

Conversion

Hub Unit SK RB/RLB to Hub Unit RB/RLB *INTEGRAL*

Edition 04/2008

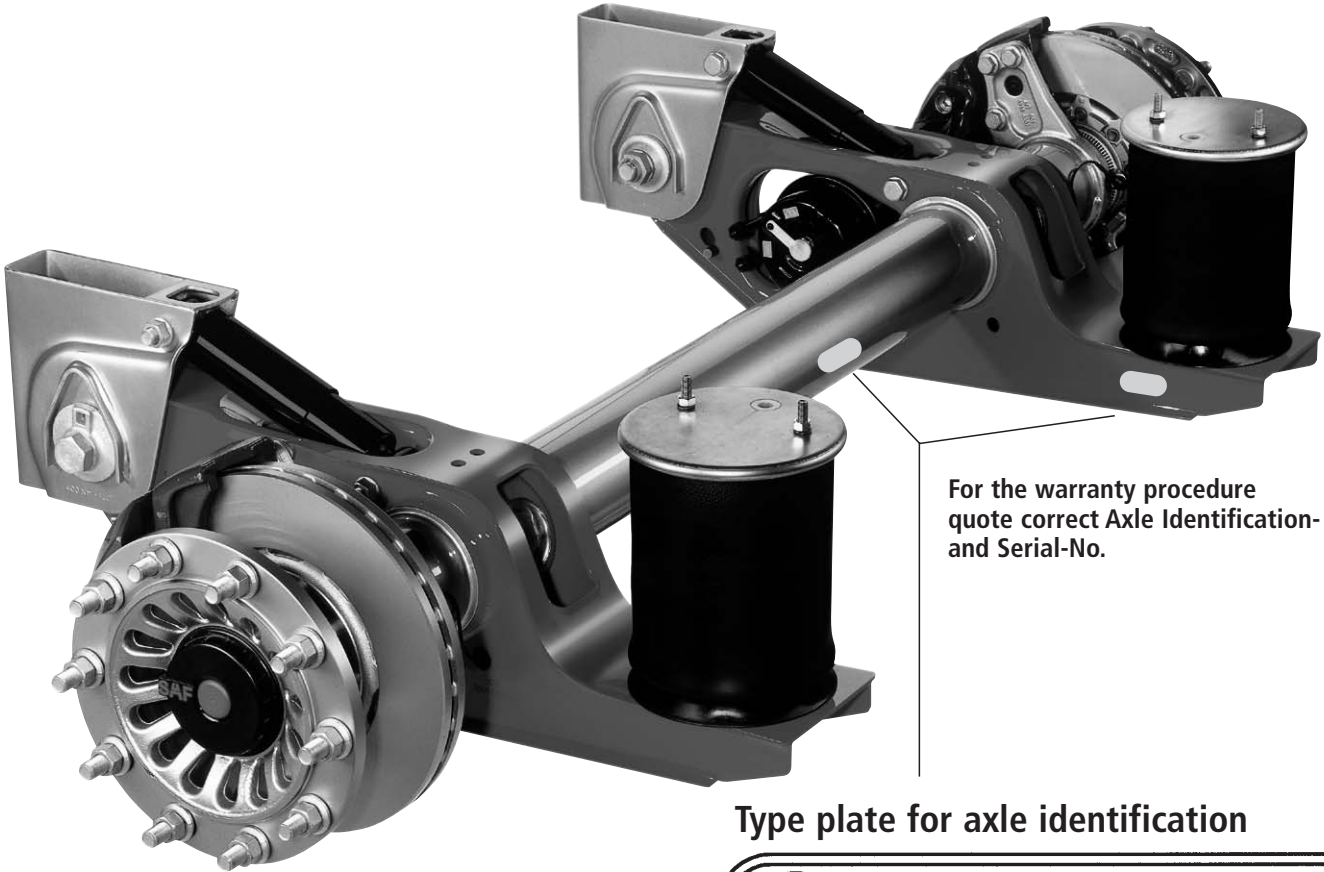


Trailer Manufacturer

Body type

Chassis no.....

Year of manufacture/Trailer date in Service



Type plate for axle identification

SAF		DTTO SAUER ACHSENFABRIK KEILBERG	
		D-63854 BESSENBACH / G E R M A N Y	
TYP			
<input type="checkbox"/>	Ident.-No.		
	/Prod.-No.		
zul. Last kg	STAT.	TECH.	v max km/h
perm. cap.			max. speed
charge adm.			vifess maxi.
TDB-No.	Grundtyp		

	Ident.-No.	Prod.-No. (Serial-No.)
Example:	14732487480	014033241
1. Axle		
2. Axle		
3. Axle		
4. Axle		
5. Axle		

Enter axle data from type plate



Identification of axles in case of type plate absence
Serial No. on spindle end, Rh side.



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Note:

Part numbers used in the text refer to the illustration of the axle SK RB / RLB 9019 / 9022

Please observe the following safety instructions in order to maintain the operational and road safety of your SAF-HOLLAND 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-HOLLAND 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-HOLLAND axles and suspension systems not designed for the purpose may result in damage and hence to an impairment of road safety.

10. SAF-HOLLAND 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-HOLLAND recommends that the inspection and maintenance instructions described on page 5 should be carried out.

The SAF-HOLLAND repair manuals and instructions must always be observed during all repairs.

We recommend the use of original SAF-HOLLAND spare parts.

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

Updates will be published as necessary on the Internet under www.safholland.com.

These instructions summarise using the following illustrations the steps and working sequences the steps necessary for replacing the Hub Unit with the INTEGRAL wheel Hub Unit on axle types SK RB / RLB 9019 / 9022 with disc brake. The tightening torques for the various items in the working steps can be found in Table 1.

Safety instructions for repair work

The perfect technical condition of the brake disc is of crucial importance for good driving and safe braking properties.

Observe the wear limits of the brake pads and brake disc! Worn brake pads and/or brake discs can lead to a deterioration in the braking efficiency or even a complete brake failure! Danger of accidents! Burnt, glazed or oily brake pads must be replaced immediately!

Brake pad replacement must always be performed for all the wheels on an axle!

During repair work on the brake system, the trailer must be standing on level ground and secured to prevent it from rolling away. Use only approved equipment for supporting and securing the trailer. During the repair work on the brake system, measures must be taken to ensure that the brakes are not actuated accidentally. The brakes must not be actuated as long as the brake pads are removed. Danger of injury!

During repair work on the brake system, do not clean soiled areas with compressed air or other high-pressure cleaners. Danger of injury!

During work on the brake system or when moving the brake calliper, hold the parts only at the outer edges to prevent fingers being trapped between brake calliper and brake bracket!

During removal and installation of the brakes on the trailer, obtain assistance from a second fitter. Heavy load! Danger of injury!

During repair work on the brakes away from the trailer, the brake must be gripped firmly in a suitable device, e.g. vice. High loosening and tightening torques of the bolts. Danger of injury!

The brake calliper with clamping unit must not be opened. For this reason, the retaining bolts of the cover on the brake calliper must not be loosened.

Carry out repair work only with recommended tools. Do not use power wrenches or other power tools! Tighten nuts and bolts only to the recommended tightening torques.

When new brake pads are installed, sharp braking should be avoided for the first 50 kilometres. Long braking distances and sudden braking should also be avoided.

In the event of severe damage or wear of the castings (e.g. cracks), the complete brake must be replaced.

On completing repair work, a final test should be carried out on a roller dynamometer.

Notes!

These working instructions relate only to the conversion of Hub Unit SK RB / RLB to Hub Unit SK RB / RLB *INTEGRAL*.

Illustrations in these working instructions show the conversion of Hub Unit SK RB / RLB with WABCO disc brake and apply analogously also for brake discs from other manufacturers.

For all working steps relating to the disc brake, please refer to the latest edition of the installation and maintenance instructions for the respective disc brake.

Optionally with
INTEGRAL disc 22.5" or 19.5"



Quantity	Part designation	Quantity	Part designation
2	Wheel hub units	2	Wheel caps
2	Discs	2	O-rings
4	Pads with mounting parts	4	Lock nuts
20	Mounting bolts	1	Tube of stub axle grease
2	Shoulder bolts	2	Additional type plates
10	Hexagon head bolts	1	Installation manual

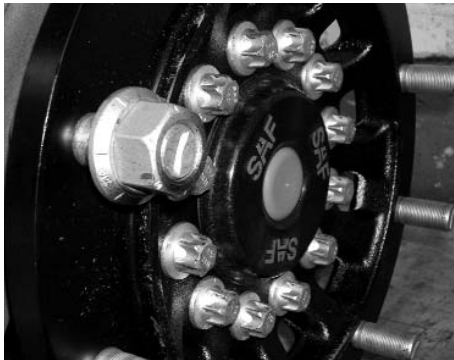
Complete and optionally with
INTEGRAL disc 22.5" or 19.5"



Quantity	Part designation	Quantity	Part designation
2	Hub Unit groups, preassembled ready for installation, consisting of: each 1 disc 1 wheel hub assy. 10 mounting bolts 10 wheel bolts	10	Hexagon head bolts with collar
4	Pads with mounting parts	2	Shoulder bolts
20	Wheel nuts	4	Lock nuts
2	Wheel caps	1	Tube of stub axle grease
2	O-rings	1	Set of documentation with installation instructions, additional identification plate

1. Disassembling the old head unit

1.1



Disassemble wheel bolts

After the rim has been removed the nuts are to be screwed on level again.

1.2



Remove all wheel bolts one after another by hammering the nuts

1.3



Remove brake pads

Disconnect the plug connector from the wear indicator and pull the ABS sensor out of the sensor bracket.

Pull back adjuster.

Unscrew the mounting bolt from the brake lining retaining clip.

Pull out the brake lining retaining clip from the brake calliper.

Remove the spring clips from the brake linings and the pressure plate.

Push the brake calliper to the wheel rim side and pull out the brake pad.

Push the brake calliper inwards and remove the brake pad with thrust plate (WABCO).

1.4



Remove brake callipers

Loosen and remove the retaining nuts for the brake cylinder.

Remove the brake cylinder from the brake calliper.

1.5



Loosen and remove the mounting bolts for the brake calliper.
Remove the brake calliper from the brake backing plate.

1.6



Remove Hub Unit SK RB / RLB with wheel flange and brake disc

Remove the wheel cap from Hub Unit SK RB / RLB.

1.7



Axle nut wrench WAF 85 (Part No. 4 434 3828 00)



Loosen axle nut and remove from the stub axle.

Note:

On the left-hand side as seen in the direction of travel = Left-hand thread
On right-hand side in direction of travel = Right-hand thread
Marking of the axle nuts with left-hand thread: Groove on outer edge

1.8



Remove Hub Unit SK RB / RLB complete with brake disc from the stub axle.
If necessary, pull Hub Unit SK RB / RLB from the stub axle using a puller.
Puller (Part No. 4 434 3822 00)

1.9



Prepare stub axle

Clean the contact surfaces for the head unit SK RB / RLB on the stub axle and coat with mounting paste. **Threads not to be greased!**

Mounting paste (tube of grease supplied or Part No. 5 387 0015 06)

2. Assembling the new head unit

2.1.



Assemble wheel bolts

Prop the *INTEGRAL* Hub Unit up with two wooden blocks

2.2.



Lay the wheel bolts in the boreholes.

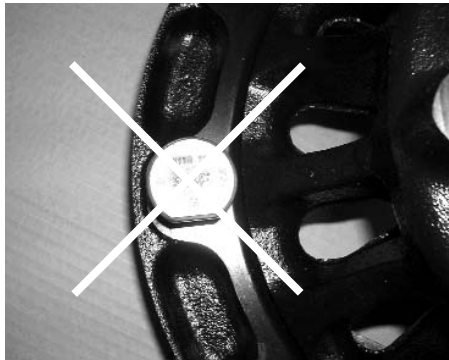
Attention!

Pay attention to the position of the wheel bolt

OK

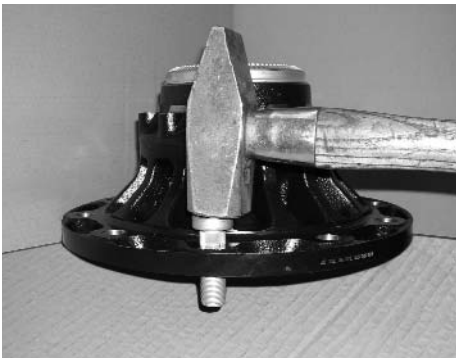


Not OK



Observe installation position

2.3.



Hammer the wheel bolts so far into the wheel flange so that the serrations catch.

2.4



Put a ca. 20 mm high spacer sleeve on the hammered-in wheel bolts.

Attention!

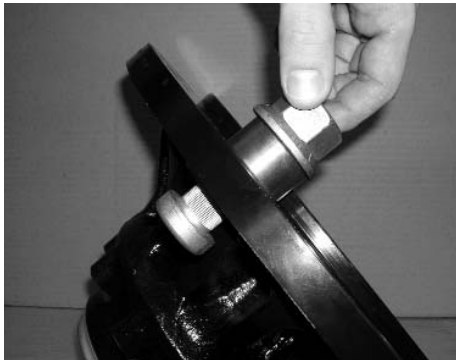
The wheel bolts and nuts will be damaged during retraction without sleeves.



Attention:

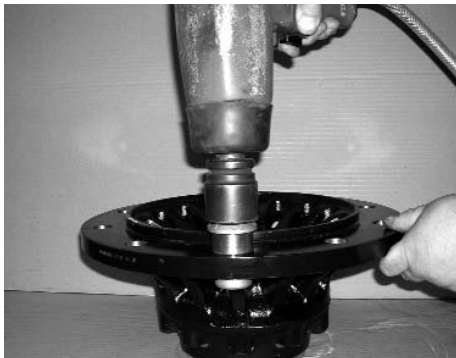
To prevent damage/scratches on the wheel flange, a double-sided chamfered sleeve must be used.

2.5



Screw the wheel nuts on to the wheel bolts.

2.6

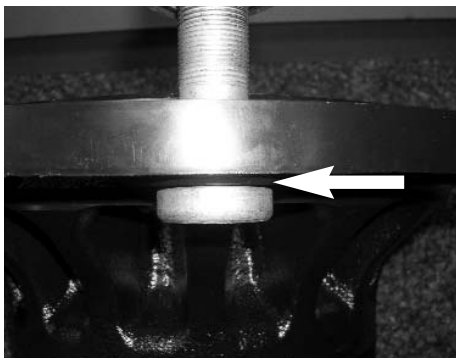


Draw in the wheel bolt using an impact wrench and 32 mm nut.

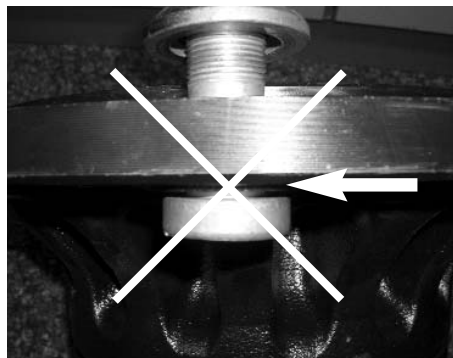
Attention!

The wheel bolt has to be completely drawn into the wheel flange.

OK without gap



Not OK with air gap



2.7.



Put and align the brake disc on the *INTEGRAL* SK RB head unit.

- 2.8. Screw in new double hexagon head bolts to fix the brake disc and tighten to the prescribed tightening torque (see table on page 21).

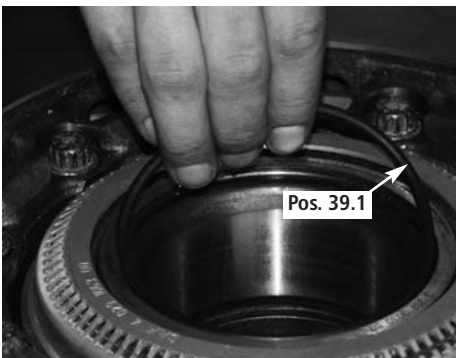


Attention!
Only use new double hexagon head bolts!
Double hexagon head bolts may not be oiled or greased!

- 2.9. Install Hub Unit SK RB / RLB INTEGRAL with brake disc on stub axle
Hub Unit SK RB / RLB INTEGRAL (see illustration).



- 2.10. Place a new O-ring (item 39.1) into the O-ring groove in Hub Unit SK RB / RLB INTEGRAL.



- 2.11. Push Hub Unit SK RB / RLB INTEGRAL onto the stub axle.



Attention!
Do not damage inner retaining ring of the wheel bearing.

2.12.



Screw on the axle nut.

Note!

On the left-hand side as seen in the direction of travel = Left-hand thread
 On right-hand side in direction of travel = Right-hand thread
 Marking of the axle nuts with left-hand thread: Groove on outer edge



Axle nut wrench WAF 85 (Part No. 4 434 3828 00)

2.13.



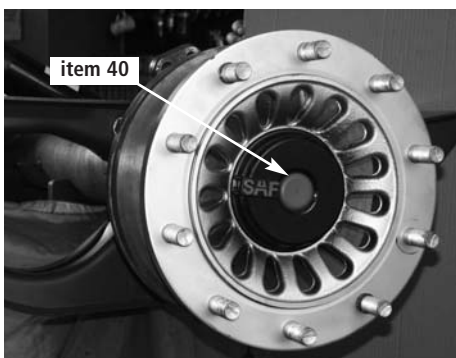
While turning the hub unit slowly by 5 revolutions, tighten the axle nut with the prescribed tightening torque.

Tightening torque, see table 1

Note:

On the left-hand side as seen in the direction of travel = Left-hand thread
 On right-hand side in direction of travel = Right-hand thread
 Marking of the axle nuts with left-hand thread: Groove on outer edge

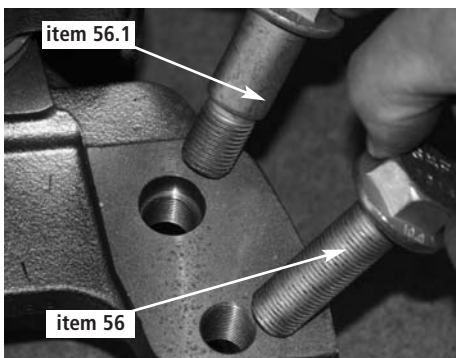
2.14.



Install new wheel cap with **O-ring** in Hub Unit SK RB / RLB *INTEGRAL*.

Wheel cap with O-ring (item 40).

2.15.



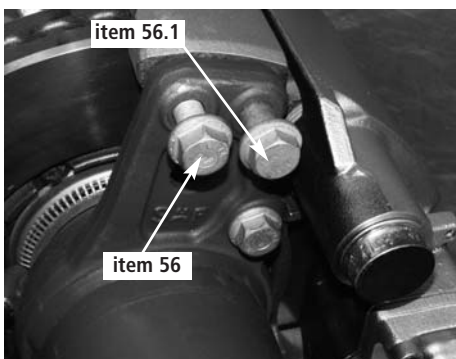
Install brake calliper on brake backing plate

Position the brake calliper on the brake backing plate and screw in the mounting bolts for the brake calliper in the correct position.

Caution!

The shoulder bolt (item 56.1) may only be screwed into the threaded bore with the recess in the brake calliper.

2.16.



Tighten mounting bolts (items 56 and 56.1) to the prescribed tightening torque.

Caution!

Use only new hexagon head bolts / shoulder bolts (items 56 and 56.1)!

The bolts must not be oiled or greased.

Tightening torque, see Table 1

2.17.



Pry out the plug for the brake adjuster using a suitable screwdriver and back off the brake at the adjusting screw.

Note:

Insert the screwdriver between plug and seal ring.

Do not place the screwdriver against the housing seal ring and pry out with force. The seal ring must not be deformed or damaged.

When backing off the WABCO brake calliper, the thrust plate must be positioned with the pin to act as a twist lock for the thruster.

The thruster must not turn as otherwise the bellows protective cap will be damaged.

Back off the brake at the hexagon of the adjuster and then turn back 1/4 turn from the end position.



2.18.



Inspect the brake calliper for serviceable function and serviceability of the parts by:

- Checking the axial shiftability and sliding function
- Checking the admissible wear clearance of the guide bolts
- Checking the automatic adjustment function
- Inspecting the bellows protective caps and seals; replace the parts or the brake calliper, if necessary
- If necessary, replace defective parts or the brake calliper

Please observe the operating instructions of the brake manufacturer.

2.19.



Clean the slots for the brake pads.

2.20.



Install brake pads

Put the spring clips on the brake linings and pressure plate.

Push the brake calliper to one side and install the thrust plate (WABCO) and new brake pads.

2.21.



Put the brake lining retaining clip in the brake calliper.

Screw on the mounting bolt of the brake lining retaining clip and tighten to the prescribed tightening torque.

Tightening torque, see Table 1

2.22.



Install brake cylinder on brake calliper

Inspect the condition of the seal on the brake cylinder flange, if necessary cylinder exchange.



Use new lock nuts.



Inspect the sealing surface on the brake calliper and clean, if necessary.

Bolt the brake cylinder to the brake calliper and tighten the retaining nuts crosswise to the prescribed tightening torque.

Tightening torque, see Table 1

2.23.



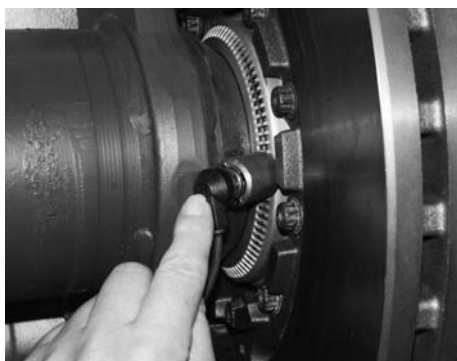
Adjust clearance by:

- Filling the compressed air system to cut-off pressure and releasing the parking brake.
- Adjusting the clearance with the adjuster.

Install the plug or cap for the adjuster again securely.

Please observe the operating instructions of the brake manufacturer

2.24.



Install ABS sensor

Install the ABS sensor in the sensor bracket and push up to the exciter ring.

2.25.



Tighten the wheel nuts

Tighten the wheel nuts with the prescribed tightening torque.

Attention!

Retighten the wheel nuts to the prescribed tightening torque of the trailer builder after 50 km and after 150 km.

Caution!

After completing the conversion work, check the function of the brakes on a roller dynamometer.

Attention!!

Please ensure that the additional label **ORIGINAL INTEGRAL** is put next to the type plate.

Be sure to quote for all later repair work!!!

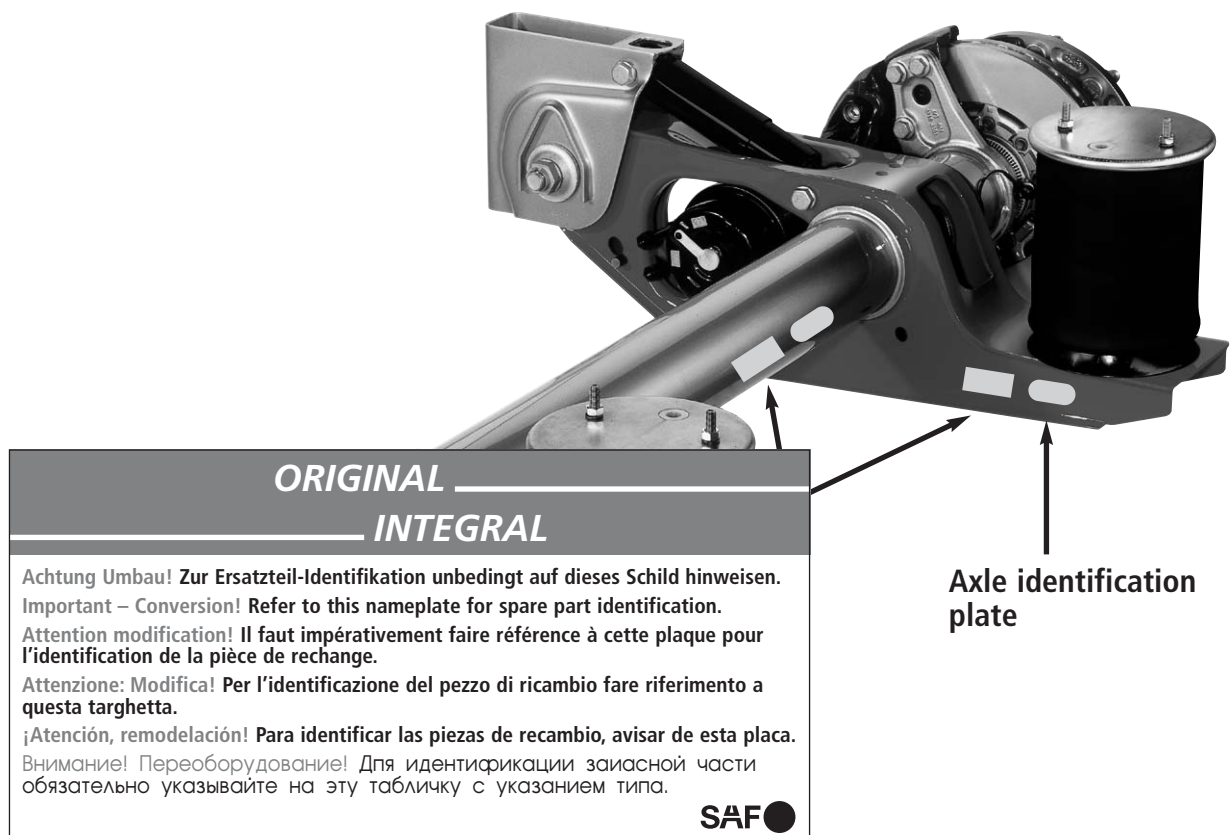


Table 1

Caution!

The bolts, item 45, 56 and 56.1 must be replaced during all repair work.

The bolts must not be oiled or greased.

Tighten all bolts using a torque wrench.

Bolted connections	Item No.	Tightening torques (Nm)
Axle nuts	21 / 22	Pretightening: 150 Nm, whilst turning the hub unit evenly by 5 revolutions. Final tightening: tighten further by 30°
<i>INTEGRAL</i> -Brake Disc Double hex. bolt, socket 13, M12 x 1.5	45	1. pre-tighten diagonally with 30 Nm 2. further tighten diagonally with torque angle 90° (in-service inspection torque 150 Nm)
Brake calliper on axle Hexagon bolt M16 x 1.5	56 56.1	290 Nm
Brake chamber hex. nut M16 x 1.5		Tighten alternately and uniformly in 2 stages 1. Pretightening 120 Nm 2. Torque angle 210 Nm (in-service inspection torque 210 Nm)



SAF's history begins in 1881 in a village forge in Germany with the invention of a new plough. The family business soon starts building steel axles for agricultural vehicles, and under the name Otto Sauer Achsenfabrik (SAF) develops into one of the leading manufacturers of trailer axles and suspension systems in Europe.

A safety coupling between plough and horse team can be found at the beginning of Holland's history. The Safety Release Clevis Company is founded in South Dakota, USA, in 1910. After its move to Holland, Michigan, the company emerges as one of the largest supplier companies to the commercial vehicles industry under the name The Holland Hitch Company.

Today - these two historical companies are together as SAF-HOLLAND, a global leader in the design, manufacture, and distribution of quality engineered components, systems, and services to the commercial vehicle industry.

SAF-HOLLAND specialises in coupling, lifting, and suspension systems for trucks, busses, tractors, and trailers. SAF-HOLLAND products are sold and serviced under the SAF and Holland brand names from over 4,600 distributor and OEM locations around the world.



From fifth wheel rebuild kits to suspension bushing repair kits, SAF-HOLLAND Original Parts are the same quality components used in the original component assembly. SAF-HOLLAND Original Parts are tested and designed to provide maximum performance and durability. Will-fits, look-alikes or worse yet counterfeit parts will only limit the performance potential and could possibly void SAF-HOLLAND's warranty. Always be sure to spec SAF-HOLLAND Original Parts when servicing your SAF-HOLLAND product.

www.safholland.com

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