General Installation Instruction Manual
SAF Modular Air suspension system
Disc Brake

Edition 11/2006

SAF Service

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Welding instructions

for hanger brackets of steel, SAF air suspension series U / M / O

Welding recommendation

The high-tensile steel used for the hanger brackets with a carbon content C of max. 0.2% can be easily welded. Special welding electrodes are therefore not required.

Cover the trailing arm to protect it from flying sparks. In order to avoid bearing damage, the welding equipment ground cable must not be connected either to the wheel or to the wheel hub with brake drum.

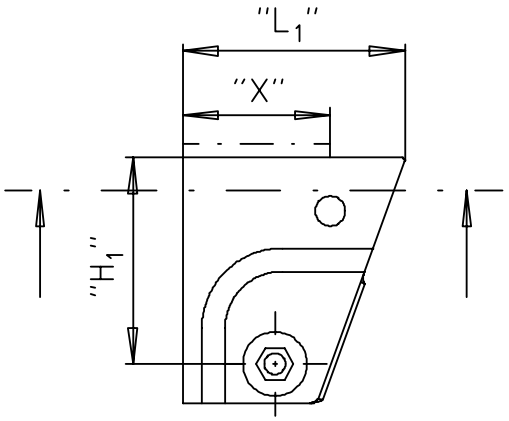
Design information

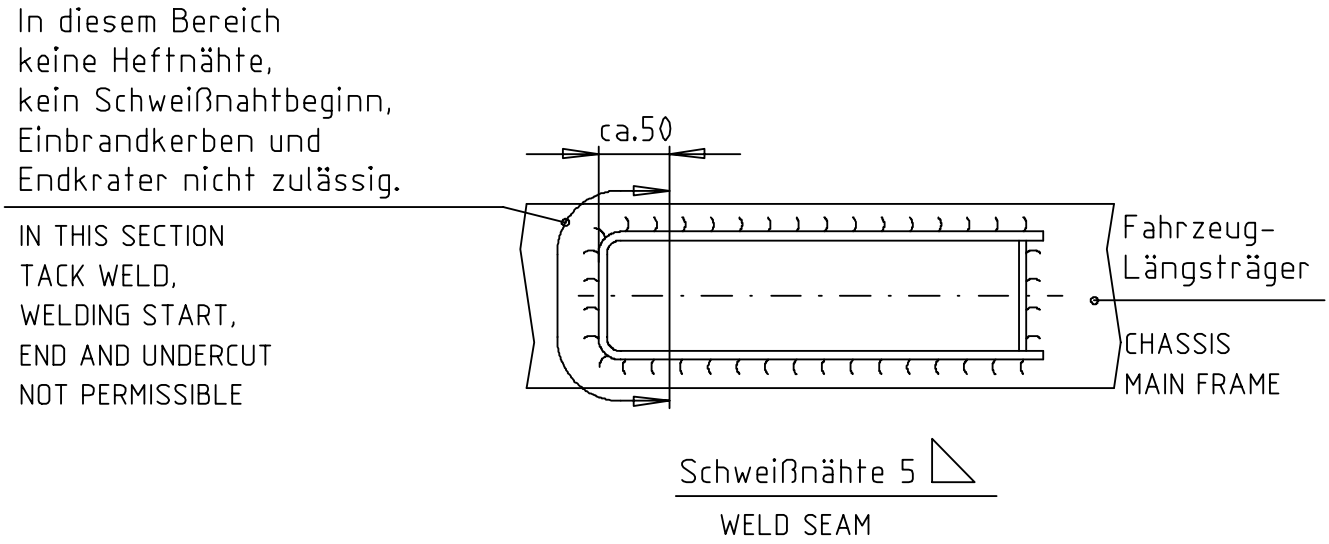
The vehicle frame must be reinforced so that it can absorb the forces to which it is exposed.

Important note

Ensure that the gap between the hanger bracket and chassis in the area “X” is kept small!

Dimension „H_1“	Dimension „L_1“
250	298
290	313
355	337





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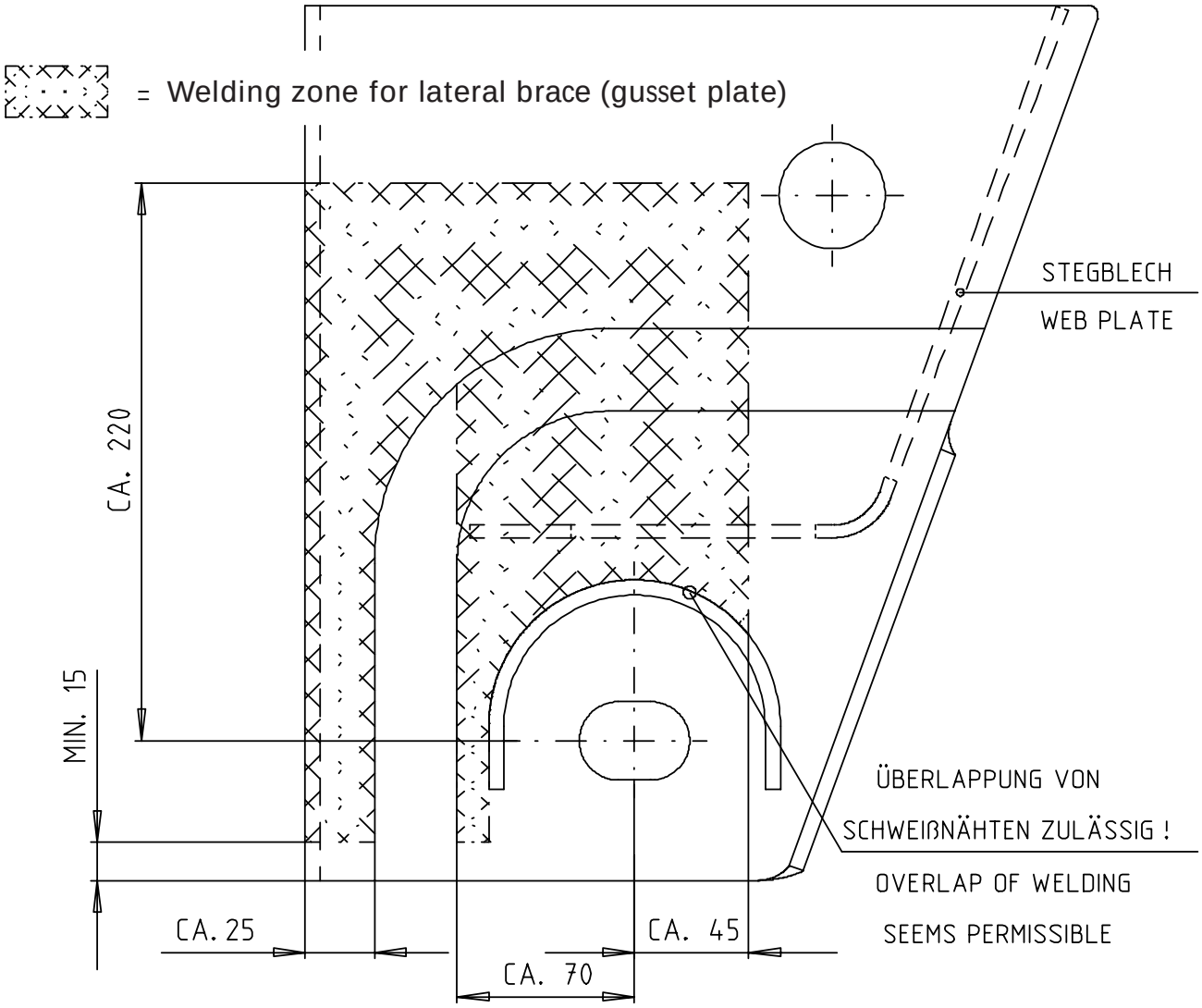
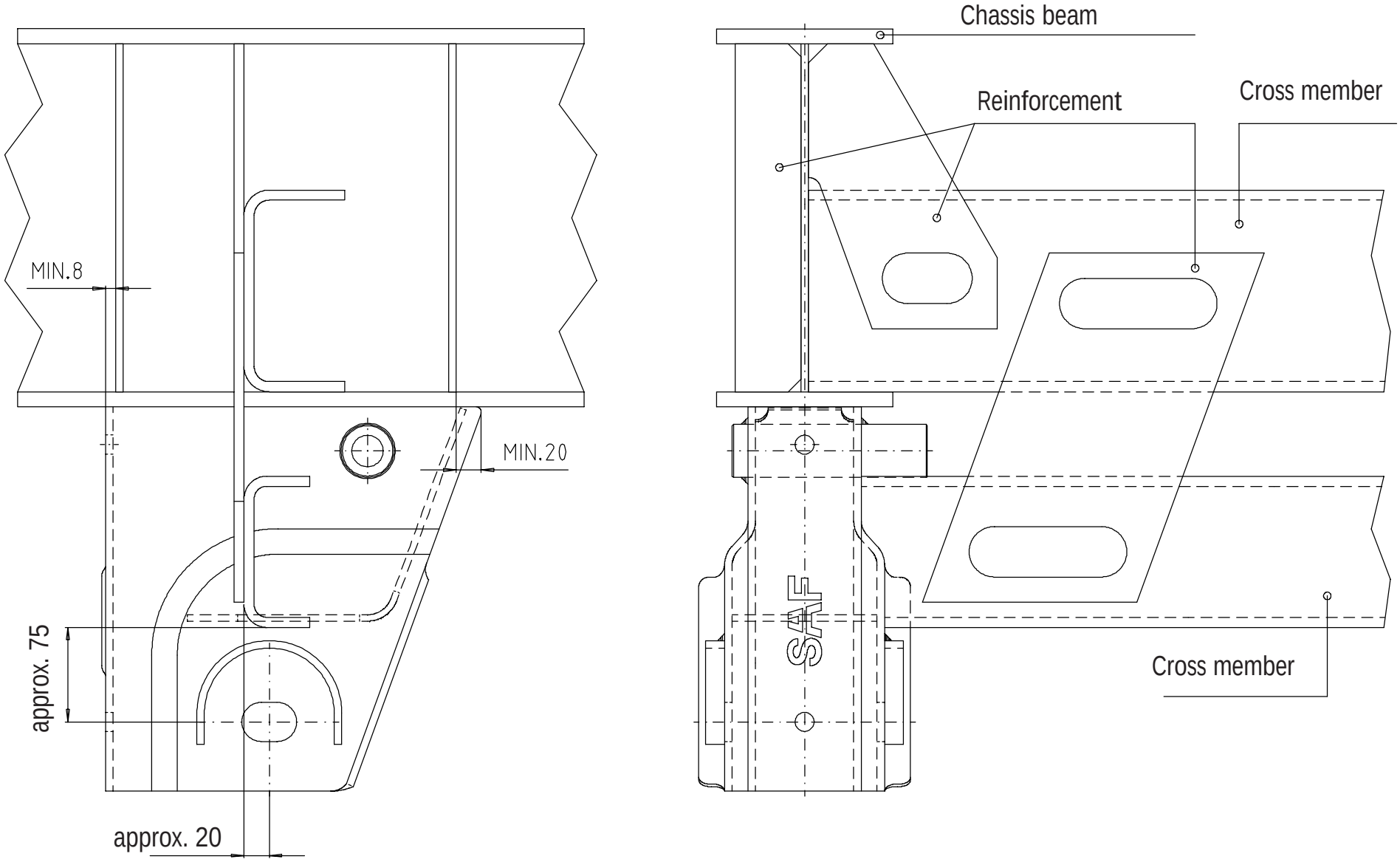
Installation instructions for lateral hanger bracket brace / adjustable spring bearing

The lateral brace (gusset plate) must be attached to the spring hanger as low as possible.

Overlapping of the gusset plate and inner brace plate is necessary to avoid any diaphragm effect.



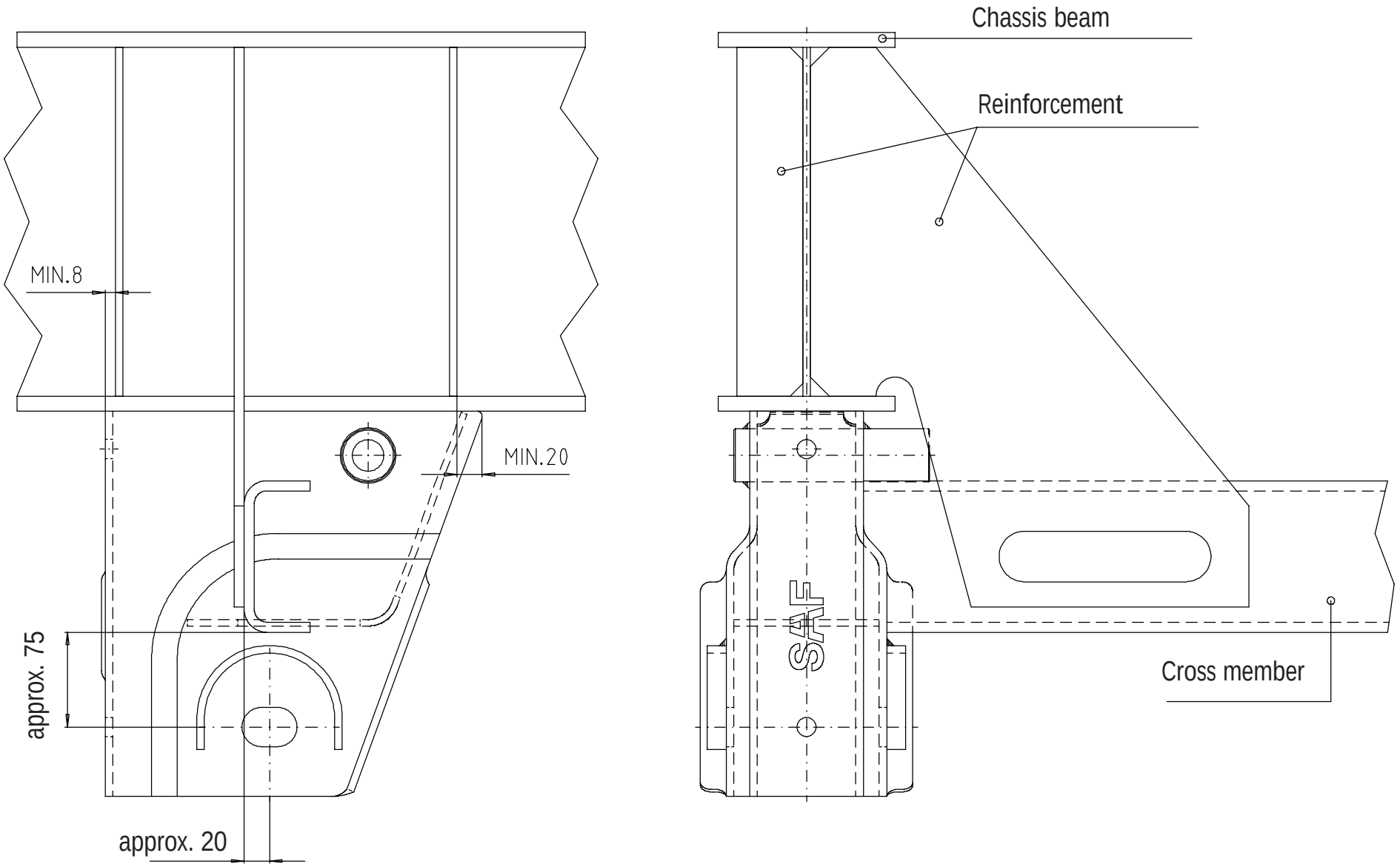
Bracing recommendations – Hanger bracket “steel”



Hanger bracket welding instructions see page 0 183 0003 00

The design and dimensioning of the hanger bracket reinforcement is the responsibility of the vehicle manufacturer, allowing for the type and operating conditions of the vehicle.

Bracing recommendations – Hanger bracket “steel”



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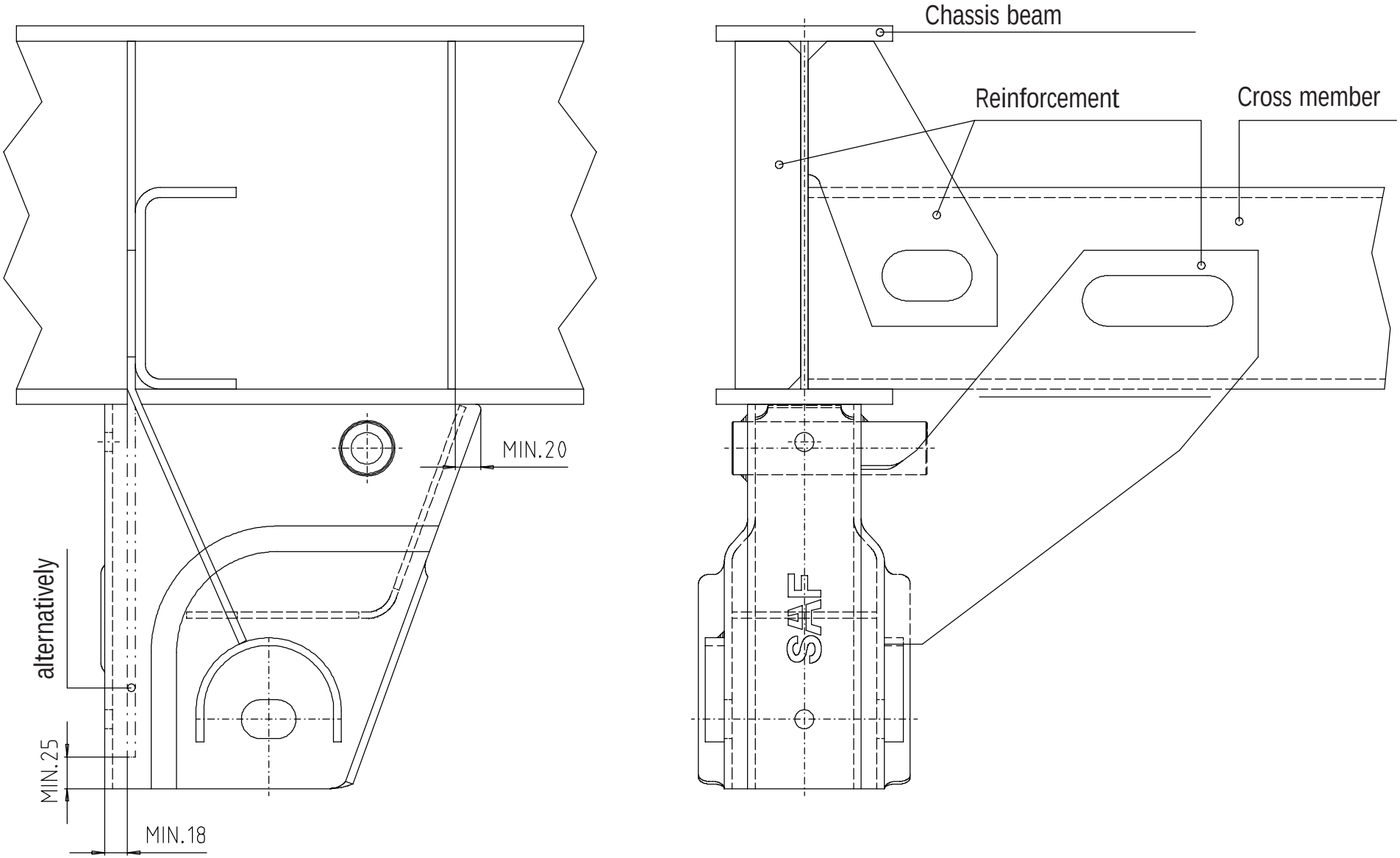

Hanger bracket welding instructions see page 0 183 0003 00

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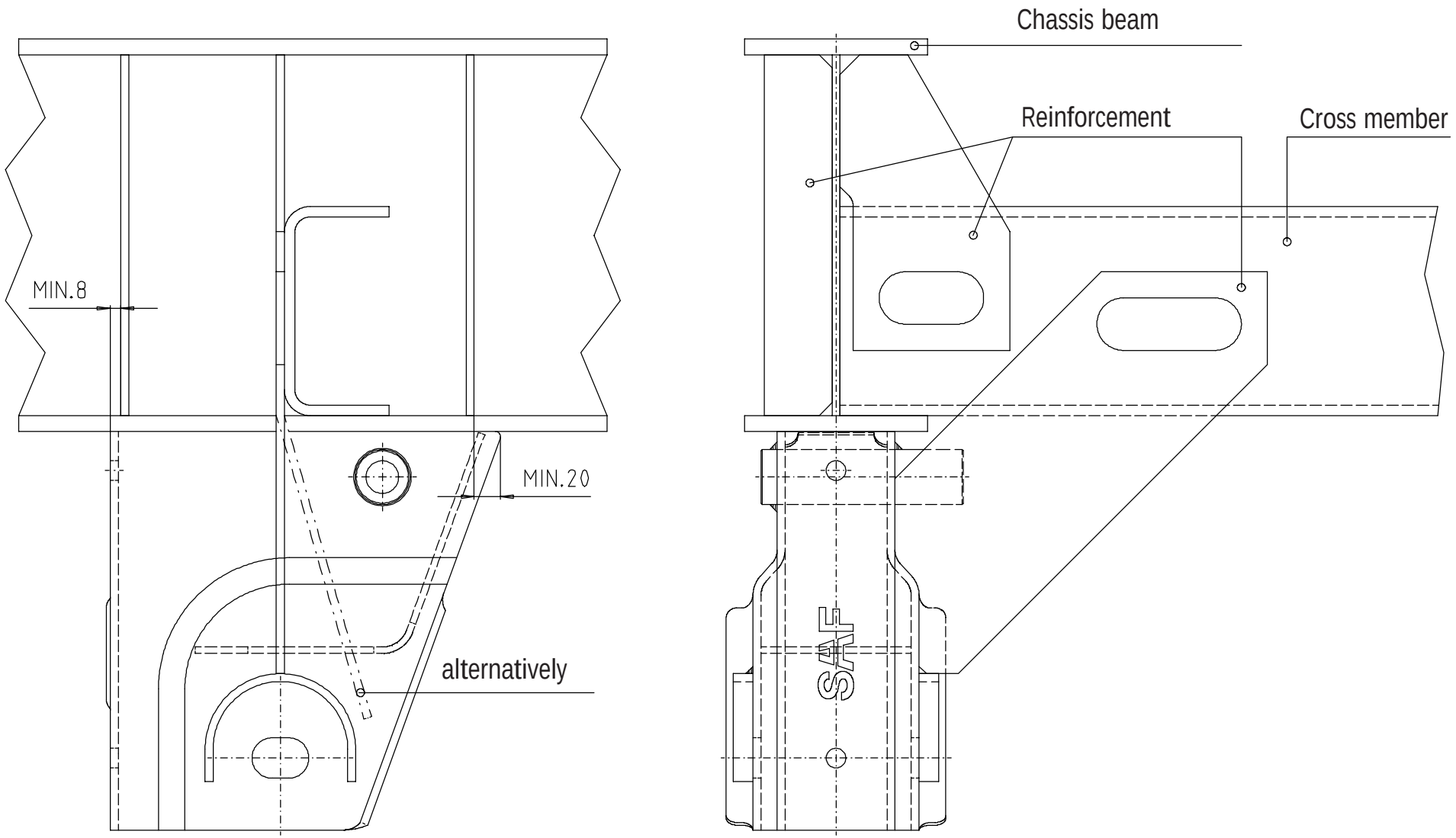
Bracing recommendations – Hanger bracket “steel”



Hanger bracket welding instructions see page 0 183 0003 00

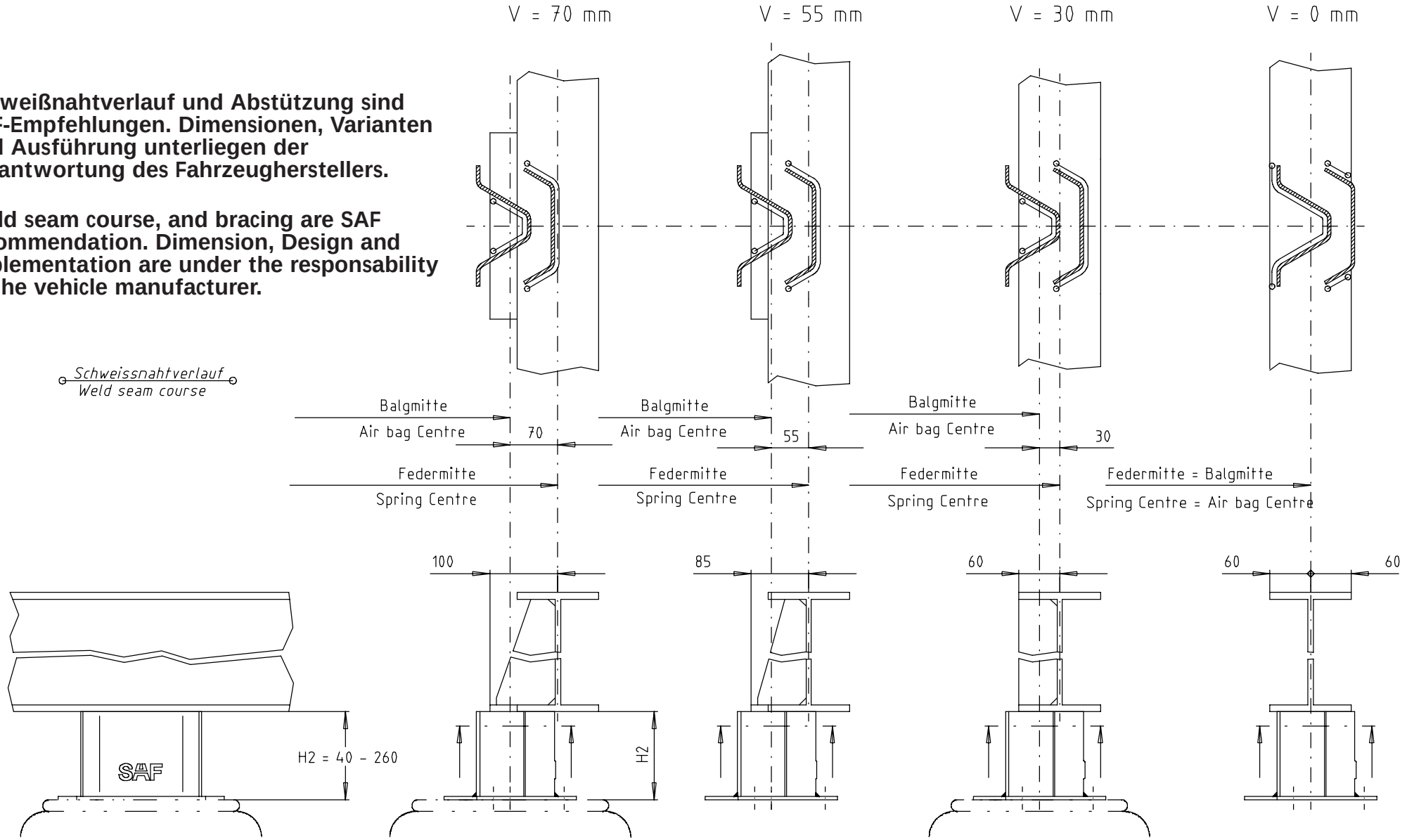
The design and dimensioning of the hanger bracket reinforcement is the responsibility of the vehicle manufacturer, allowing for the type and operating conditions of the vehicle.

Welding recommendation – Air bag bracket

SAF Standard Air Bag Offsets V

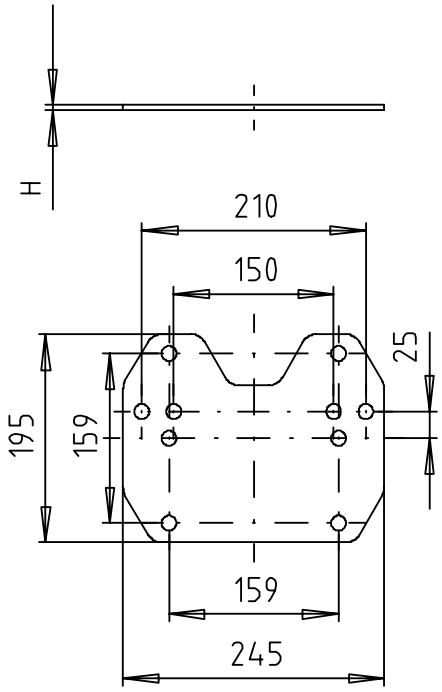
Schweißnahtverlauf und Abstützung sind SAF-Empfehlungen. Dimensionen, Varianten und Ausführung unterliegen der Verantwortung des Fahrzeugherstellers.

Weld seam course, and bracing are SAF recommendation. Dimension, Design and implementation are under the responsability of the vehicle manufacturer.

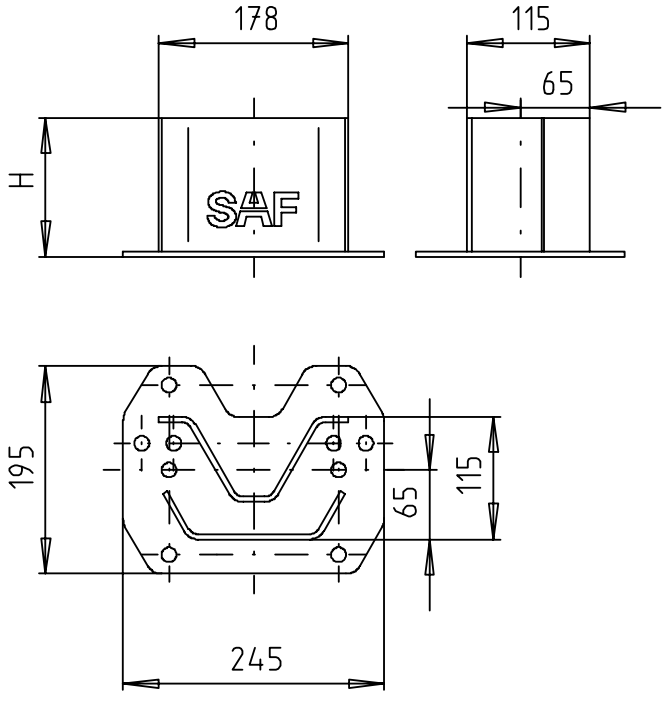


Mounting plate + Air Bag brackets

for SAF Air bags



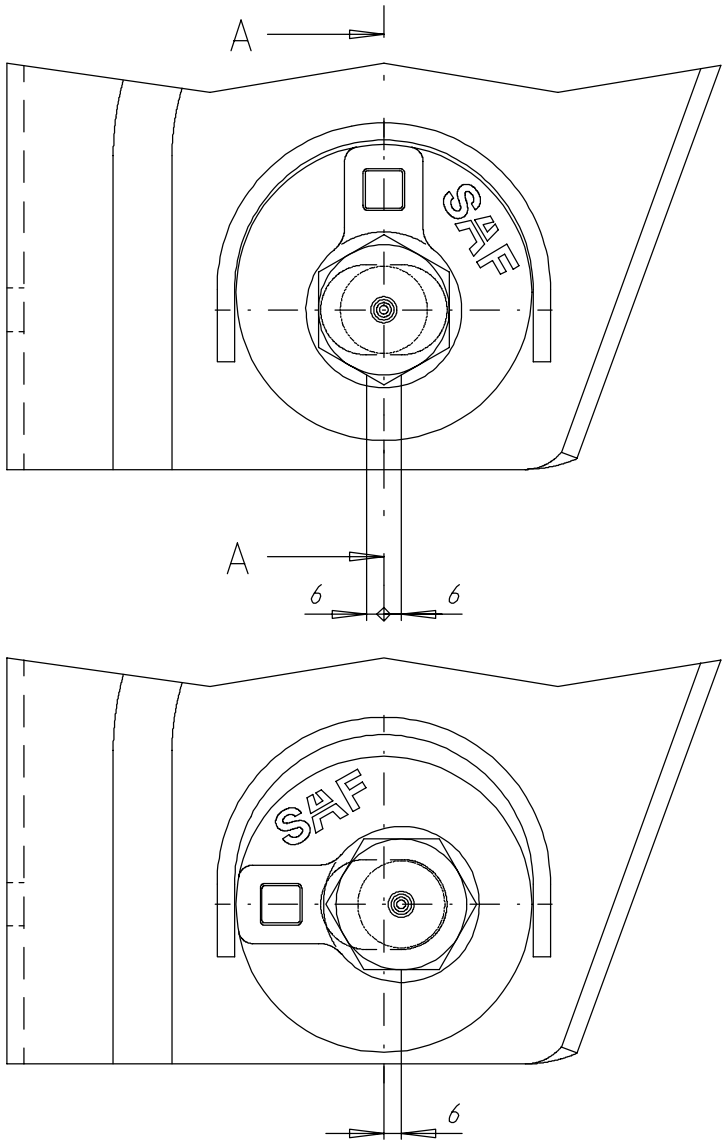
Designation	H (mm)	Order-No.:
Mounting plate “steel”	5	1 043 0261 01
Mounting plate “Alu”	8	1 043 0262 01

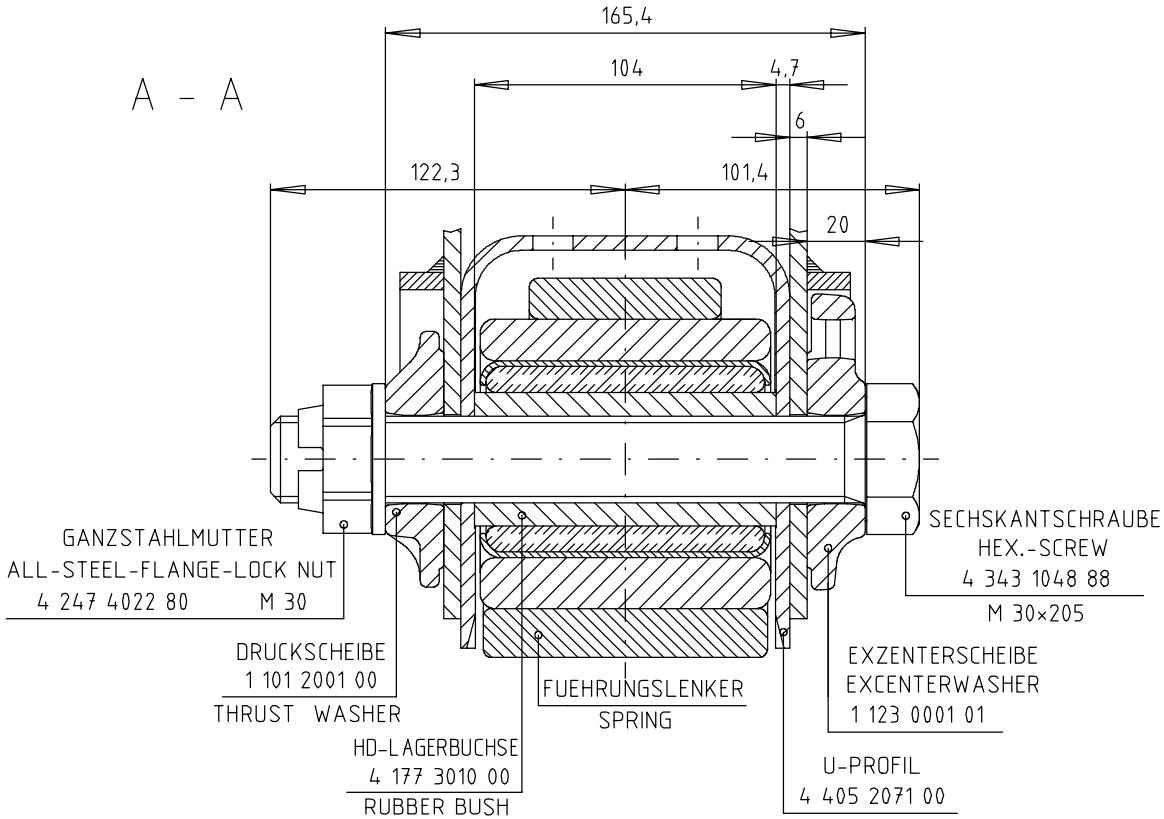


Designation	H (mm)	Order-No.:
Air bag bracket “steel”	40	2 237 0070 01
	70	2 237 0071 01
	100	2 237 0080 01
	130	2 237 0072 01
	160	2 237 0073 01
	210	2 237 0074 01
	260	2 237 0075 01

Adjustable spring bearing

steel hanger bracket / cross member



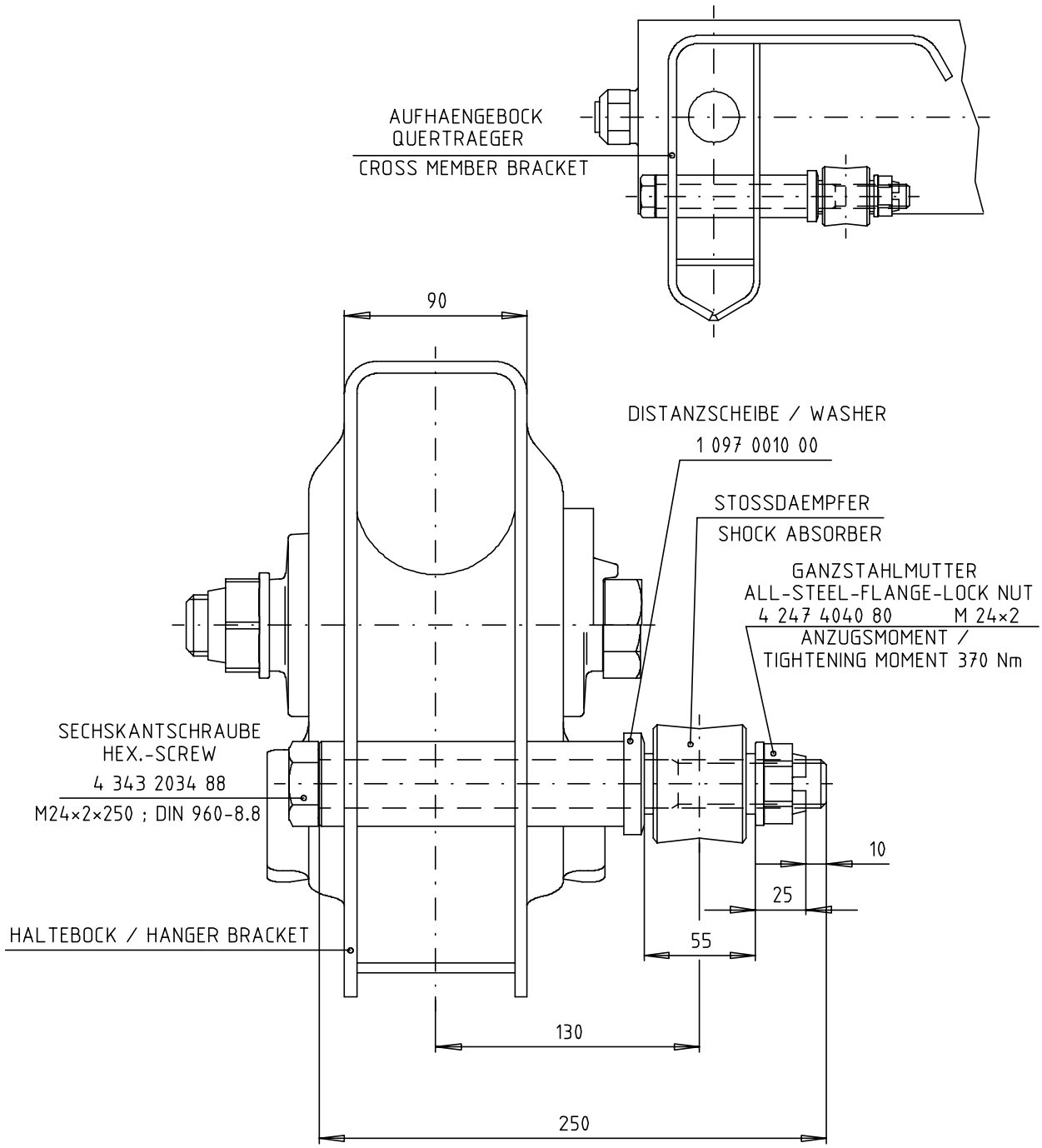


ANZUGSMOMENT : 400 Nm + 120°
TIGHTENING MOMENT : 400Nm + 120°

ANZUGSVERFAHREN SIEHE TD 0000400500
TIGHTENING PROCEDURE SEE TD 0000400500

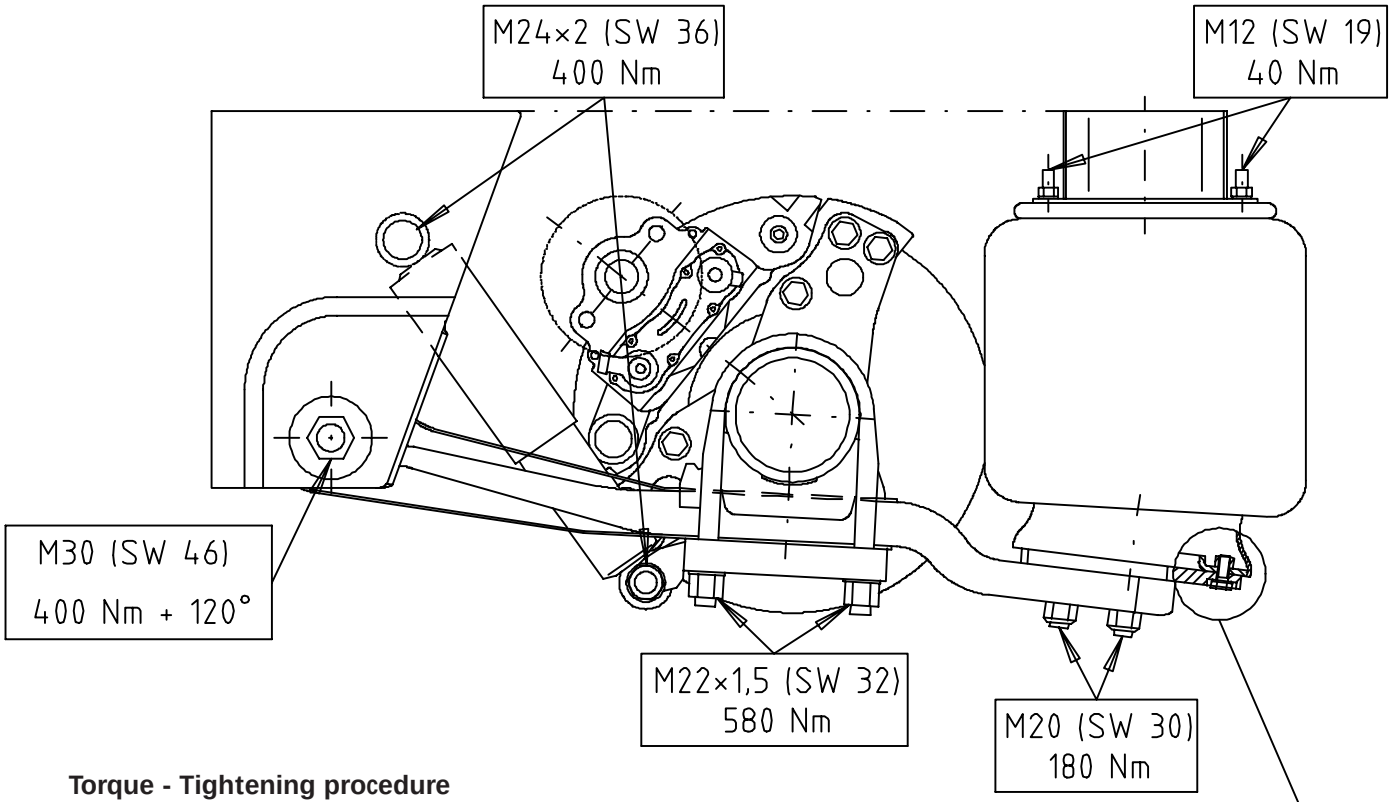
Shock absorber fixing - screwed version

steel hanger bracket / cross member bracket



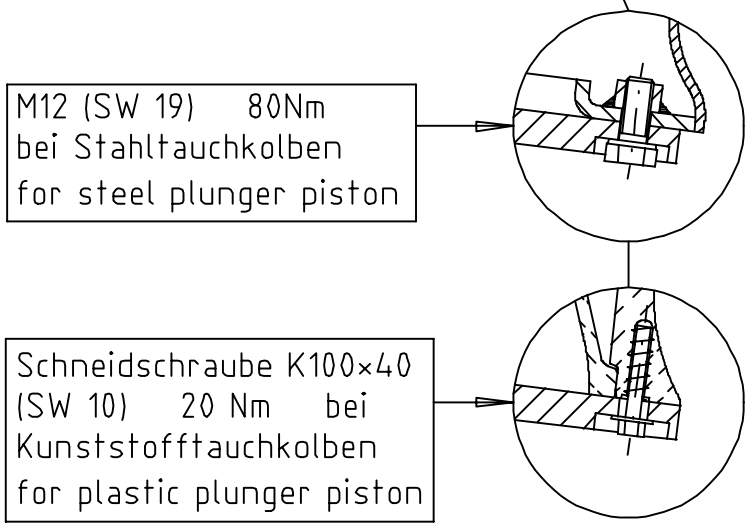
Tightening torques for suspension arms – shock absorbers – air bags

The max. coat thickness of any primer or paint must not exceed 45 µm on any contact surfaces of the suspension arm and shock absorber fixation!



Torque - Tightening procedure

1. Faces of the HD bearing bush must be free from oil and grease.
2. Install the functional suspension arm bearing parts as shown in the spare parts drawing.
3. Adjust the vehicle to ride height.
4. Pretighten the nuts M30/WAF46 to 400 Nm.
   Using a torque wrench.
5. Align the marks on the welded hub, hexagon head bolt and nut over one corner of the nut.
6. Tighten the nut a further 120° (2 nut corners), holding the bolt head to prevent the bolt from turning with the nut.
7. Perform a visual check. Correct the turn angle, if necessary.
8. Make marks with a counterpunch on the welded hub, hexagon head bolt and nut in a line after completing the tightening procedure.



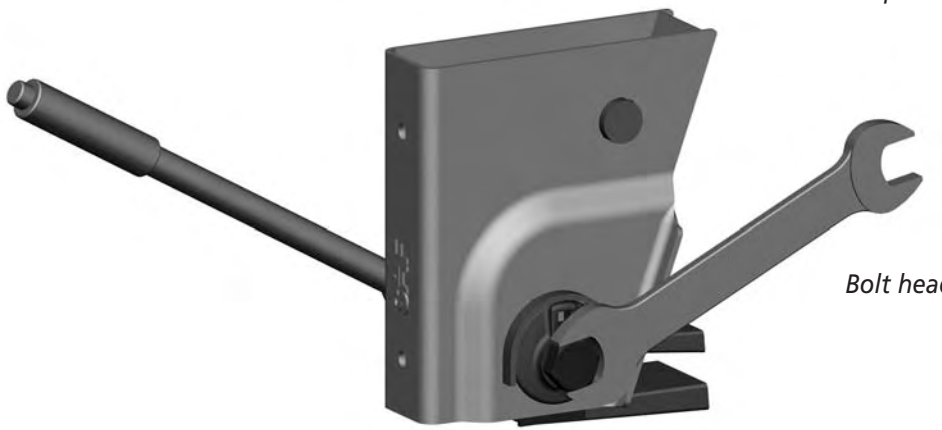
Attention!

- **Threads are not to be oiled or greased!**
- **Spring bearing for steel hanger brackets maintenance free**
- **spring bearing for aluminium hanger brackets to be checked after 500 km, further check after every 6000 km. Inspection torque 1200 Nm.**

R

Tightening instructions for adjustable pivot bolt

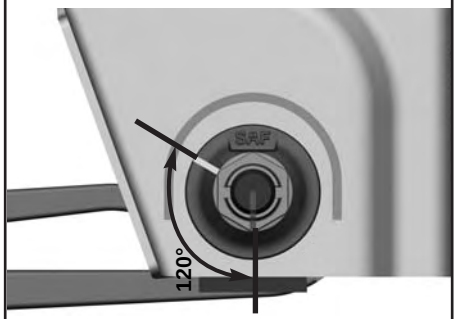
Attention:
Tightening always within the specified ride height range!
No paint residues between eccentric/thrust washer and hanger!



Bolt head always on the eccentric washer side.

Pretightening: 400 Nm
Use Torque wrench

Marking for angle tightening

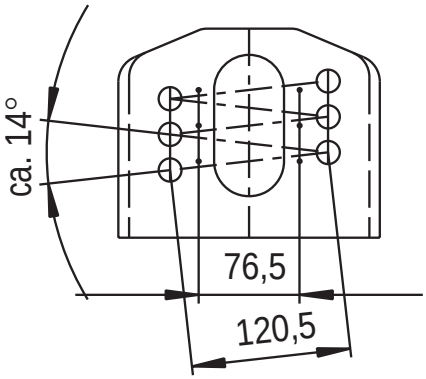


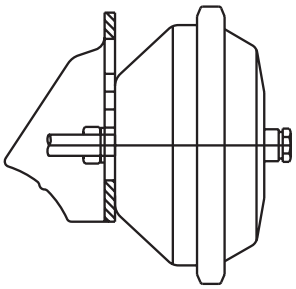
Angle tightening: 120°
Use impact wrench or extend lever to 2.5 m

Visual inspection

Mounting of diaphragm brake cylinders and spring-loaded brake cylinders on SAF axles

Connection of diaphragm cylinders to standard baseplates

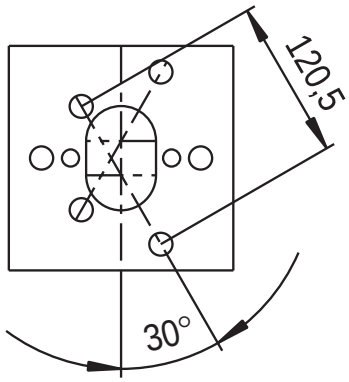


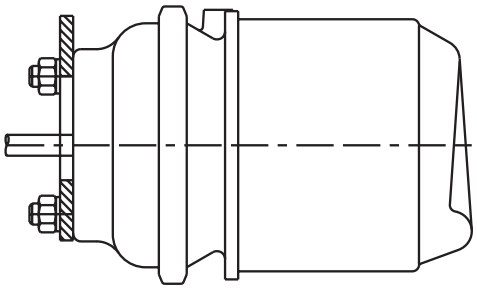


Position of the mounting bolts:

- Distance between hole lines 120.5 mm at an angle of approx. 7° from the horizontal
- Distance between hole lines 76.5 mm not required on axles with axle load > 6,000 kg

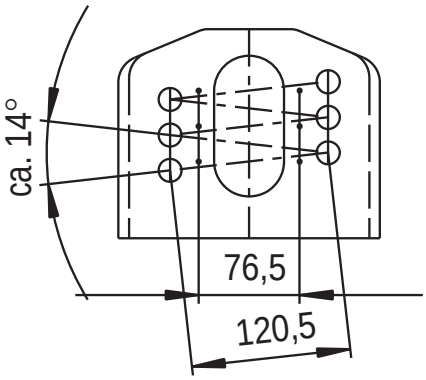
Connection of spring-loaded brake cylinders to special baseplates

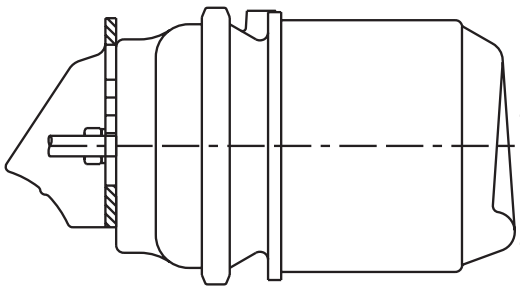




Position of the mounting bolts at an angle of 30° to the vertical!

Connection of spring-loaded brake cylinders to standard baseplates





Position of the mounting bolts:

- Distance between hole lines 120.5 mm at an angle of approx. 7° from the horizontal
- Distance between hole lines 76.5 mm not required on axles with axle load > 6,000 kg

The SAF baseplates are sufficiently well dimensioned to take spring-loaded brake cylinders where the manufacturer permits installation with the mounting bolts horizontal.
The flatness of the baseplates when new complies with the specifications of the brake cylinder manufacturers, a reinforcing plate to strengthen the baseplate is not necessary.

Observe the installation instructions of the brake cylinder manufacturers.
A major factor for the serviceability of the brake cylinders and baseplates is compliance with the specified tightening torques and regular checking of the torque.

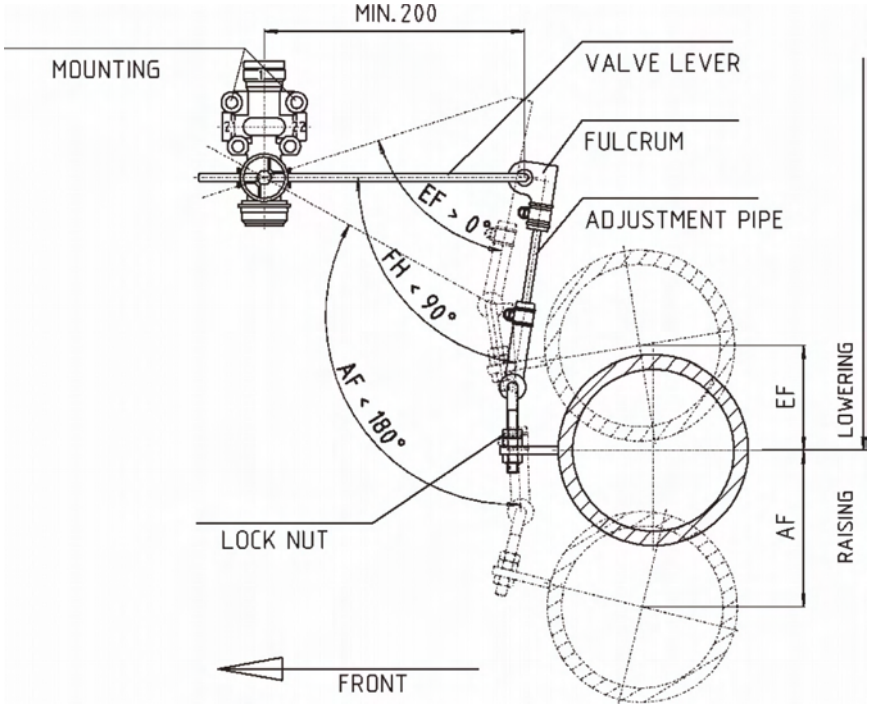
In conjunction with axle suspensions, please contact SAF to obtain approval for installation due to the larger space requirement of spring-loaded brake cylinders where approval is not automatically given.

Adjustment of the air suspension system ride height

Air suspension valve

As standard's air suspension axles and system require only one air suspension valve.
The air suspension valve controls the air bag pressure in relation to the trailer load in order to maintain a constant ride height in every load condition.
The air suspension valve is fastened to the trailer frame with screws and connected to the axle via the pivot joint (valve lever and adjustment pipe).On Tri-axle trailers, the height control valve is generally connected to the middle axle (normally in the middle of the axle), on Tandem-axle group on the rear axle, and Quad axle trailers recommended axle No.3. In special cases (e.g. large trailer tilt angle), the air suspension valve can be installed in the rear axle

For trailers with axle lifting system, the axle to which the system is connected depends on the axle to be lifted



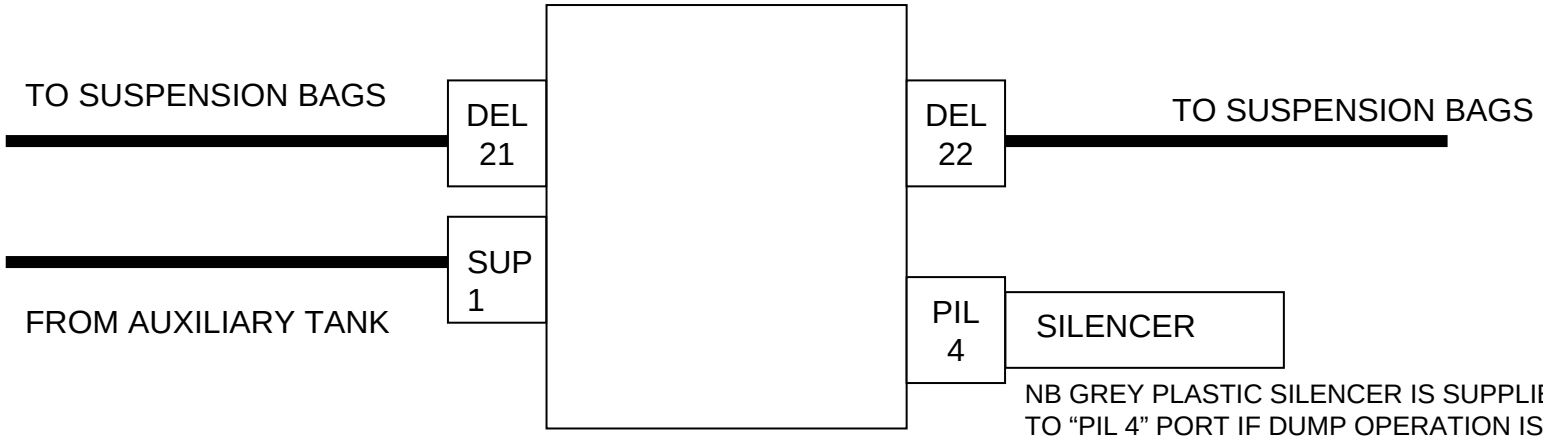
Installation

The valve lever should be at least 200 mm long and is horizontal when the trailer is in the driving position. As a function check, move the lever down slightly. Air must now escape via the venting cap into the atmosphere. If airflows into the air bags when the lever is pushed down, the valve lever has to be turned through 180°.For this the valve lever has to be disconnected. The ride height is set by adjusting the adjustment pipe in the fulcrums and by turning the lock nuts.
The adjustment must be carried out with the trailer standing on level ground. It can be carried out with the trailer either empty or loaded.

Note

For a final check, the air suspension system should be lowered to the suspension stop or raised to the limit (shock absorbers, stop ropes, air bag length).During this process, the specified angle between valve lever and adjustment pipe must not be exceeded in order that the valve lever does not move in the wrong direction.

HC464 HEIGHT CONTROL VALVE PIPING DIAGRAM



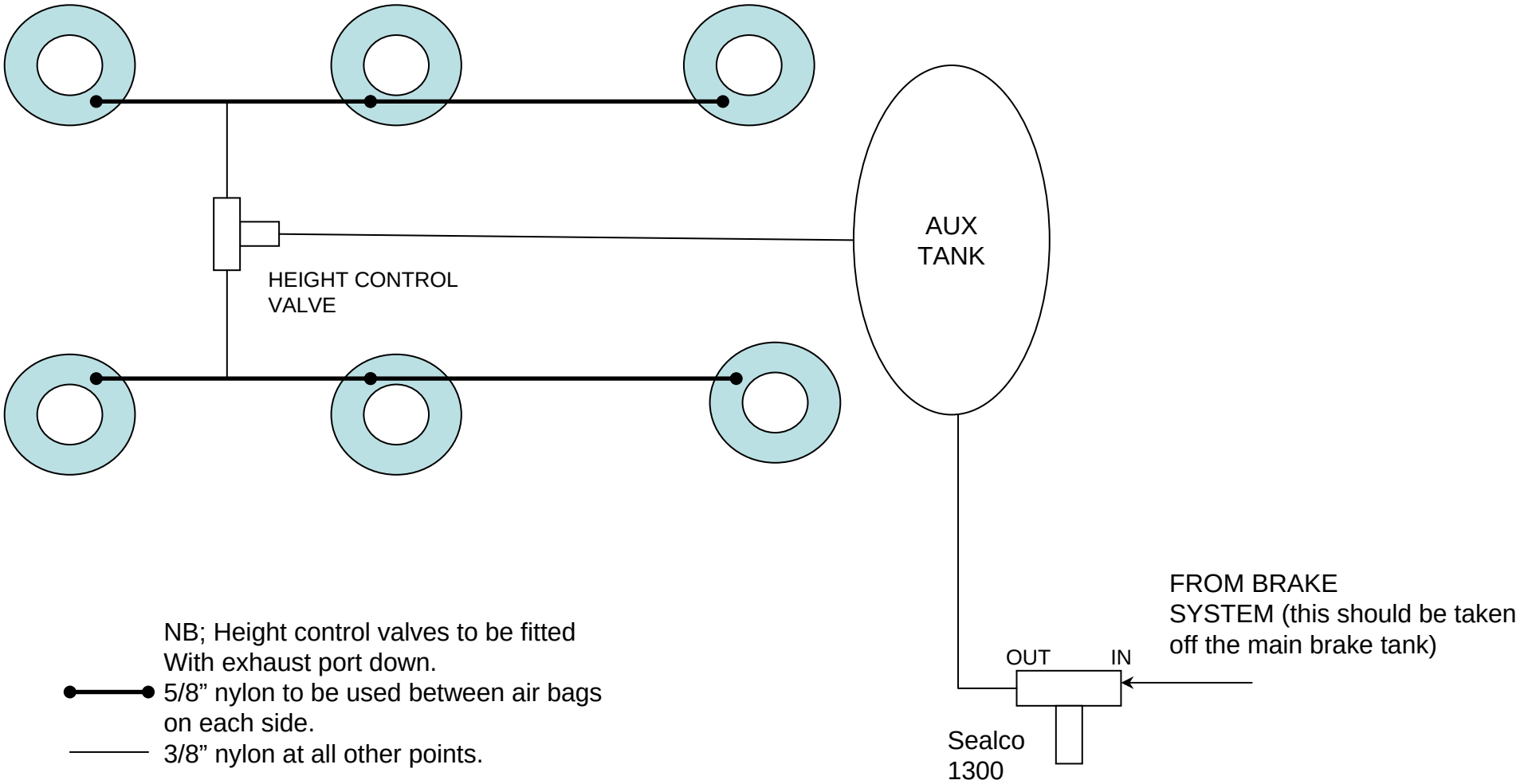
NB GREY PLASTIC SILENCER IS SUPPLIED AND TO BE FITTED TO “PIL 4” PORT IF DUMP OPERATION IS NOT NEEDED.
IF DUMP OPERATION IS REQUIRED, CONNECT DUMP SWITCH INTO “PIL 4”.

PORT 21 IS TO BE CONNECTED TO THE AIR BAGS ON ONE SIDE OF THE TRAILER AND PORT 22 TO THE BAGS ON THE OTHER SIDE. IT DOES NOT MATTER WHICH PORT GOES TO WHICH SIDE.

Transpecs
QUALITY ON THE MOVE

RGHC464

AIR SUSPENSION PIPING 3 AXLE SEMI

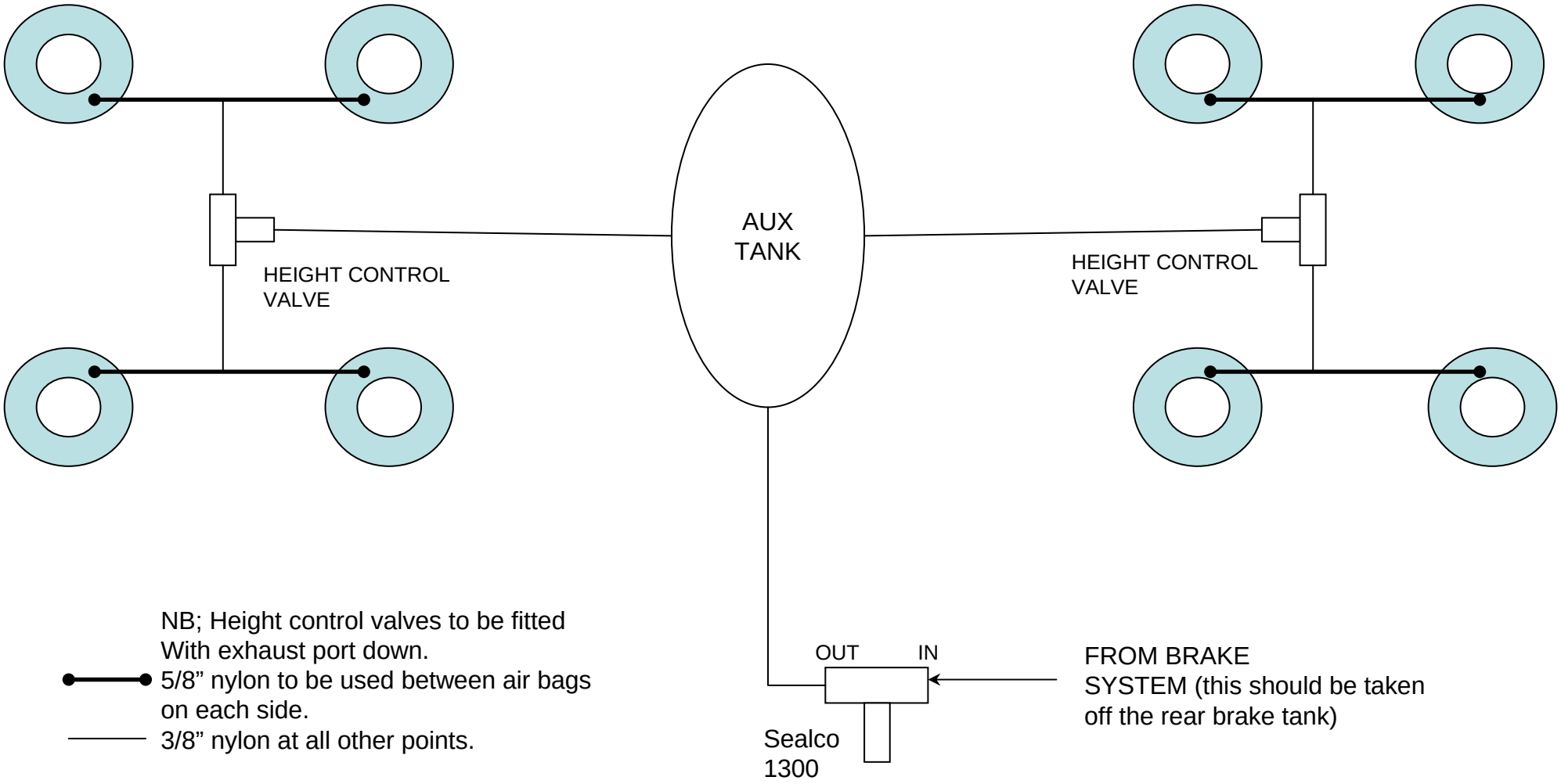


NB; Height control valves to be fitted
With exhaust port down.

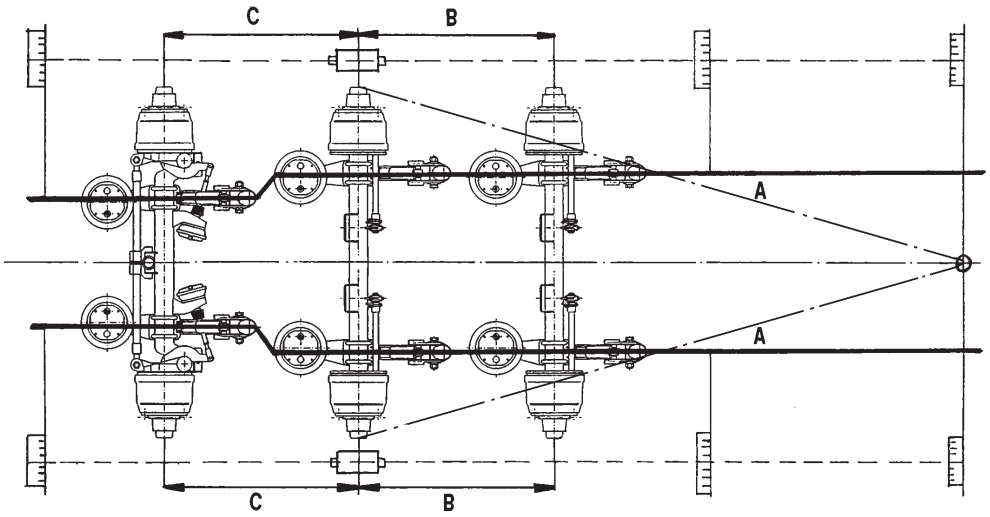
5/8” nylon to be used between air bags on each side.

3/8” nylon at all other points.

AIR SUSPENSION PIPING

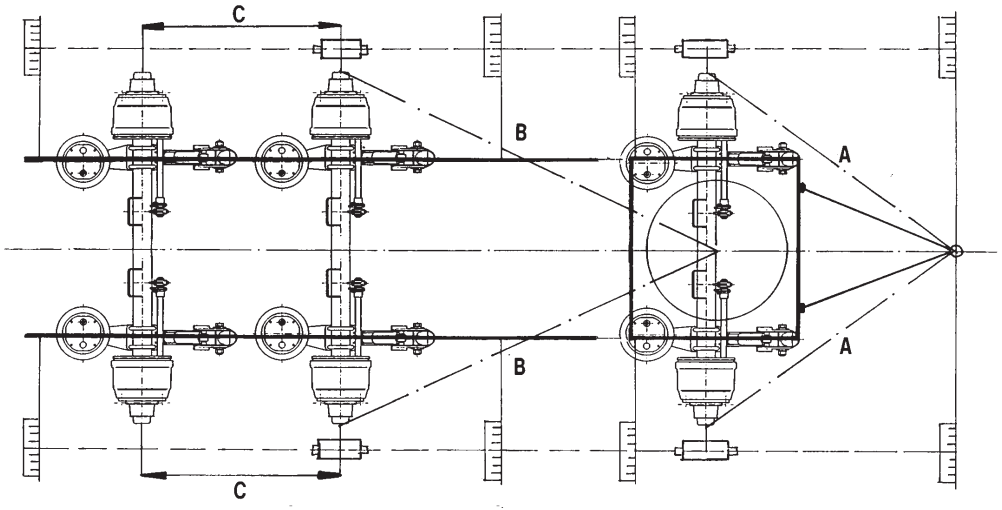


For axle alignment, the air suspension must be adjusted to the ride height specified by SAF.



Semi-trailers with self steering axle
Distance A, B, C max. permissible deviation 1.0 mm
Toe setting ± 12' = ± 3.0 mm/m Camber ± 12'
Values apply to unloaded vehicle.
Air suspension must be in Ride Height for axle alignment check and re-adjustment works.

In the case of self steering axles the stabilizing chambers must be pressurised to 2.0 bar.
Total toe-in 4.0 mm/m.



Trailer
Distance A, B, C max. permissible deviation 1.0 mm
Toe setting ± 12' = ± 3.0 mm/m Camber ± 12'
Values apply to unloaded vehicle.
Air suspension must be in Ride Height for axle alignment check and re-adjustment works.

The max. permissible deviation values for axle aligment are according to the tyre manufacture specifications.
To avoid excessive tyre wear we recommend having the alignment checked at regular intervals.
Deviations may be caused by:

- loose U-bolts
- spring guide bearing wear
- deformation of axle assembly components due to improper use

The relevant reference point for alignment is the hub cap centre or stub axle centre.

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