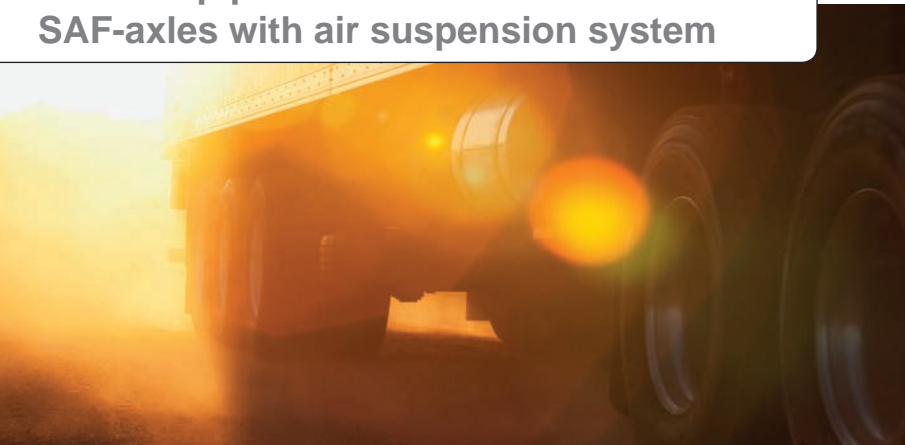


Workshop pocket manual SAF-axles with air suspension system



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INTRADISC



MODUL with disc brake



INTRADRUM

MODUL with drum brake

The type plate

SAF-HOLLAND GMBH D-63856 BESENENBACH - GERMANY			
Version	BI9-22K01	ID1 - SBK2243 - 115	
Serial No.	11 12 117 0009	ID2 - SBK2243 - 115 01	
Ident No.	147 96 62 7 48 20	ID3 - 10791	
Stat.	9000 kg Vmax. 105 km/h	ID4 - 36110303	
Made in Germany	E		SN 11121170009

Since end of 2012

Identification in case of a missing type plate

The axle serial number is embossed on the right of the axle stub end, as viewed in the direction of travel.



INTRA



MODUL



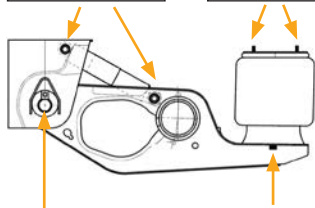
INTRADISC / INTRADRUM servicing the air suspension systems

Torque settings

Steel hanger bracket

M20x1.5 (AF30)
Nut contact surface,
dry: 600 Nm

M12 (AF19)
40 Nm



M30 (AF46)
400 Nm + 120°
See tensioning
instructions 1
through 4

M16 (AF24)
• 180 Nm with steel
plunger piston
• 80 Nm with plastic
plunger piston

Caution:

Every time the pivot bolt mounting is tightened to the reference torque, the corresponding setting must be labelled.

Pivot bolt torque

specification 1 through 4



1. Pretightening
400 Nm



2. Labelling
for angle
tightening
to 120° (two
edges)



3. Angle
tightening
to 120° (two
edges)



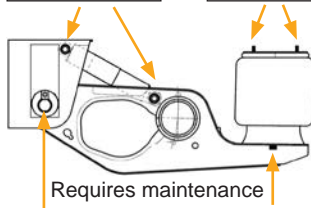
4. Labelling for
subsequent
visual
inspection

Torque settings

Stainless steel / aluminium

M20x1.5 (AF30)
Nut contact surface,
dry: 400 Nm

M12 (AF19)
40 Nm



M30 (AF46)
400 Nm + 120°
See tensioning
instructions 1
through 4

M16 (AF24)
• 180 Nm with steel
plunger piston
• 80 Nm with plastic
plunger piston

Caution:

Maintenance intervals for stainless steel/aluminium hanger brackets:

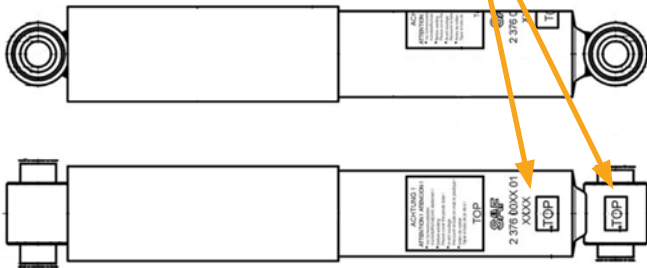
- Initial inspection after 10,000 km or 5 weeks.
- Additional inspections every 100,000 km or 12 months.
- Control torque: 1200 Nm

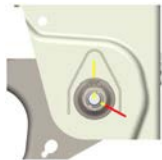
Note: Any warranty claim for the INTRADISC / INTRADRUM air suspension system is voided if the mandatory instructions detailed in the "Maintenance and Repair Manual" are not applied. See www.safholland.com

Shock absorber installation position

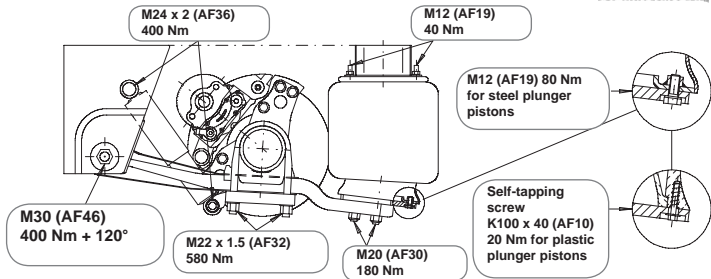


The "TOP" label of the shock absorber must point upwards.





Label the positions of washer, nut, screw.



Tensioning instructions:

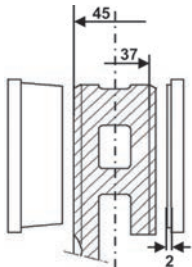
1. The bearings of the trailing arm are to be fitted in accordance with the maintenance and repair manual.
2. Position the eccentric washer below the screw head.
3. Raise the vehicle to the correct ride height.
4. Pretighten the M30/SW46 nuts to 400 Nm. Label the positions of the washer, nut and screw on the hanger bracket.
5. Tighten the nut by another 120° (two edges) while holding the screw head firmly against it.
6. Perform a visual inspection. Correct the tightening angle if necessary.
7. When tightening is complete, label the positions of the washer, nut and screw on the hanger bracket.

Caution!

- Do not apply oil or grease to the thread.
- The screw connections of the steel hanger bracket do not require maintenance.
- The thickness of the coating applied to the screw contact surface between shock absorber and hanger bracket and between trailing arm and hanger bracket must not exceed 45 µm.
- For galvanised hanger bracket, thickness must not exceed 120 µm; otherwise the no-maintenance feature ceases.

Wear on the brake disc and brake pads

To assess the friction surface on the brake pads, the pad retainer must be removed and the brake calliper adjustment must be de-adjusted.



Wear limits:

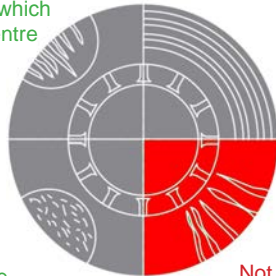
Brake disc: Minimum 37 mm

Brake pad: Minimum 2 mm

Typical signs of wear on the brake discs

Permitted: Cracks of up to 1.5 mm maximum (width and depth), which run to the centre of the hub

Permitted: Uneven disc surface



Permitted: Network-type cracking

Not permitted: Full-length cracking

SAF INTRADISC plus: Permitted joint elasticity of the 3D bushing

When tested with a longitudinal force of 30 kN (approx. 3 t), the 3D bushing of the INTRADISC plus system can carry out elastic movement in a horizontal direction of ± 14 mm maximum, i.e. a total of 28 mm (image 1).

This elasticity does not indicate that the bushing is damaged; rather, it is required for proper functioning of the chassis system. However, such values of ± 14 mm are reached only during static inspection and do not occur while driving.

Due to the shape of the 3D bushings, rigidity in a horizontal direction is much higher than in vertical direction. It is therefore important to ensure proper installation position (image 2).

This high rigidity in a horizontal direction allows for the system's intentional auto steering behaviour, whereby tyre wear and the strain on the roads are reduced.



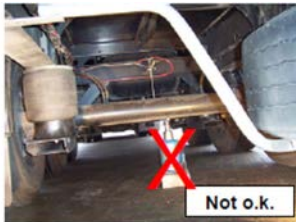
Image 1:
Joint elasticity: $x = \pm 14$ mm,
28 mm total



Image 2:
Follow the "TOP" label for
installation position

Changing tyres of a fully loaded trailer with INTRA axle.

Lifting points.



Ride heights

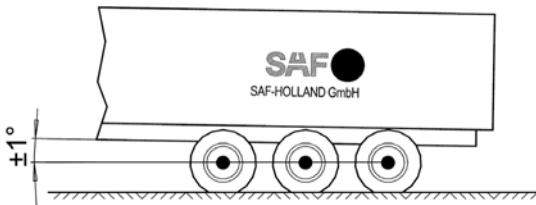
The ride height of the air suspension axles is to be set to the permitted values as indicated in the appropriate documentation provided by SAF.

For single axles, a minimum suspension travel of 60 mm must be observed.

For multiple-axle trailers, a minimum suspension travel of 70 mm must be observed.

Exceptions

On multiple-axle trailers with lift axles, minimum suspension travel should not drop below 100 mm on the lift axle in order to maintain ground clearance.

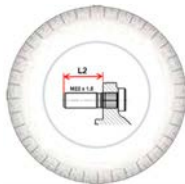


Maximum inclination of the semi-trailer must not exceed $\pm 1^\circ$.

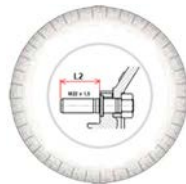
Drum brake



Disc brake



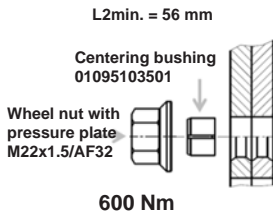
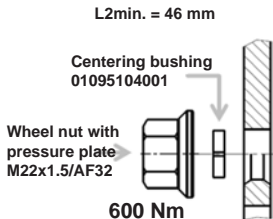
Drum brake



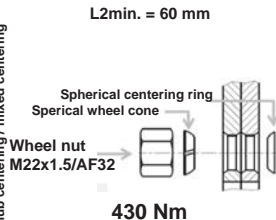
Single tyres

Twin tyres

Steel wheels
For hub centering / mixed centering



Steel wheels
For hub centering / mixed centering



For wheels with mixed centering / spherical countersink, 2 distance / centering bushings (installed opposite each other) are needed per wheel hub.

Aluminium wheels

Single tyres

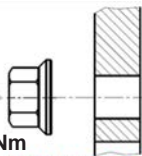
L2min. = 56 mm

For hub centering
Stud hole 26 mm

Wheel nut with
pressure plate
M22x1.5/AF32

600 Nm

max. 28 mm



Twin tyres

L2min. = 80 mm

Wheel nut with
pressure plate
M22x1.5/AF32

600 Nm



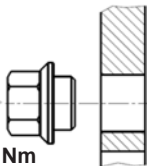
Aluminium wheels

L2min. = 56 mm

For hub centering
Stud hole 32 mm

Wheel nut /
sleeve nut with
pressure plate
M22x1.5/AF32

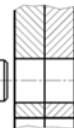
600 Nm





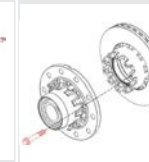


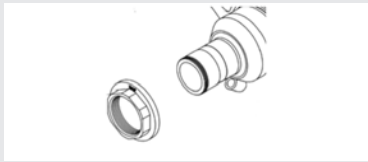

L2min. = 56 mm


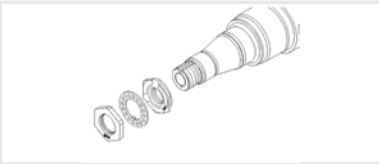
Wheel nut / sleeve
nut with
pressure plate
M22x1.5/AF32

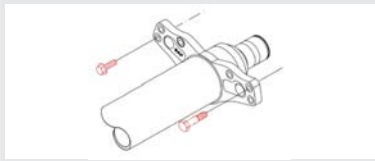
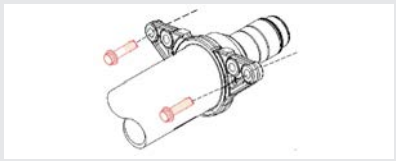
600 Nm


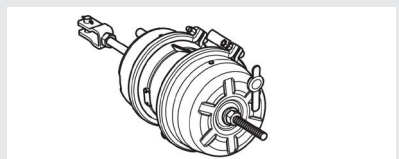


Axle type	SK RB	RB-Integral / BI	B9	SI / ZI - 22K11	SI / ZI - 22K01
Tensioning method	Torque / rotation angle	Torque / rotation angle	Torque / rotation angle	Torque / rotation angle	Torque / rotation angle
Type of thread	M18x1.5	M12x1.5	M14x1.5	M14x1.5	M14x1.5
Type of screw	TORX	DHS	DHS	DHS	DHS
Size of head	E24	AF13	AF15	AF15	AF15
Torque / angle	50 Nm + 90°	40 Nm + 90°	50 Nm + 120°	50 Nm + 120°	50 Nm + 120°
Reference torque	450 Nm	130 Nm	180 Nm	180 Nm	180 Nm
Figure					
Procedure	<ul style="list-style-type: none"> • Pretightening 50 Nm • Final tightening: 90° in diagonally opposite sequence 	<ul style="list-style-type: none"> • Pretightening 40 Nm • Final tightening: 90° in diagonally opposite sequence 	<ul style="list-style-type: none"> • Pretightening 50 Nm • Final tightening: 120° in diagonally opposite sequence 		
Caution	<ul style="list-style-type: none"> • Use screws only once! • No oil, grease, dirt or other residue in the threaded section! 				

Axle type	SK RB	S/Z/B series
Tensioning method	Torque / rotation angle	Torque / rotation angle
Type of thread	M72x1.5	M75x1.5
Type of screw	Hexagon nut	Hexagon nut
Size of head	AF85	AF85
Torque / angle	150 Nm + 30°	150 Nm + 30°
Reference torque	900 Nm	900 Nm
Figure		
Procedure	<p>Tightening the axle nut:</p> <ul style="list-style-type: none"> • Left in direction of travel: left-hand thread; right in direction of travel: right-hand thread. • Pretightening 150 Nm, evenly turn hub unit by 5 turns. • Final tightening: re-tighten by 1 graduation mark (30°). • Axle nuts with left-hand thread: outside on collar with milled groove. 	
Caution	<ul style="list-style-type: none"> • No oil, grease, dirt or other residue in the threaded section! • Do not use an impact wrench! 	

Axle type	SK	SK
Tensioning method	Torque / rotation angle	Torque
Type of thread	M120x2	M56x2
Type of screw	Hexagon nut	Hexagon nut
Size of head	AF140	AF85
Torque / angle	150 Nm + 10°	-
Reference torque	900 Nm	Inside nut: 150 Nm Outside nut: 400 Nm
Figure		
Procedure	Tightening the axle nut: <ul style="list-style-type: none"> • Left in direction of travel: left-hand thread; right in direction of travel: right-hand thread. • Pretightening 150 Nm, evenly turn hub unit by 5 turns. • Final tightening: re-tighten by 1 graduation mark (10°). • Labelling axle nuts with left-hand thread: outside on hexagon with milled groove. 	Adjusting wheel bearing play: <ul style="list-style-type: none"> • Tighten axle nut AF 85 to 150 Nm while turning wheel hub. • Turn back axle nut by 2 ½ holes in the lock disc. • Slip on lock disc and lock axle nut using locking pin. • Tighten lock nut to 400 Nm. • Check that wheel bearing and wheel rock run properly.
Caution	No oil, grease, dirt or other residue in the threaded section!	

Axle type	SK RB	S/Z/B series
	6-hole connection	4-hole connection
Tensioning method	Torque / rotation angle	Torque / rotation angle
Type of thread	M16x1.5	M18x1.5
Type of screw	Hexagon screw	DHS
Size of head	AF24	AF24
Torque / angle	-	120 Nm + 60°
Reference torque	290 Nm	450 Nm
Figure		
Procedure	Tighten screws, working from inside to outside.	<ul style="list-style-type: none"> • Pretightening 120 Nm • Final tightening: 60°, working from inside to outside
Caution	<ul style="list-style-type: none"> • Ensure correct position of the close tolerance bolt! • Use screws only once! • No oil, grease, dirt or other residue in the threaded section! 	

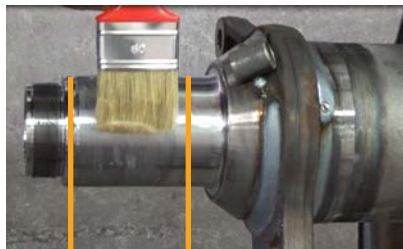
Axle type	Disc brake	Drum brake
Tensioning method	Torque	Torque
Type of thread	M16x1.5	M16x1.5
Type of screw	Hexagon nut	Hexagon nut
Size of head	AF24	AF24
Torque / angle	-	-
Reference torque	210 Nm	210 Nm
Figure		
Caution	<ul style="list-style-type: none"> • Tighten screws alternately and uniformly in 2 stages! • Use nuts only once! • No oil, grease, dirt or other residue in the threaded section! 	

Caution:

Do not use an impact wrench. Not for loosening, not for tightening.



Greasing the axle stub end



Note:

Grease the axle stub end to prevent tribocorrosion.
Apply 1 g of grease.



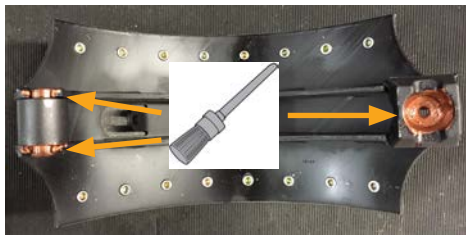
Only included in the repair kit

Material no. 05 387 0042 01 (1 kg)

Note:

- Do not apply oil or grease to the thread.
- No oil, grease, dirt or other residue in the threaded section.

Brake shoes – greasing ball, camshaft

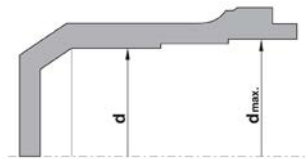


Note:

Apply copper paste to the bearings of the cam roller and the anchor ball.

Material no. 05 387 0014 01 (1 kg)

Wear limits



Brake size	Standard limit "d"	Wear limit "dmax"
420	420	425
367	367	372
300	300	304

Contact information

Emergency hotline +49 6095 301-247

Customer service / maintenance

Telephone +49 6095 301-602
Fax +49 6095 301-259
Email service@safholland.de

After market / spare parts

Telephone +49 6095 301-301
Fax +49 6095 301-494
Email originalparts@safholland.de

Web www.safholland.com