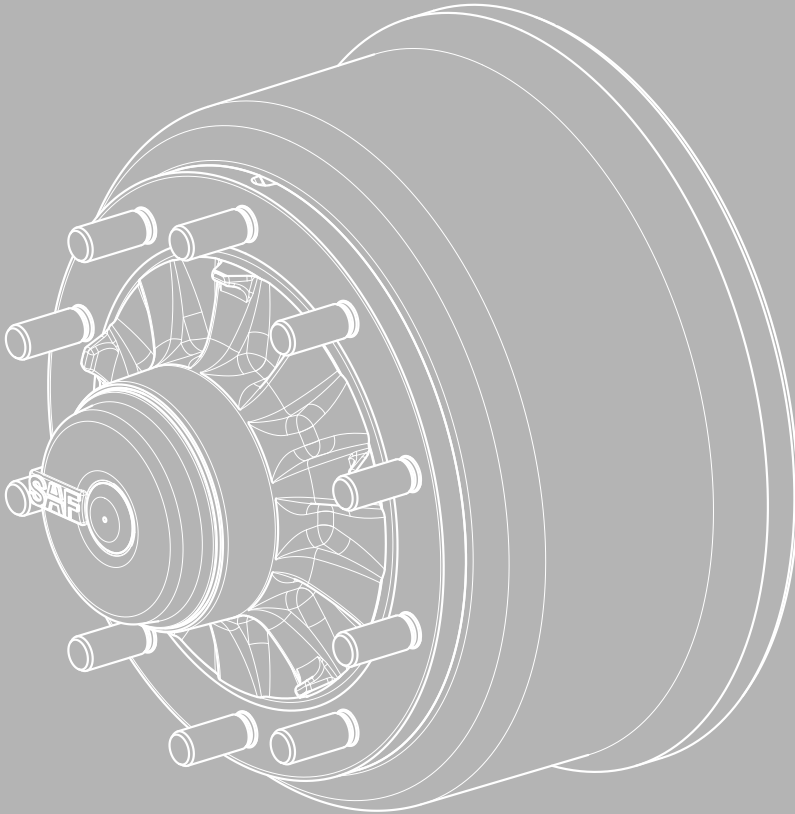


Operating manual

Air suspension systems and axles with drum brake
Valid for axle types S / Z



1.1 Dear customer,

This owner's manual will help you to familiarise yourself with the SAF-HOLLAND product and use it for its proper use.

The owner's manual contains important instructions on how to operate the product safely, properly and economically. Adherence to it helps prevent hazards, faults and reduce down times and increase the reliability and service life of the product. Read the owner's manual through carefully and follow the instructions accurately.

It must be ensured that all personnel with responsibility for performing tasks on the vehicle are able to consult the owner's manual at all times.

The owner's manual must be kept in the glove compartment in the driver's cabin of the towing vehicle at all times.

1.1 Copyright

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SAF-HOLLAND GmbH Hauptstrasse 26, 63856 Bessenbach, Germany

This owner's manual contains text and drawings that without the express permission of the manufacturer cannot be either fully or partly

- duplicated,
- distributed or
- in any other way disclosed.

Any breach or infringement will result in liability for damages.

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1 Axle identification

1.1 Identifying the axle

Please have the exact type designation of the product ready when ordering spare parts.

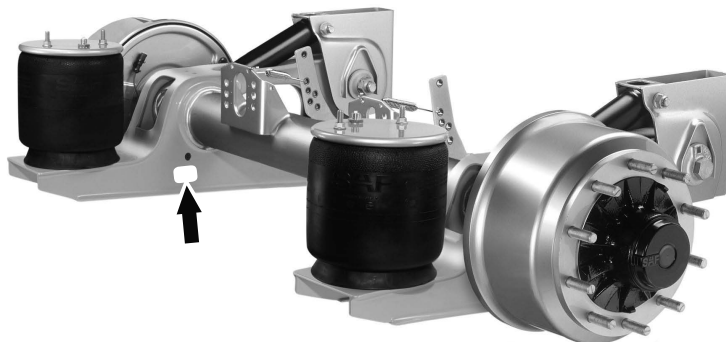
The 11-digit number (serial No.) can be found on the type plate.

SAF-HOLLAND GMBH D-63856 BESSENBACH · GERMANY		
Version S9-4218	Serial No. 11 09 156 0021	
Type SNK4218-115	Ident No. 147 84 60 2 58 0	
Test Report TDB0381	Perm. axle cap. stat. 9000 kg	
Made in Germany	V max. 105 km/h	
AN 3335528		SN 11091560020

AS-0028

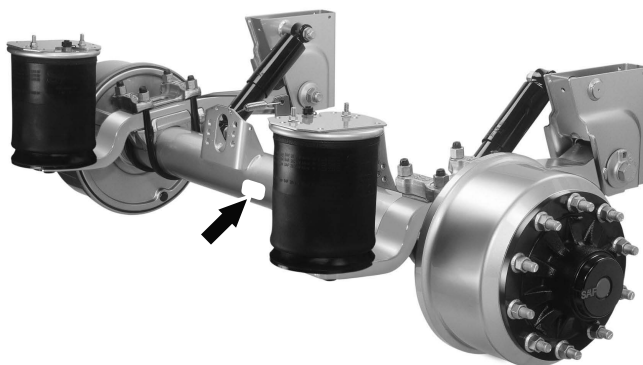
Fig. 1 · · Type plate

1.2 Position of the type plate



AS-0016

Fig. 2 · Position of the type plate, air suspension system type INTRA



AS-0017

Fig. 3 · Position of the type plate, air suspension system type MODUL and floating axles

1.3 Identification in case of missing type plate

The axle's serial No. is embossed on the axle journal, on the right-hand side, viewed in the direction of travel (fig. 4, item 1).

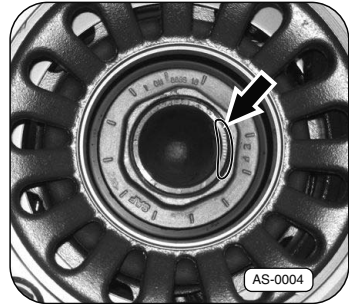


Fig. 4 · Right-hand axle stub end:
Serial No.

The data for ordering spare parts from SAF-HOLLAND can be entered in the following field.

	Ident No.	Serial No.
1. axle		
2. axle		
3. axle		
4. axle		
5. axle		

2 Ordering spare parts

When ordering original spare parts from SAF-HOLLAND make sure that you pay attention to the assembly groups of the respective product.

Reproduction parts have a negative effect on the function of the product, have a shorter lifetime and cause risks and hazards, which SAF-HOLLAND cannot evaluate. They also increase the maintenance requirement.

For technical consultancy for SAF-HOLLAND products and the provision of parts, a tight service network of SAF-HOLLAND partner companies are on hand to help you (see the back page or visit us online at **www.safholland.com**).

For further instructions on identifying spare parts refer to our homepage **www.safholland.com** in the "After-market" section.

Updates are published on the internet at www.safholland.com as necessary.

3 General information

3.1 Liability

SAF-HOLLAND's "General Terms and Conditions" apply SAF-HOLLAND.

SAF-HOLLAND does not recognise any liability claims for personal injury or material damage which are caused by one or more of the following causes:

- Improper use of the product Page 7,
- Failure to adhere to the operating manual and the safety instructions contained in it.
- Arbitrary constructional changes to the product.
- Insufficient maintenance of parts which are subject to wear Page 9,
- Improper maintenance work and maintenance work that is not performed in good time Page 9,
- the use of any spare parts other than original parts from SAF-HOLLAND Ersatzteilbestellung.ditamap,
- the use of damaged parts,
- disasters due to external influences or acts of God.

3.2 Warranty and general terms and conditions of business

For information on our current warranties and general terms and conditions, refer to the "Sales" section of our homepage at www.safholland.com .

3.3 Environmental protection

All components and consumables used for maintenance and care must be disposed of in an environmentally friendly manner.

Recyclable components must be cleaned of oil and lubricants and recycled. When doing so, you must adhere to the disposal instructions for the respective consumables and the valid national and regional regulations.

4 Safety

4.1 Target group

The operating manual for the product is restricted exclusively to use of the product by the user and personnel authorised and instructed by the user.

The user must ensure that the personnel authorised by him receive regular instruction on the content of the operating manual and in particular the safety instructions it contains.

4.2 Proper use

The product has been constructed using state-of-the-art technology and in accordance with the recognised rules of technical safety. However, its use may result in hazards for the operator or third parts or damage to the device or other objects of material value. The product must only be used a steering axle or fixed axle.

Proper use also includes:

- Adherence to the operating manual and implementation of the working steps stipulated in the operating manual.
- Adherence to the performance limits Fig. 1 of the product.
- Adherence to all maintenance and care instructions and additional inspections.
- The use of the listed consumables Page 9 and their disposal in an environmentally friendly manner Page 6.

Operationally safe function can only be guaranteed if all the instructions, adjustments and performance limits for the product are adhered to.

4.3 Safety instructions and symbols used in the operating manual

The following symbols are used to denote particularly important information and sections of the text. Make sure that they are always read and adhered to before working with the product.



Danger!

This safety instruction with the signal word warns of a possible safety risk or serious and fatal injuries.

**Careful!**

This safety instruction with the signal word warns of a possible damage to the product.

**Note:**

Marking for special user tips and other particularly useful and important information for efficient work and economical use.

4.4 Marking used for sections of text

- Marking for instructions for actions and information in safety instructions
- 1., 2., 3., ... Marking used for working steps

4.5 General safety instructions

It is imperative to adhere to the following safety instructions for your SAF-HOLLAND axles and suspensions in order to comply with operational safety and traffic safety:

Danger!

Risk of serious traffic accidents which may lead to serious or fatal injuries.

Operation

- You must make sure that the brakes do not overheat, e.g. due to continuous use. Overheating on drum brakes can lead to a dangerous reduction of the braking power. On disc brakes overheating can cause damage to the surrounding components - in particular the wheel bearing. This can be seriously detrimental to safety, e.g. can cause the wheel bearings to fail.
- In case of overheating the parking brake must not be applied until the brake has cooled down. The brake discs and brake drums may otherwise become damaged as a result of different levels of tension arising during the cooling process.



Danger!

- When loading and unloading the provided support devices must be used in order to prevent damage to the axle.
- Adhere to the trailer manufacturer's recommendations for OFF ROAD use of the installed axles and suspensions. The SAF-HOLLAND definition OFF ROAD refers to driving on nontarmacked/concreted stretches, e.g. gravel roads, countryside and forest roads, on construction sites and in gravel pits.

The operation of SAF-HOLLAND axles and suspensions in OFF ROAD use which are not conceived for this purpose can cause damage and thus compromise traffic safety.

Care

- 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.

General safety instructions

- You must only use the wheel rims and tyre sizes specified by the trailer manufacturer. The tyres must always have the stipulated air pressure.

en

5 Maintenance Procedures

5.1 General maintenance instructions

Danger!

Risk of serious traffic accidents which may lead to serious or fatal injuries.

- Maintenance tasks must only be carried out by authorised specialist workshops and by staff with the appropriate training.

**Danger!**

- The wheel nuts have to be re-tightened with the stipulated tightening torque values, initially after 50 km and then after 150 km.
- At the latest 5,000 km after commissioning the semi-trailer/trailer, the brake systems on the tractor and the semi-trailer/trailer must be adjusted to each other by way of a tractor/trailer brake synchronisation in order to ensure that the brakes perform evenly and the brake pads wear evenly. Tractor/trailer brake synchronisations should be performed by specialist brake workshops. On vehicles with EBS a balancing inspection has to be carried out.
- All components which are not in a serviceable condition must be replaced.
- The general safety inspection must be performed as per legal regulations.
- Daily inspection of the vehicle for traffic safety before starting the journey is part of the duty of the driver.

SAF-HOLLAND axles and suspensions require continuous care, inspections and maintenance so that natural wear and faults can be detected in good time, and in order to maintain operational and traffic safety.

SAF-HOLLAND recommends that you carry out the inspections and maintenance tasks described in the chapter "Maintenance". In case of repairs you must always follow the SAF-HOLLAND repair instructions and directions.

5.2 Before each journey

Danger!**Risk of serious traffic accidents which may lead to serious or fatal injuries.**

- The maximum permitted axle load must not be exceeded and the loaded goods must be positioned with an even distribution.



Danger!

- For vehicles with an air suspension system, you must ensure that the airbags are fully inflated with air. An incomplete supply of air can cause damage to the axles, chassis, frame and attachment and compromise traffic safety.
1. Carry out general visual inspections on the tyres and all parts of the chassis to make sure they are firmly fastened and check for wear, leaks, corrosion and damage.
 2. Carry out general visual checks on the brakes to make sure they are firmly fastened and to check for wear, leaks, corrosion and damage.
 3. Remove any coarse soiling before starting the journey in order to prevent damage to the following traffic.

5.3 Service schedule

Danger!

Risk of serious traffic accidents which may lead to serious or fatal injuries.

- Maintenance tasks must only be carried out by authorised specialist workshops and by staff with the appropriate training.
- In the case of vehicles with extreme operating conditions, e.g. OFF ROAD or multiple-shift operation, the maintenance intervals have to be shortened from 12 months/150,000 km to 6 months/75,000 km.

Maintenance work on the axle

	Initially after 1 month or 5,000 km	According to the vehicle manufacturer's information	Every 3 months or 30,000 km	Every 6 months or 75,000 km	Every 12 months or 150,000 km
Check the wheel bearing unit for leaking grease					X
Check and, if necessary, adjust Page 19.		X			
On aluminium and stainless steel hanger brackets check the screw connections, pivot bolts and shock absorbers with the stipulated inspection torque Page 15. Initially after 500 km.				X	
On MODUL suspensions the U-bolts must be tested with the respective test torque values Page 15.					X
Test the screw connection for the air bags with the stipulated inspection torque Page 15.					X
For steering axles lubricate the bearing points of the king pin bolts Page 17.	X			X	
Lubricating the camshaft Page 17.					X
Check the slack adjuster					X

	Initially after 1 month or 5,000 km	According to the vehicle manufacturer's information	Every 3 months or 30,000 km	Every 6 months or 75,000 km	Every 12 months or 150,000 km
Check the wear limits on the brake lining and drum Page 13.	X		X		
General safety inspection as per legal regulations.					

5.4 Wear check on the thickness of the brake lining



Danger!

Risk of accidents due to the vehicle rolling away.

- Park the vehicle on firm, level ground.
- Lock the vehicle so that it cannot roll away.
- The test must be performed with the service brake and parking brake released.

On the slack adjuster the camshaft has a cut-in nut and an attached indicator for visual inspection of the state of wear on the brake pads.

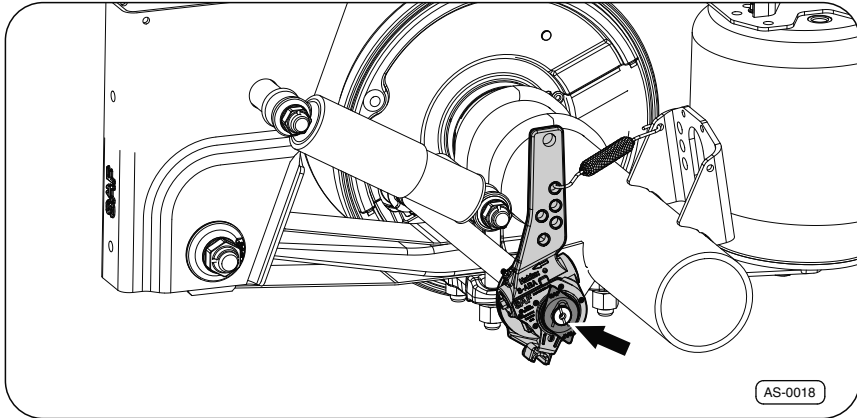


Fig. 5 · Installation position of the wear indicator



Danger!

Risk of serious traffic accidents due to the loss of traffic safety and operational safety which may lead to serious or fatal injuries.

- You must ensure that the brakes are fully functional.
- The wear inspection must be performed for each wheel and on each axle.
- Once the wear limits have been reached, the brake lining must be replaced immediately by an authorised specialist workshop and by personnel with the appropriate training.

New

Wear indicator for brake lining thickness in new condition.

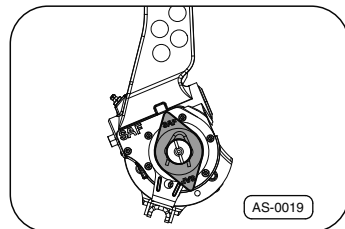


Fig. 6 · Wear indicator, new condition

Worn

Wear indicator for brake pad thickness in worn condition.

If the wear indicator has reached a horizontal position, an inspection of the thickness of the brake lining has to be performed by a specialist workshop.

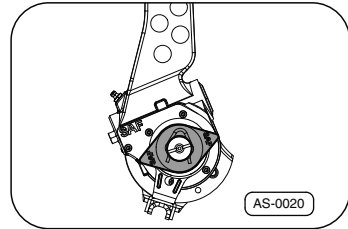


Fig. 7 · Wear indicator, worn condition

5.5 Inspection torque



Danger!

Risk of accidents due to loose screw connections.

- Threads must not be oiled or greased.
- Do not loosen screws.
- Check the inspection torque with a pre-set torque wrench. If the stipulated inspection torque is not achieved, an authorised specialist workshop with appropriately qualified staff must be visited.

SAF INTRA

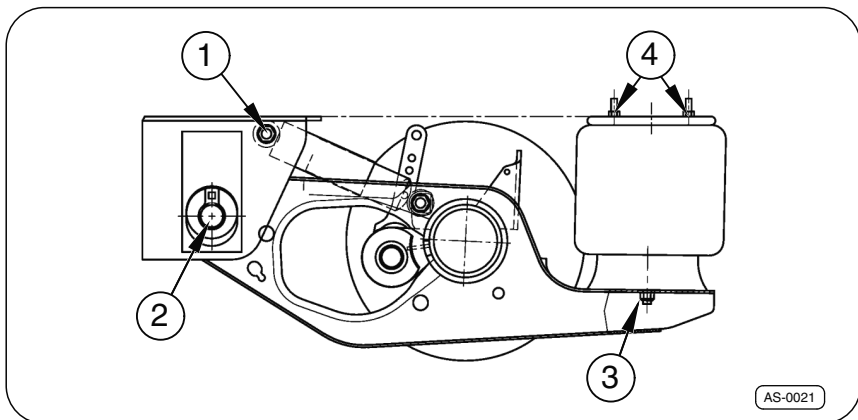


Fig. 8 · SAF INTRA inspection torque

Item	Screw connection	Inspection torque (Nm)	Width across flats (WAF)
-1-	M20x1.5	600	30
-2-	M30	1200	46
-3-	M16	80	24
-4-	M12	40	19

SAF MODUL

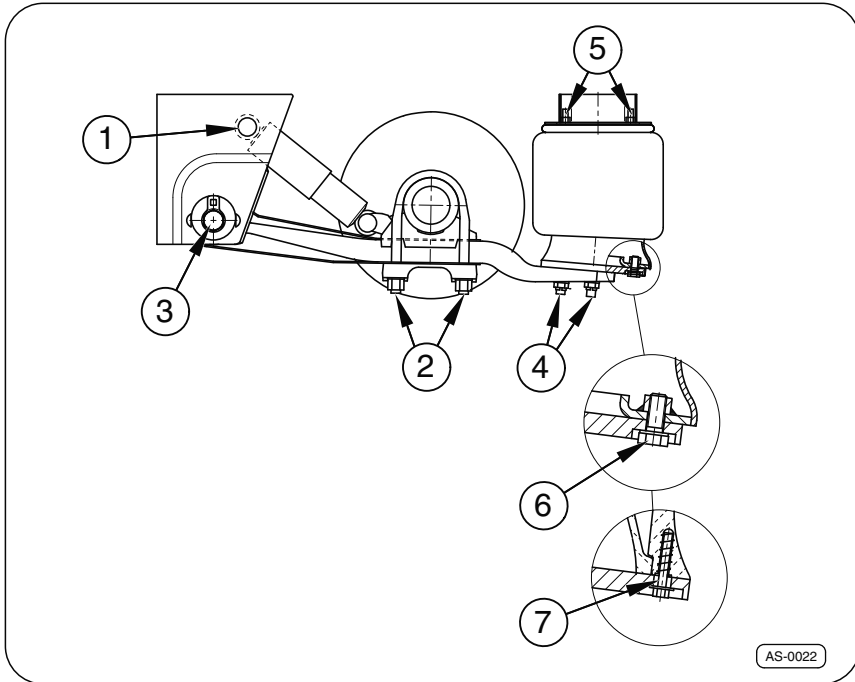


Fig. 9 - SAF MODUL inspection torque values

Item	Screw connection	Inspection torque (Nm)	Width across flats (WAF)
-1-	M24x2	400	36
-2-	M22x1.5	580	32
-3-	M30	1200	46
-4-	M20	180	30

en

Item	Screw connection	Inspection torque (Nm)	Width across flats (WAF)
-5-	M12	40	19
-6- ¹⁾	M12	80	19
-7- ²⁾	K100x40	20	10

5.6 Lubricate



Careful!

Risk of damage to the camshaft, slack adjuster and king pin bolt!

- Only use the specified lubricant.
- Lubricate the axle only when unloaded.
- Only lubricate the specified lubricating points.

Use special lithium complex soap lubricating grease (SAF-HOLLAND part number 5 387 0011 04).

- Lubricate the camshaft, slack adjuster and king pin bolt thoroughly on all lubricating nipples.



Note:

The bearings have long-term lubrication and are permanently protected from the penetration of dirt and spray water by O-ring seals and rubber sleeves.

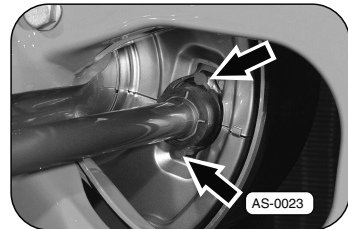


Fig. 10 · Rear lubrication point on brake spider

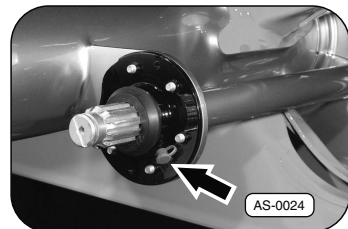


Fig. 11 · Front lubrication point on camshaft bearing

¹⁾ For steel airbag pistons

²⁾ For plastic airbag pistons

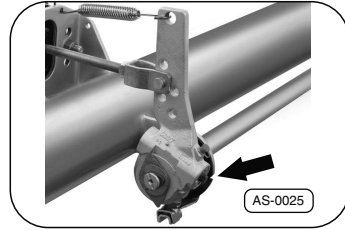


Fig. 12 · Lubrication point on the slack adjuster

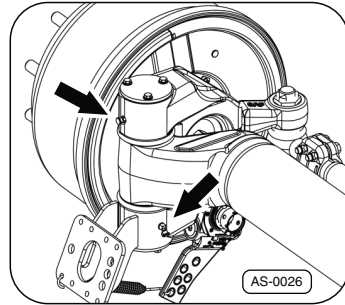


Fig. 13 · Lubrication points on the king pin bolt

6 Jacking point

Raise the vehicle with the jack Fig. 14 as shown.



Careful!

Risk of damage to the axle!

The jack must only be positioned as shown in Fig. 14 .

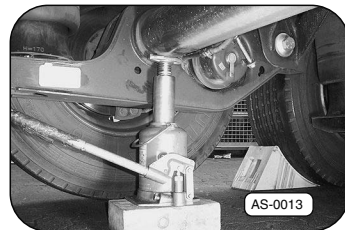


Fig. 14 · Jacking point

7 Inclination of the semi-trailer

On **single axles** a minimum suspension travel of 60 mm must be observed.

On **multiple axle trailers** a minimum suspension travel of 70 mm must be observed.

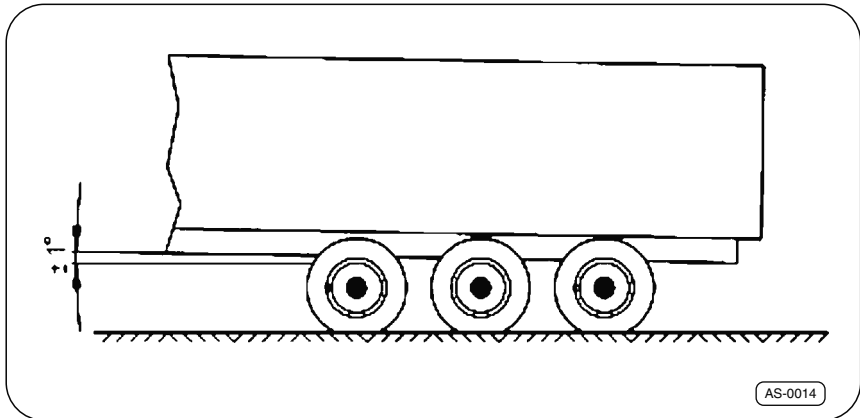


Fig. 15 · Inclination of the semi-trailer



Careful!

Risk of damage to the vehicle!

The maximum inclination of the semi-trailer must not exceed 1 degree or 20 mm per metre.



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