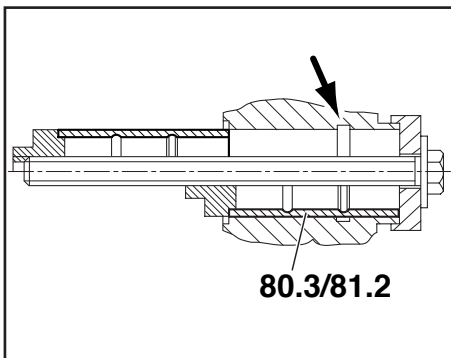
Remove the brake calliper.

Remove guide bush and boot (see page 20: "Replacing the tappets with tappet boots").

Replacing the brass bush

Pull out brass bush (80.3) with puller/pusher, SAF Part No. 4 434 1064 00.

Check whether there is a groove (see arrow) in the brake calliper.



- In the event that there is **no** groove:
Pull in new brass bush (80.3) with the puller/pusher.

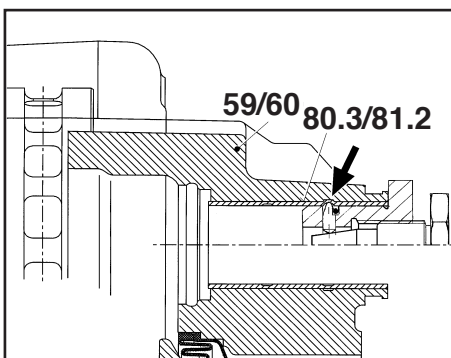
- In the event that there is **groove**:

Note:

The groove in the brake calliper is always on the side nearest the middle of the vehicle. Pull in new brass bush (80.3/81.2) with the puller/pusher. Secure the brass bush (80.3/81.2) against longitudinal shifting in the brake calliper (59/60) by caulking the groove (see arrow) of the brake calliper (59/60) with special tool, SAF Part No. 4 434 1066 00.

Inspect the seat of the brass bush for burrs and remove the burr, if necessary.

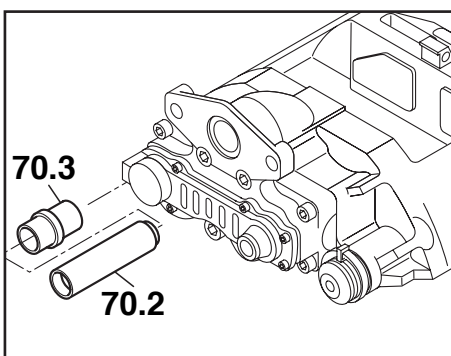
Coat the brass bush with white grease (SAF Part No. 4 387 0016 00) (see chapter "Maintenance instructions" for lubricants).



Note:

The guide and seal kit includes a new guide bush (long) and a new hex. socket head screw.

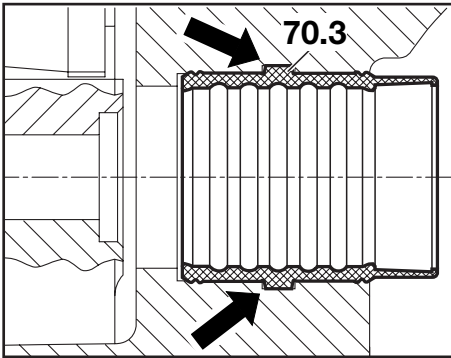
Install the guide bush and boot.



Replacing the rubber guide sleeve

Remove guide bush (70.2).

Press guide sleeve (70.3) out of the bore, inspect the bore for corrosion, clean and treat with a corrosion inhibitor, if necessary.



Press the new guide sleeve together at the collar and insert into the bore from the inside of the brake calliper.

Push guide sleeve (70.3) into the bore until the collar of guide sleeve (70.3) engages positively in the shoulder of the bore (arrows).

Caution!

On no account should the mineral oil-based white grease be used in the guide sleeve. Use only green (mineral oil-free) grease.

Note:

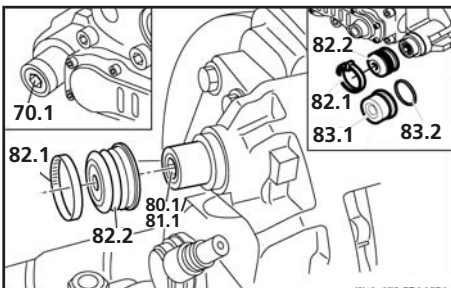
The guide and seal kit includes a new guide bush (short) and a new hex. socket head screw.

Install the guide bush.

Install the brake calliper.

Notes:

Tighten the hex. socket head screws to 290 Nm and check that the brake calliper can move freely.



Replacing the brake calliper

Caution!

Do not repair the brake cylinder due to the "inner sealing". Use only an original replacement cylinder.

Removing the brake calliper

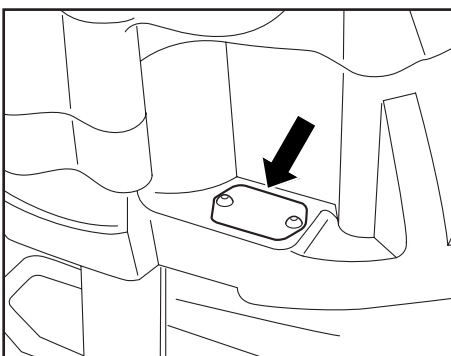
Remove the brake pads.

Remove the diaphragm cylinder.

Loosen and remove band-type clamp (82.1) and remove boot cap (82.2).

Unscrew hex. socket head screws (80.1/81.1) and (70.1).

New type steel cap: dismantle steel cap 83.1.



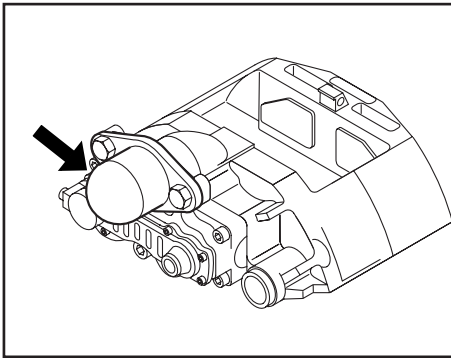
RISK OF CRUSHING!

Hold the brake calliper only on the outside; never place your fingers between brake calliper and brake calliper carrier!

Remove the brake calliper from the brake calliper carrier.

RISK OF ACCIDENTS!

Opening or dismantling of a brake calliper is not permitted. Use only replacement brake callipers.



Installing the brake calliper

When selecting the replacement brake calliper, observe the corresponding part number and the rating plate (see arrow, upper figure) on the brake calliper.

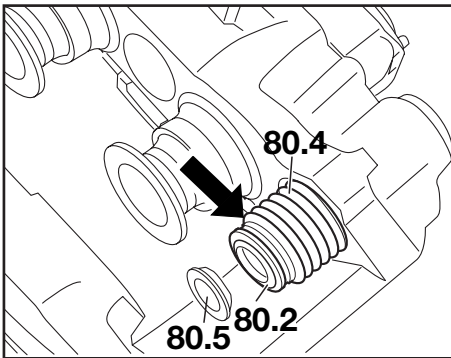
Note:

The rating plate of the replacement brake calliper is blue.

Remove the plastic cap in the vicinity of the bore for the hex. socket head screws (see arrow) on the replacement brake calliper.

Note:

The replacement brake calliper kit includes sealing and guide elements, but no brake pads.



RISK OF CRUSHING!

Hold the brake calliper only on the outside; never place your fingers between brake calliper and brake calliper carrier!

Mount the brake calliper on the brake calliper carrier.

Tighten the hex. socket head screws (80.1/81.1) and (70.1) to 290 Nm.

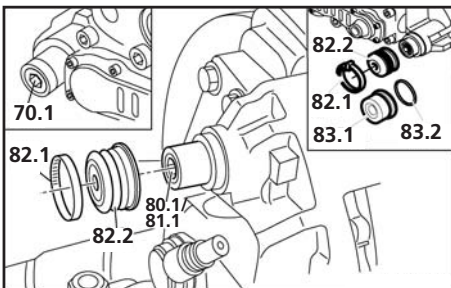
Check that the brake calliper can move freely.

Inspect the seat of the inner boot (80.4) on guide bush (80.2).

Check the adjuster.

Fit new steel cap (83.1) with seal (83.2).

Check that the seat for boot cap (82.2) on the brake calliper is grease-free.



Old type:

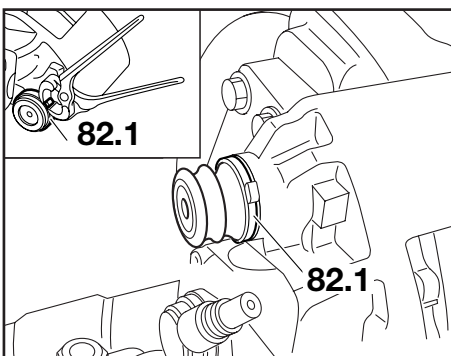
Close the band-type clamp (82.1). Ensure that the band-type clamp is in the right position and then check for leaks.

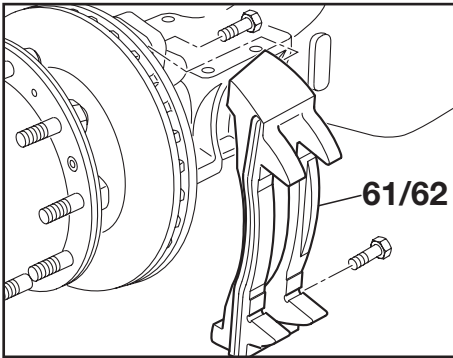
New type:

Fit the steel cap using the assembly pin (see sketch on page 29).

Install the brake linings.

Install the diaphragm or combination cylinder.





Replacing the brake calliper carrier

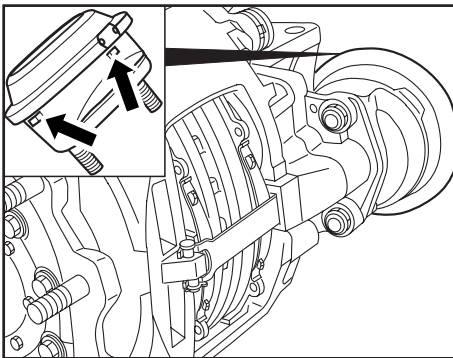
Remove the brake calliper.

Unscrew hexagon head bolts and remove brake calliper carrier (61/62) from the axle.

Clean the mounting surface on the axle.

Bolt on a new SAF brake calliper carrier with new hexagon head bolts to the SAF specifications.

Install the brake calliper.



Replacing the brake cylinder

Caution!

Do not repair the brake cylinder due to the "inner sealing". Use only an original replacement cylinder.

Removing the diaphragm cylinder

Unscrew the air connection from the diaphragm cylinder.

Remove the hex. nuts from the diaphragm cylinder.

Remove the diaphragm cylinder.

Installing the diaphragm cylinder

Note:

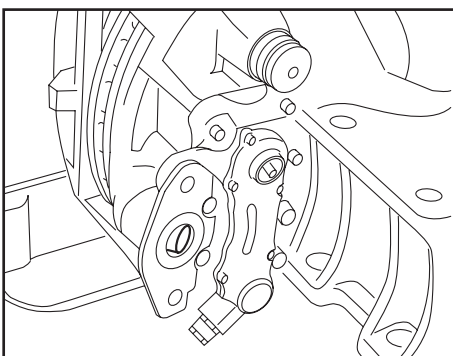
On the new diaphragm cylinder, the rubber plug in the bore facing downwards must be removed for secondary chamber venting (see arrows).

All other venting bores must remain closed.

Before installing the new diaphragm cylinder, grease the ball in the lever with white grease (SAF Part No. 4 387 0016 00) (see chapter "Maintenance instructions" for lubricants).

Caution!

Do not use molybdenum disulphide-saponified grease! Use only diaphragm cylinders complying with the vehicle manufacturer's specifications.



Install the diaphragm cylinder.

Tighten the new hex. nuts of the diaphragm cylinder to 210 Nm.

Connect the brake hose to the diaphragm cylinder, ensuring that the hose is now twisted or kinked and is laid so that chafing is not possible.

Check the air connection for leaks.

Caution!

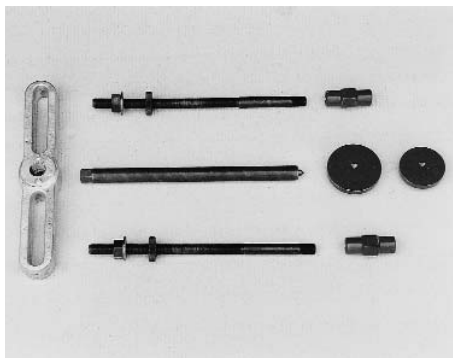
Carry out a function and efficiency test of the brake system.



1. Lever for hub cap
SAF Part No. 1 434 1041 00



2. Axle nut wrench W.A.F. 140
SAF Part No. 1 012 0024 00



3. Wheel hub puller
SAF Part No. 4 434 3822 00



4. Wheel bearing installation drift
SAF Part No. 4 434 1062 00



5. Puller for inner boot (calliper bearing)

SAF Part No. 4 434 1063 00



6. Puller / pusher for brass bush

SAF Part No. 4 434 1064 00



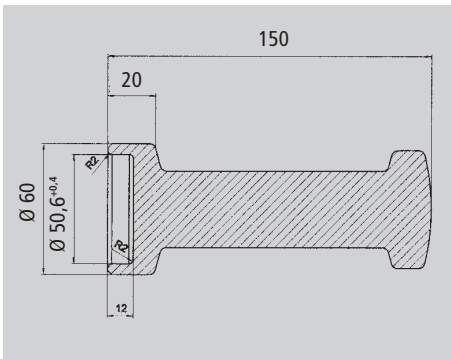
7. Wedge fork for tappet with boot

SAF Part No. 4 434 1065 00



8. Caulking tool for brass bush

SAF Part No. 4 434 1066 00



- 9. Assembly pin steel cap**
(make according to sketch)




- 10. SAF ratchet wrench**
SAF Part No. 3 434 3327 00

SAF F) Bolt / Nut torque values

The following tightening torques are only valid if no other values are given in the axle maintenance chart.

Torque wrenches settings, impact wrench not permissible.

Thread	 W.A.F.	Material		
			8,8	10,9
M 8	W.A.F. 13	25	35	41
M 8 x 1		27	38	45
M 10	W.A.F. 17 / 16	49	69	83
M 10 x 1		52	73	88
M 12	W.A.F. 19 / 18	86	120	145
M 12 x 15		90	125	150
M 14	W.A.F. 22 / 21	135	190	230
M 14 x 1.5		150	210	250
M 16	W.A.F. 24	210	300	355
M 16 x 1.5		225	315	380
M 18	W.A.F. 27	300	405	485
M 18 x 1.5		325	460	550
M 20	W.A.F. 30	410	580	690
M 20 x 1.5		460	640	770
M 22	W.A.F. 32	550	780	930
M 22 x 1.5		610	860	1050
M 24	W.A.F. 36	710	1000	1200
M 24 x 2		780	1100	1300
M 27	W.A.F. 41	1050	1500	1800
M 27 x 2		1150	1600	1950
M 30	W.A.F. 46	1450	2000	2400
M 30 x 2		1600	2250	2700
M 36 x 2	W.A.F. 55	2450	3450	4150

Wheel fixing:

Wheels see appropriate axle maintenance chart.


TRILEX wheels	M 18	270 - 300 Nm
	M 20	320 - 350 Nm

Soforthilfe im Pannenfall

NonStopService 24

Support in the case of service

- Im Servicefall wählen Sie bitte **immer** die Rufnummer Ihres **Heimatlandes**.
- In the case of service please **always** dial the number of your **own country**.

Inland home country		Vom Ausland from abroad
03 62 27 23 21	(A)	+43 3 62 27 23 21
0 59 33 07 07	(B)	+32 59 33 07 07
+30 21 09 40 19 80	(BG)	+30 21 09 40 19 80
+386 26 16 58 35	(BIH)	+386 26 16 58 35
0 19 08 64 90	(CH)	+41 19 08 64 90
2 61 10 45 06	(CZ)	+42 02 61 10 45 06
0800 72 37 37 84 / 0 73 33 80 81 58	(D)	00800 72 37 37 84 / +49 73 33 80 81 58
75 72 74 74	(DK)	+45 75 72 74 74
9 02 18 19 92	(E)	+34 9 13 82 68 41
697 91 96	(EST)	+372 697 91 96
03 88 72 06 43	(F)	+3 33 88 72 06 43
0 93 51 31 33	(FIN)	+35 8 93 51 31 33
+41 19 08 64 90	(FL)	+41 19 08 64 90
0 87 02 42 02 37	(GB)	+44 87 02 42 02 37
21 09 40 19 80	(GR)	+30 21 09 40 19 80
06 13 45 17 27	(H)	+36 13 45 17 27
+386 26 16 58 35	(HR)	+386 26 16 58 35
02 66 16 55 74	(I)	+39 02 66 16 55 74
+44 87 02 42 02 37	(IRL)	+44 87 02 42 02 37
+32 59 33 07 07	(L)	+32 59 33 07 07
+372 697 91 96	(LT)	+372 697 91 96
+372 697 91 96	(LV)	+372 697 91 96
+33 3 88 72 06 43	(MC)	+33 3 88 72 06 43
+386 26 16 58 35	(MK)	+386 26 16 58 35
+45 75 72 74 74	(N)	+45 75 72 74 74
+32 59 33 07 07	(NL)	+32 59 33 07 07
+34 9 13 82 68 41	(P)	+34 9 13 82 68 41
06 18 31 98 70	(PL)	+48 6 18 31 98 70
02 12 50 02 60	(RO)	+40 2 12 50 02 60
+39 02 66 16 55 74	(RSM)	+39 02 66 16 55 74
+45 75 72 74 74	(S)	+45 75 72 74 74
+42 02 61 10 45 06	(SK)	+42 02 61 10 45 06
0 26 16 58 35	(SLO)	+386 26 16 58 35
0 21 22 75 13 21	(TR)	+90 21 22 75 13 21
+386 26 16 58 35	(YU)	+386 26 16 58 35

www.saf-axles.com

Otto Sauer Achsenfabrik GmbH · Hauptstraße 26 · D-63856 Bessenbach
Tel +49 (0) 60 95 / 301-0 · Fax +49 (0) 60 95 / 301-259 · www.saf-axles.com

