

# Maintenance and Repair Manual for SAF Disc Brakes

**SK RB 9019 W** with WABCO brake calliper

**SK 1000 ET 120**



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, quote correct axle identification serial no., refer to the axle type plate.

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



## Identification of axles without type plate

Production No. of axle on right of axle tube as seen in direction of forward travel.

## Type plate (on the inside of the trailing arm or axle beam)

<b>SAF</b>		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
<b>A) General safety instructions</b>	<b>5</b>
<b>B) Maintenance instruction</b>	
Maintenance instructions for SAF axles SK RB 9019 W - SK 1000 ET 120 .....	6
Maintenance schedule for SAF axles SK RB 9019 W - SK 1000 ET 120 .....	7
Brake testing (fault-finding procedure) .....	8
Adjuster check .....	9
Brake pad check .....	10
Special notes .....	11
<b>C) Spare part illustrations/spare part designation</b>	
Spare part illustration and spare part designation SK RB 9019 W - SK 1000 ET 120 .....	12-13
<b>D) Installation instructions</b>	
Repairing the brakes .....	14-20
Replacing pressure pad and folding bellows .....	20
Replacing the folding bellows of the pressure pad .....	21-22
Repairing the brake calliper bearing with "guide and seal kit" .....	23-25
Installing the brake calliper .....	26
Replacing the brake cylinder .....	26
Overview of Hub Unit components .....	27
<b>E) Service tools</b>	<b>28</b>
<b>F) Tightening torque in Nm</b>	<b>29</b>

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 WABCO for providing various illustrations!**

[illegible]

**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](http://www.saf-axles.com)).

Updates will be published as necessary on the Internet under [www.saf-axles.com](http://www.saf-axles.com).

## SK 1000 Disc/ET 120 SK RB 9019 W - SK 1000 ET 120

Maintenance intervals		After first 5,000 km or	Periodic checks		
whichever comes first	Mileage intervals >		every 30,000 km	every 75,000 km	every 150,000 km
	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 caliper 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.

## SK 1000 Disc / ET 120 SK RB 9019 W - SK 1000 ET 120

### 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.

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:

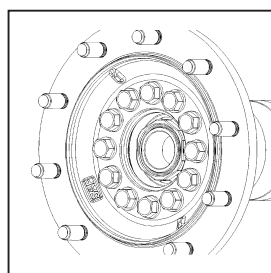
Grease for repairs is contained in every repair kit.

Stub axle:

SAF Part No. 4 387 0015 06

SAF fitting paste

### Tightening the hub nut

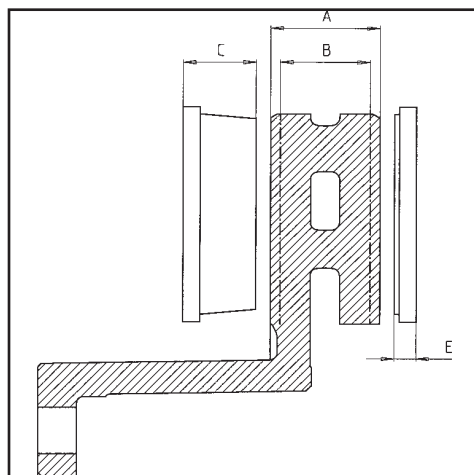


On LH side as seen in direction of travel –  
LH thread

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:  
Groove on the face.



### 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
SBW 1937	45	≤37	30	11	370	4

Item No.		Tightening torque (Nm)	Spanner size (W.A.F.)	Hexagon outside      inside	
44	Wheel flange mounting M18 x 1.5 x 75 or 65	450	27	X	–
44	TORX screw with head M18 x 1.5 x 75 or 65	Tightening process: pre- tighten to 50 Nm diagonally, turning angle of 90° diagonally tightened (1 1/2 nut corners)	External torx E24	–	–
Caution! Bolts must not be oiled!					
	Guide bearing on brake calliper 2 hex. socket head screws M16 x 1.5 - 10,9	340 <sup>±20</sup>	14	–	X
	Diaphragm/combination cylinder 2 hex. nuts M16 x 1.5	210	24	X	–
56/56.1	Brake calliper mounting on axle body M16 x 1.5 x 55	290	24	X	–
63.2	Fixing screws of the lining fixing hoop	30 <sup>±15</sup>	17	X	–

### Assembly tools

Hub nut wrench

Puller for Hub Unit

Tool box compl.

3/4" spanner external torx shape

### SAF Part No.

2 012 0023 01

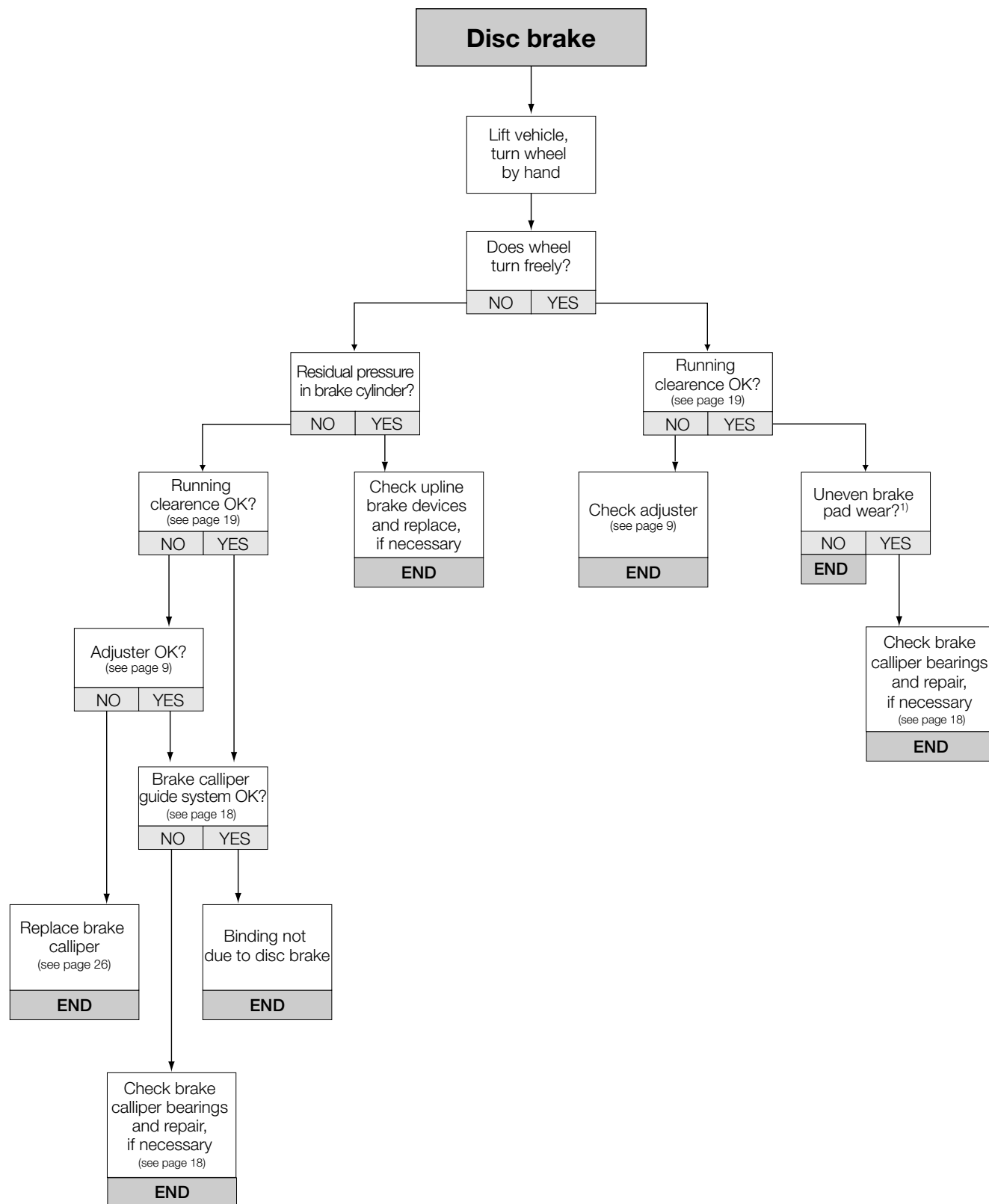
4 434 3822 00

3 434 6010 00

4 434 3824 00

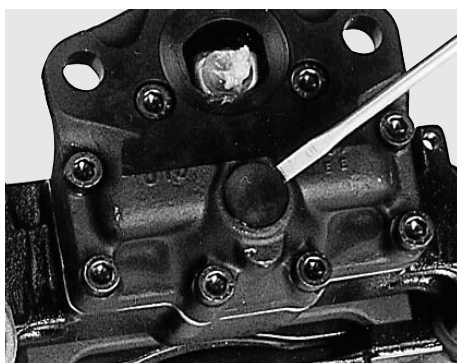
## Brake testing

### Fault-finding procedure



<sup>1)</sup> Difference between wear of inboard and outboard pad, and diagonal wear  $\leq 2$  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.



Turn the adjuster approx. – spanner turn clockwise using the SAF ratchet wrench.

Actuate the brakes 5 times (approx. 1 bar)

When the adjuster is functioning correctly the SAF ratchet wrench (arrow) must turn anti-clockwise.

#### 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:

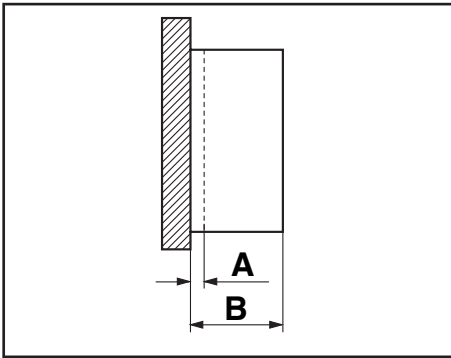
The adjuster or SAF ratchet wrench

- 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 grease in the snap-fit area, then push on the cap and ensure that it is fitting tightly.



## Brake pad check

### Caution!

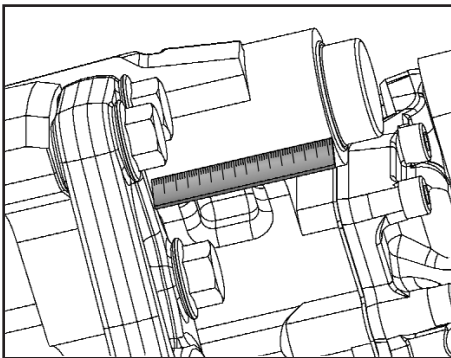
Observe the wear limits of the brake pads.

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.



## Signs of wear

Wear on the middle of the lining can be measured with a tape measure or a ruler either at the shoulder bolt (long bolt near the disc run in) or at the play bolt (short bolt near the disc run in). Here, the distance between the axle flange and the edge of the housing of each bolt is measured (see illustration). The amount of wear is determined to have been reached or exceeded by the following criteria:

**Short bolt: wear > 70 mm - replace linings**

**Long bolt: wear > 97 mm - replace linings**

### 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 1000 Disc/ET 120 SK RB 9019 W - SK 1000 ET 120

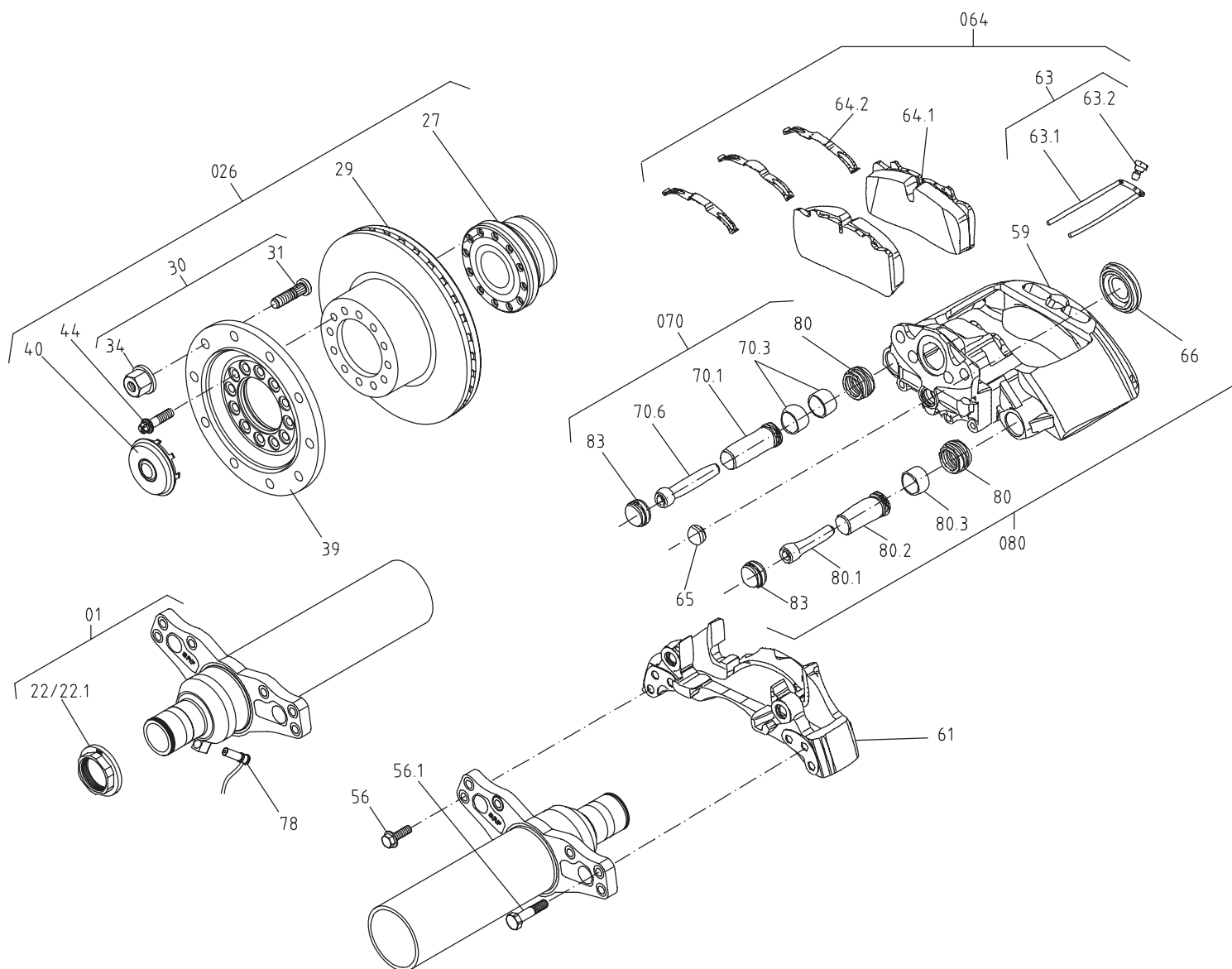
### Torque wrench settings

Use a torque wrench.  
The use of impact wrenches  
is not accepted.

**Wheel nuts:**  
Spigot-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 1000 Disc / ET 120

### SK RB 9019 W - SK 1000 ET 120

Item	Parts designation	Item	Parts designation
01	<b>Axle beam assembly</b>	59/60	<b>Brake calliper group</b> including items 61, 65, 66, 70, 80
22	Axle nut, RH, W.A.F. 85	63	Lining fixing hoop including items 63.1, 63.2
22.1	Axle nut, LH, W.A.F. 85	064	Lining set
026	<b>Axle end assembly</b> <b>including items 27-31, 34,</b> <b>39-40, 44, 77</b>	64.1	Brake linings
27	Hub Unit	64.2	Lining retainer springs
29	Brake disc	070	<b>Guide pin group</b> including items 70.1 - 70.6, 80, 83
30	<b>Wheel bolt assembly</b> including items 31, 34	78	ABS sensor
31	Wheel bolt	080	<b>Guide pin group</b> <b>(folding bellows)</b> including items 80, 80.1 - 80.3, 83
34	Wheel nut with pressure plate		
39	Wheel flange		
40	Hub cap with gasket		
44	Torx screw		
56	Hexagon head bolt		
56.1	Shoulder bolt		

#### Repair kits for SAF disc brakes SBW 1937

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, 80
Brake calliper carrier with guide kit, LH	62, 70, 80
Guide pin group (folding bellows)	80
Guide pin group	70
Tappet with boot	66.1, 66.2
Brake pad retainer (per axle)	064
Cap for clearance adjuster (4 caps)	65
<b>All kits available only as complete sets!</b>	

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



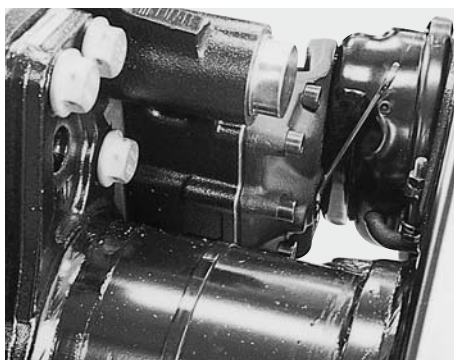
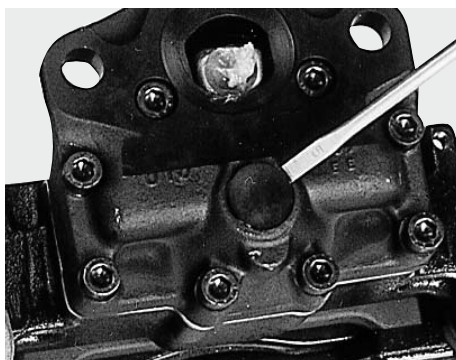
## Repairing the brakes

Remove the brake calliper.

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

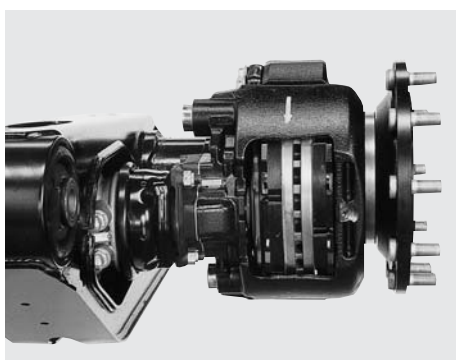
Lift the axle using a jack.

Loosen the wheel nuts and remove the wheel.



Remove the cap.

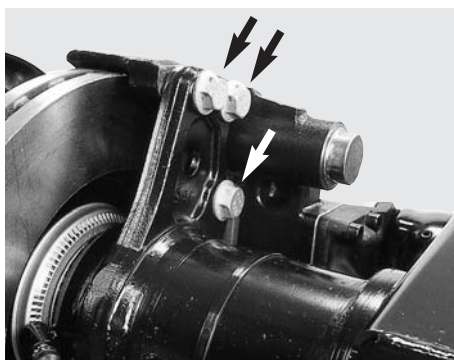
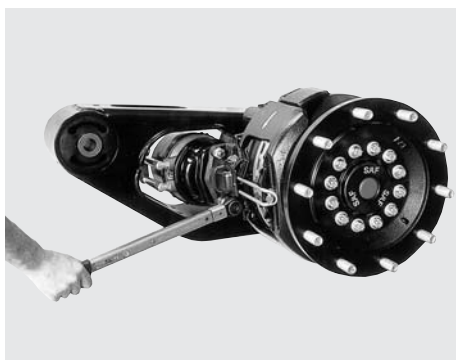
Return adjuster clockwise – turn until the stop.



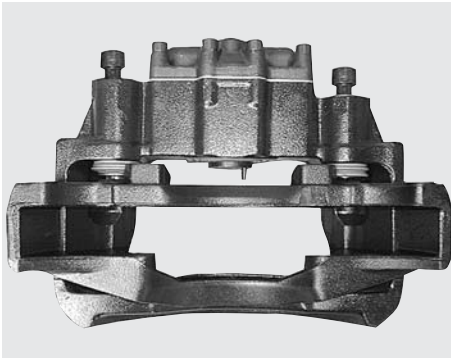
Loosen and remove the fixing screws of the lining retainer hoop.

Move the brake calliper towards the rim and remove linings

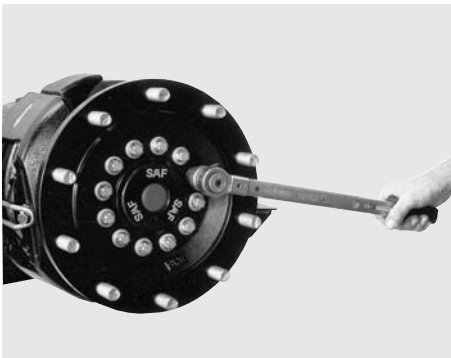
Move brake calliper towards the inside, remove linings and pressure plate.



Unbolt the spring pressure or diaphragm cylinder from the brake calliper. Then loosen bolts (6 bolts M 16 x 1.5) and remove the brake calliper.



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.



### Replacing the brake disc

Unscrew bolts M 18 x 1.5 from the wheel flange and remove the wheel flange.

**Note:**

**Bolts must not be oiled!**

**(Observe tightening torques)**



Press the brake disc off the hub unit with 3 hexagon head bolts M 12 x 30.

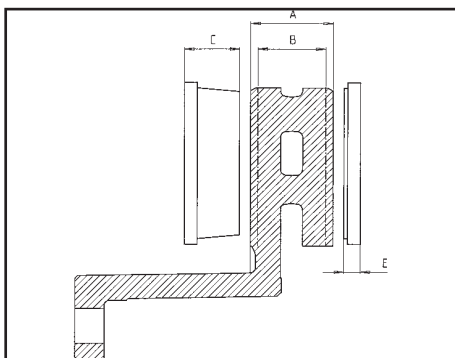


Clean contact surfaces before assembly.

**Caution!**

**Seal on axle nut must not be damaged as this would invalidate all warranty claims.**



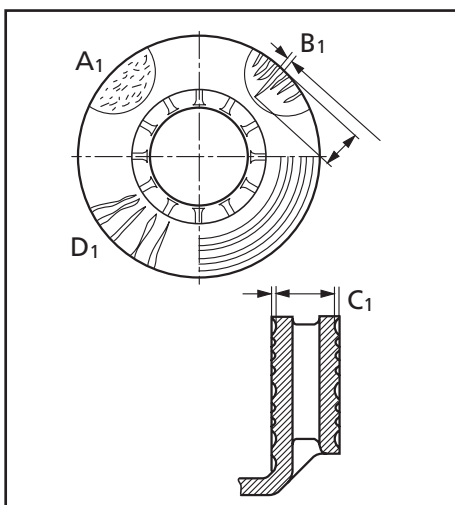


## Brake disc

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.

**A<sub>1</sub>** – Network-like cracks are permissible.

**B<sub>1</sub>** – Cracks up to max. 1.5 mm (width and depth) running towards the middle of the hub are permissible.

**C<sub>1</sub>** – Unevenness in the disc surface up to 1.5 mm is permissible.

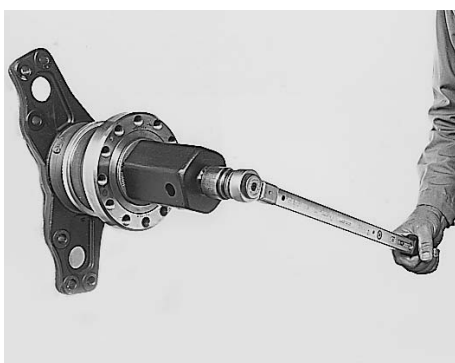
**D<sub>1</sub>** – Cracks going right through the disc are not permissible.

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 hub unit

Loosen axle nut and unscrew from stub shaft.

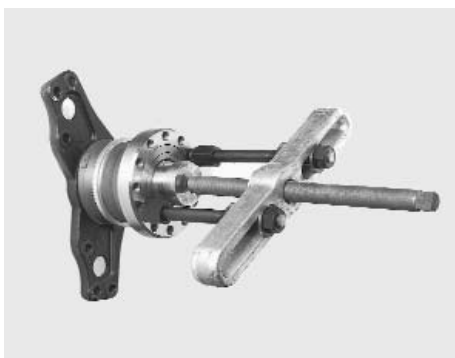
Axle nut wrench, SAF Part No. 2 012 0023 01.

### Note:

Axle nut W.A.F. 85

– on left-hand side as seen in direction of forward travel = left-hand thread.

The axle nut with left-hand thread has a milled groove on the outer face for identification.



The complete hub unit can be pulled off the stub shaft using a puller, SAF Part No. 4 434 3822 00.

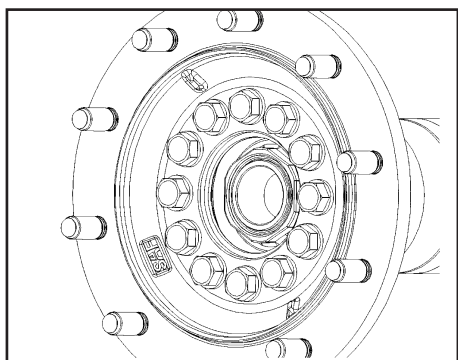
(The hub unit cannot be overhauled and has to be replaced complete with the bolts of the wheel flange).





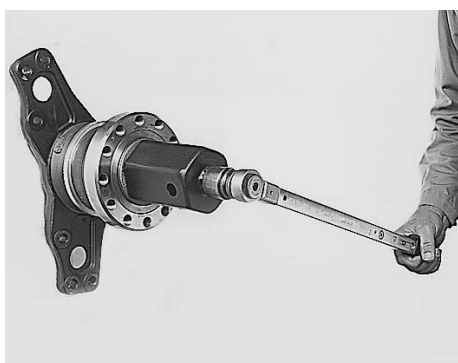
### Installing the hub unit

Emery the seating surfaces of the hub unit on the stub shaft down to the bare metal and coat with SAF fitting paste (SAF Part No. 4 387 0015 06).



Coat the hub unit bearing surfaces with SAF fitting paste and push onto the stub shaft. Tighten the axle nut to the prescribed torque.

**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:**  
**Groove on the face**



**Axle nut W.A.F. 85:**  
**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.**

**Groove on the face.**

**Tighten the axle nut.**

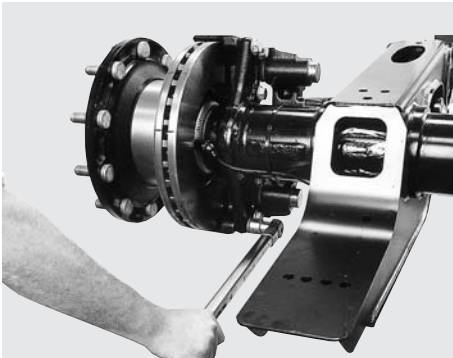
**Axle nut wrench: SAF Part No. 2 012 0023 01**

**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.**



**Place the wheel flange onto the hub unit and tighten the new, uncoiled bolts to the prescribed torque.**



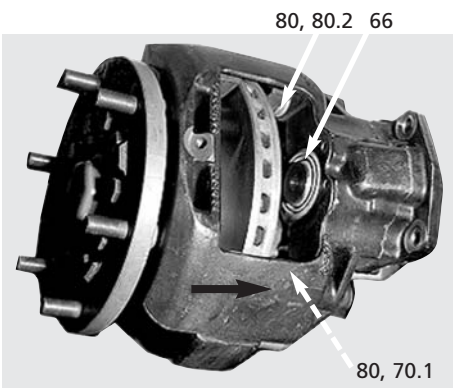
## Bolting on the brake calliper

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

Coat ABS sensor (see arrow) all around with copper paste and install in the sensor holder.

Push in the ABS sensor until it contacts the exciter.

Measure the output voltage at the ABS sensor cable using a voltmeter (approx. 100 mV) while turning the brake disc or wheel flange.



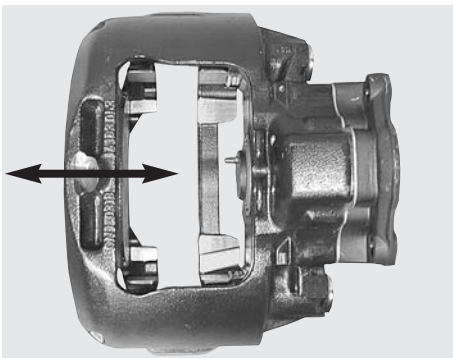
## Checking the folding bellows on the pressure pad

Checking the protection cap and the moveability of the brake calliper:

Move the brake calliper in the direction of the cylinder and check the protection cap 80, 66 the guide pin 70.1/80.2 and the adjustment screw for wear or damage. If necessary replace the protection cap (page 22)!

### Note!

Should the protection cap 66 become defect, check to make sure no dirt or water has entered the inside of the brake or that the seal seating has not been damaged by corrosion. In case of doubt the brake should be replaced. If the protection cap 66 becomes damaged during service this must also be replaced (see page 22).

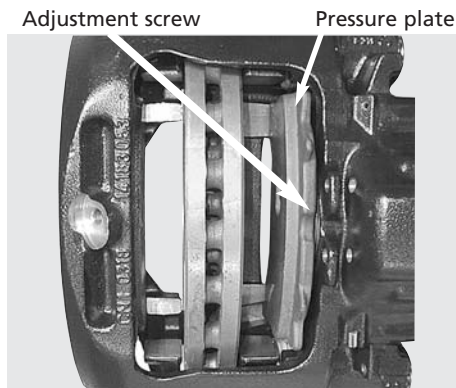


Manually move the brake calliper on the guide pin over the whole length of travel and check for ease of movement.

If movement is difficult replace both the bushes and the protection cap.

### Note!

Do not squash the guide pin's protection cap against the brake mounting.

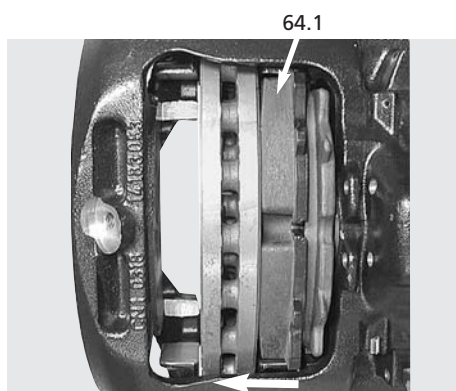


Move the brake calliper so far so that there is enough distance between the brake disc on the actuation side to insert the brake lining.

Insert the pressure plate into the brake mounting and push it against the adjustment screw.

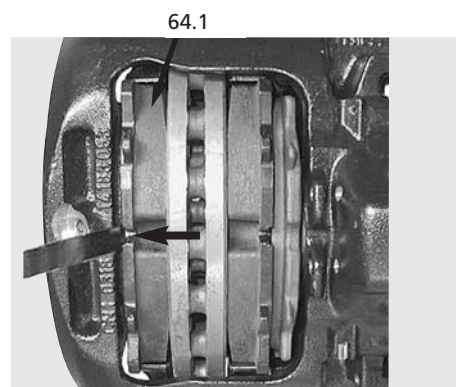
**Note!**

The pressure plate must seat correctly in the brake mounting guide and the pin of the adjustment screw must be seated in the groove of the pressure plate, otherwise the correct functioning of the adjustment mechanism is endangered ! Provision is made so that the adjustment screw can be turned until the pin sits correctly in the pressure plate groove. The protection cap must not be rotated during this action.



Inserting new brake linings 64.1 on the actuation pad.

Move the brake calliper in the direction of the rim until the actuation side of the brake lining 64.1 sits on the brake disc.



Inserting **new** brake linings 64.1 on the rim side.

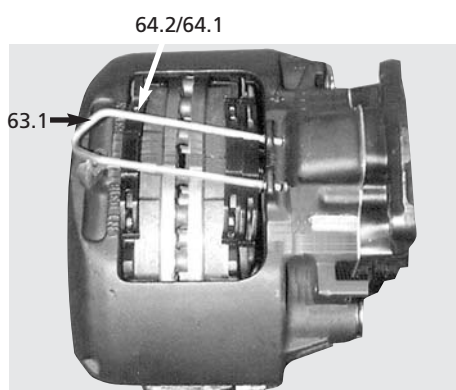
With the help of a 1 mm thick feeler gauge (arrow) inserted between the rim side of the lining and the brake calliper, regulate the adjuster with a SAF ratchet wrench until both brake linings sit on the brake disc.

**Attention !**

Do not use excessive force on the corners of the adjuster.

**Note!**

Direction of rotation in regulating the adjuster is anti-clockwise. Do **not** assemble the lining retainer hoop until play has been adjusted.

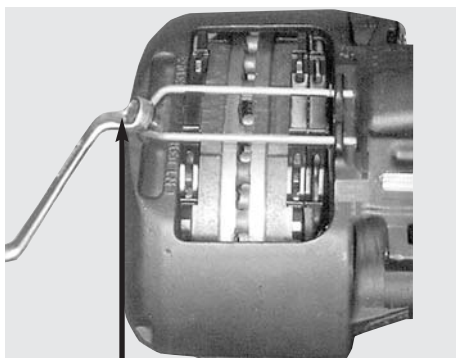


Setting **new** retainer springs 64.2 onto the brake linings 64.1 and pressure plate.

Push and depress the lining retainer hoop 63.1 in the opening of the brake calliper so that the radial lugs of the retainer spring seat in the hoop.

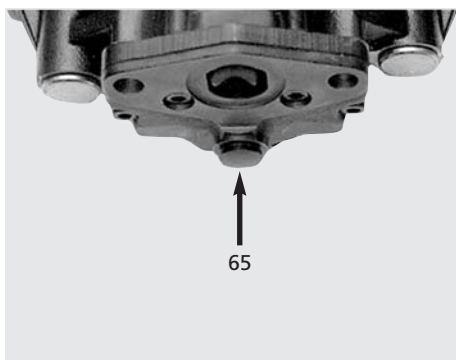
# SAF

## D) Installation instructions



63.2

Affixing **new** hex. screw 63.2 with  $30\pm 15$  using a spanner onto the brake calliper.

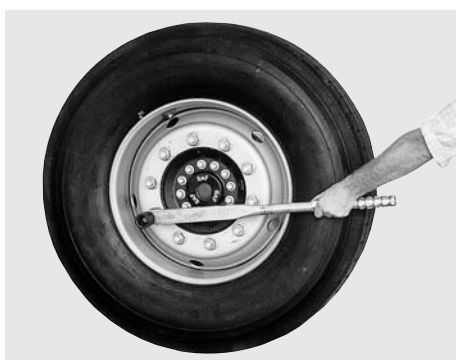


65

Push the **new** plug 65 into the opening of the brake calliper! Check the wheel hub for freedom of movement.

### Note!

Check the brakes on a rolling road test station after completion of work.

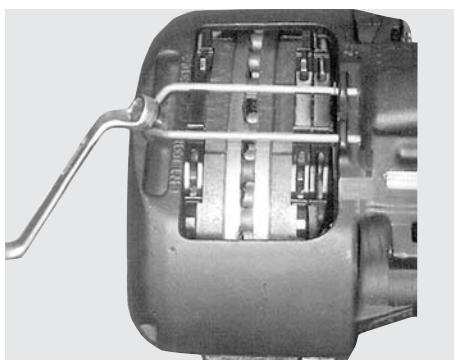


Fit the wheels.

Tighten the wheel nuts using a torque wrench.

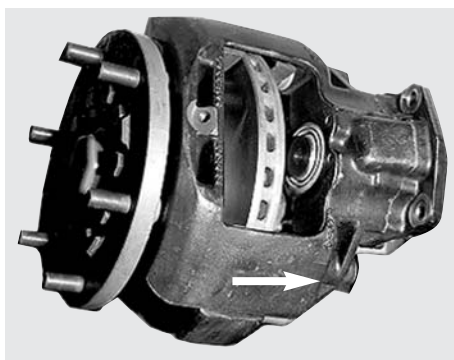
### Caution!

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



### Replacing the folding bellows of the pressure pad!

Dismantle brake linings and pressure plate (see page 14)



Move brake calliper by hand towards the cylinder.

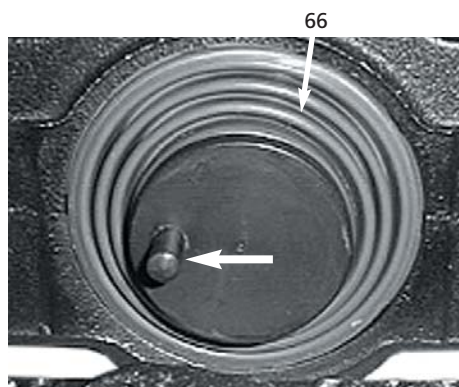
Pull out the protection cap 66 using a screwdriver from the brake calliper seating.

Check the thread on the adjuster screw.

**Note!** Lay the rim side brake lining in the lining cavity so that the adjuster cannot be screwed out of adjustment. After checking remove the linings again.

Secure the adjuster screw against turning (arrow) and screw out approx. 30 mm anti-clockwise using a ring spanner on the hexagonals.

During this time check the thread for damage or corrosion.



#### Note!

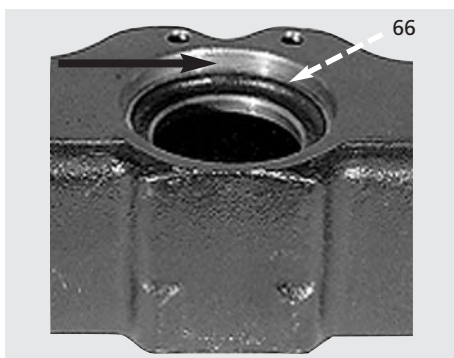
The protection cap 66 can be replaced if dirt or water is seen to be present over the seal seat of the brake calliper, or if the protection cap has been damaged immediately prior to servicing. Should parts be found to be corroded then the brake should be replaced in case of doubt.



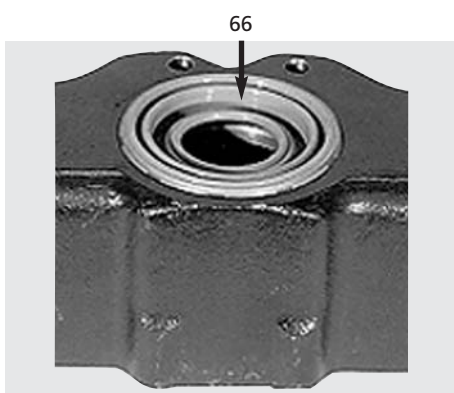
After checking, grease the thread and partly screw the adjuster clockwise again.



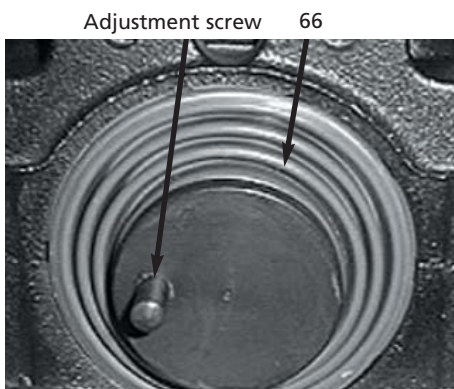
## SAF D) Installation instructions



Clean the seating of the protection cap 66 in the brake calliper (arrow)  
(illustration without adjustment screw)

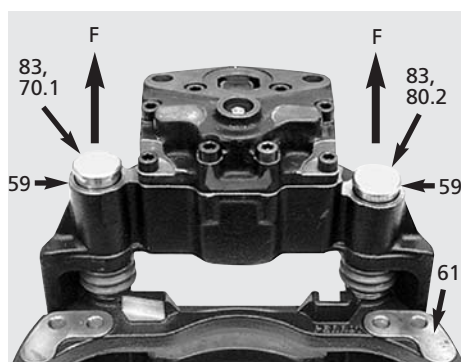


Push the **new** protection cap 66 over the adjuster.  
Centralize the press-in tool over the protection cap 66 and insert the  
protection cap in its seat in the brake calliper 59.  
(illustration without adjustment screw)



Insert the protection cap 66 into the adjustment screw seating.  
Grease the rim lip before insertion.

**Note!** Ensure an even and unwrinkled seating of the protection  
cap's rim lip in the groove of the adjustment screw.

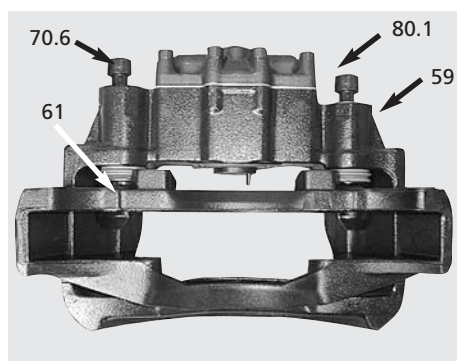


### Repairing the brake calliper bearing with "guide and seal kit"

Dismantle the brake calliper 59 from the brake mounting 61 and additionally remove the cap 83 of the guide pin 70.1/80.2 with a screwdriver from the housing 59.

**Note!**

Do not damage the holes for the cap in the housing.

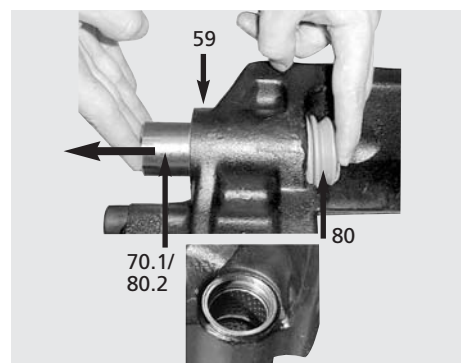


Loosen the screws 70.6/80.1 with a spanner. Remove the brake calliper 59 from the brake mounting 61.

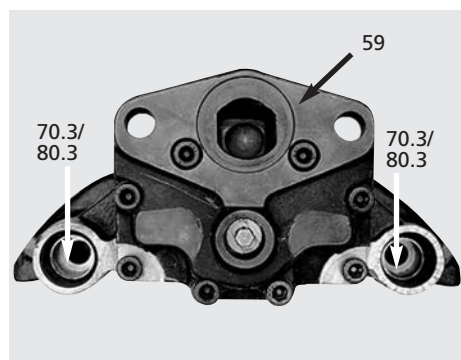
**Note!**

Danger of trapping through loose brake calliper!

Clean contact surface (flush) on the brake mounting 61 to the guide pin.

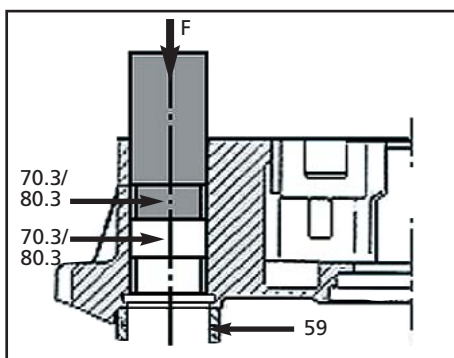


Remove the guide pin 70.1/80.2 from the brake calliper 59, remove the protection cap 80 from the groove.



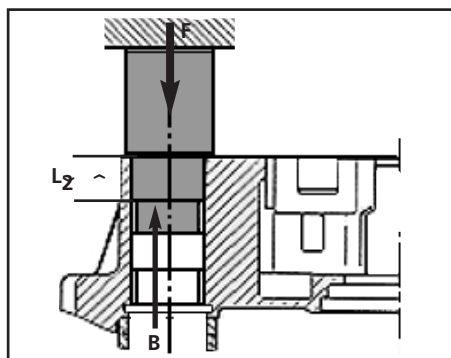
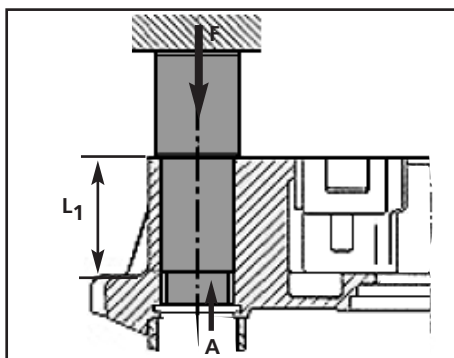
Lay the brake calliper 59 on a firm surface so that the cover opening of the brake calliper is uppermost in order to press out the bushes 70.3/80.3

# SAF D) Installation instructions



Press out the bushes 70.3/80.3 from the brake calliper using a press and mandrel.

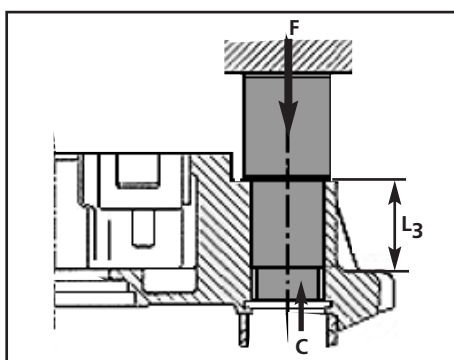
Clean the holes in the brake calliper.



Press in two **new** bushes 70.3 and for the longer guide pin 70.1:

Firstly (A) the inner bush with mandrel ( $L_1 = 52.2 \pm 0.2$  mm), and finally (B) the outer bush with a mandrel ( $L_2 = 13.2 \pm 0.2$  mm), in both cases press in until they meet the stop.

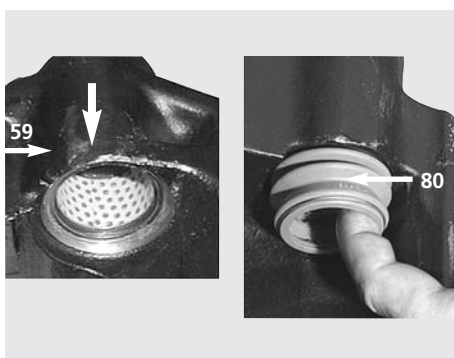
Grease sliding surfaces of the bushes and the space between them.



Press in a **new** bush 80.3 for the shorter guide pin 80.2.

Press in bush (C) with mandrel ( $L_3 = 38.7 \pm 0.2$  mm) until it meets the stop.

Grease sliding surfaces of the bush.

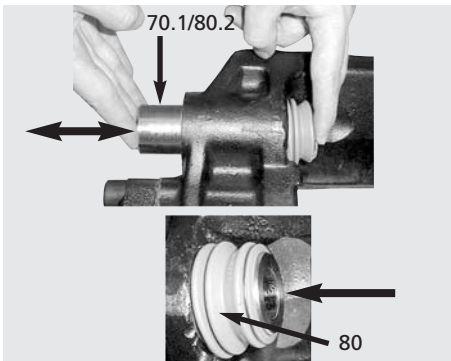


Insert the **new** protection cap 80 in the seat (arrow) of the brake calliper (59).

**Note!** Clean seating before insertion. For ease of insertion of the protection cap it is recommended to lightly grease the rim lip.

**Note!** Ensure an even and unwrinkled seating of the protection cap's rim lip in the groove of the brake calliper.





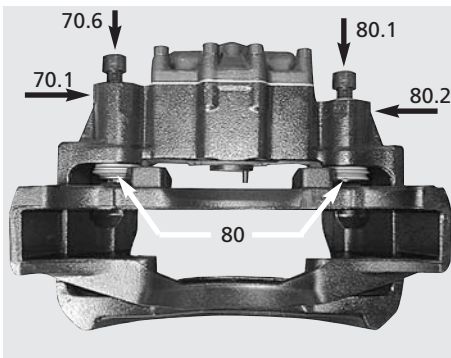
Grease the running surfaces for the guide pins 70.1/80.2 and the rim lip of the protection cap 80.

Insert the **new** guide pins from the direction of the cylinder into the brake calliper 59 and push the protection cap 80 against the seating of the guide pins 70.1/80.2.

Lightly move the guide pins backwards and forwards several times as illustrated in the sketch.

The longer guide pin 70.1 is the shoulder bolt and is fitted on the brake disc run in side. The shorter guide pin 80.2 is the play bolt and is fitted on the brake disc run out side.

Remove excessive grease. The flat surfaces of the guide pins to the brake mounting (arrow) must be free of grease!



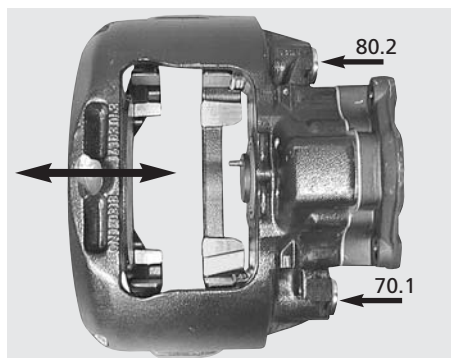
Seat the brake calliper 59 onto the brake mounting 61 and insert the fitted guide pins 70.1/80.2 flush.

Fit the new screws 70.6 (long for the shoulder bolt 70.1), 80.1 (short for the play bolt 80.2) through the previously fitted guide pins in the brake calliper 59 and screw the brake calliper to the brake mounting 61.

Tightening sequence: 1st screw 70.6 / 2nd screw 80.1

**Note!**

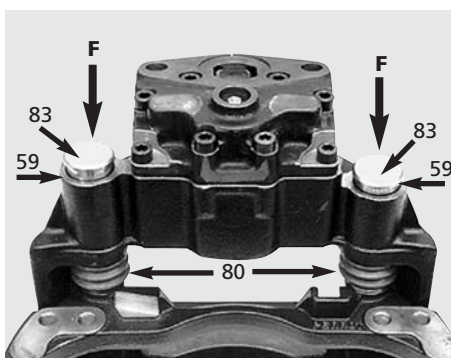
It must be ensured during tightening of the screws when assembling that the protection cap 80 is not damaged or rotated. First, screw tightly the slide fit longer guide pin 70.1 and then screw tightly the running fit shorter guide pin 80.2. Should the guide pins 70.1/80.2 be loosened during maintenance work from the brake mounting 61, then these must be replaced with new screws 70.6/80.1 when re-assembling.



Move the brake calliper several times backwards and forwards over the guide pins 70.1/80.2. Ensure ease of movement.

**Note!**

Do not squash the guide pins against the brake mounting!

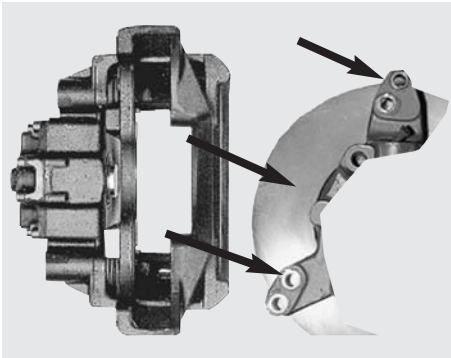


Grease the holes for the cover plate 83 in the brake calliper 59.

Insert the **new** cover plate 83 into the holes of the brake calliper 59 and press home using a suitable tool.

**Note!**

Avoid damaging the cover.



## Fitting the brake calliper

Seat the brakes with brake mounting over the brake disc and fit to the axle.

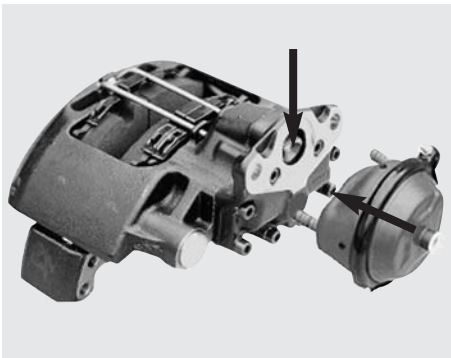
Tightening sequence of the screws:

Right hand side clockwise

Left hand side anti-clockwise

Each time begin the sequence with the shoulder bolt (if applicable).

Position of shoulder bolt: In the direction of wheel rotation - the run out side of the outer corner of the flange.



## Replacing the brake cylinder

Before fitting the brake cylinder clean the sealing surface of the brake calliper and grease the bearing on the brake lever (arrow).

Set the brake cylinder onto the brake calliper and screw the nuts tightly with a spanner.

### Note!

According to the respective fitting position, the lower drain holes on the bottom of the cylinder must be clear.

### Overview of Hub Unit components



Hub Unit



Hub Unit



Hub cap



Axle nut, RH / LH thread



Wheel flange



Brake disc

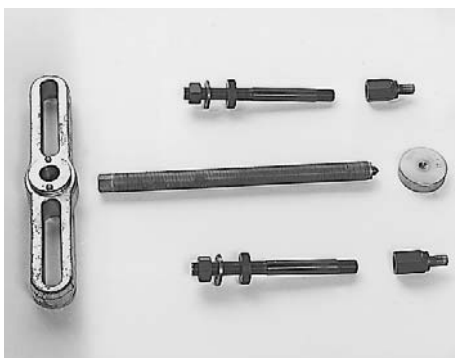


Brake calliper



## 1. Axle nut wrench WAF 85

SAF Part No. 2 012 0023 01



## 2. Wheel hub puller

SAF Part No. 4 434 3822 00



## 3. WABCO tool box

SAF Part No. 3 434 6010 00




## 4. SAF ratchet wrench

SAF Part No. 3 434 3327 00

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	12,9
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
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