



Owner's Manual 

 **Semitrailer container**

GB

*just more.*

**Trailer**

**Services**

**Technology**

## Take the time to read this...

This manual informs you about the Schmitz Cargobull reefer semitrailers. It contains important information on working with the semitrailer.

Please read the information in this manual very carefully. Take particular note of the sections dealing with your safety.

Make sure that the manual is always with the vehicle, especially if you lease or sell it.

Schmitz Cargobull is continuously developing our products. For this reason the descriptions in the text and the pictures in this manual may differ from the equipment on your semitrailer.

If you have any questions that you cannot answer by reading this manual, please contact a Schmitz Cargobull service centre or the Schmitz Cargobull customer service:

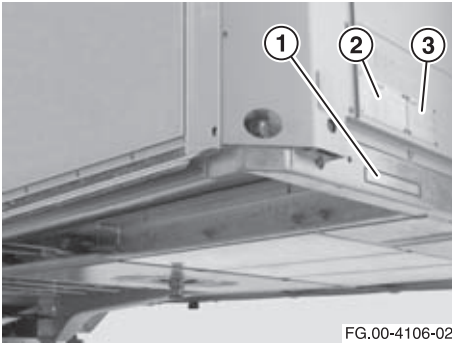
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# Vehicle identification

## S.KO 24 – 13.62 FP 25 . . .



FG.00-4106-02

### Vehicle identification

- 1 Vehicle Identification Number (VIN)
- 2 Vehicle name plate
- 3 ALB name plate

The Vehicle Identification Number (VIN) (1) is stamped into the vehicle frame. The vehicle identification number can also be read on the vehicle name plate (2).

<b>Typ</b> <b>SKO24</b>				In compliance with directive 96/53/EC Nachweis der Übereinstimmung mit RL 96/53/EG Length / Länge: <b>14</b> m Width / Breite: <b>2,6</b> m	
APPROVAL-NO. Genehmigungs-Nr.:		_____			
VEHICLE ID. NO. Fahrzeugkenn-Zahl:		_____			
MAX. GROSS WEIGHT zul. Gesamtgewicht		<b>35000</b>	<b>39000</b>	_____	
MAX. AXLE LOAD zul. Achslast		<b>8000</b>	<b>9000</b>	_____	
MAX. AXLE LOAD zul. Achslast		<b>8000</b>	<b>9000</b>	_____	
MAX. AXLE LOAD zul. Achslast		<b>11000</b>	<b>12000</b>	_____	
		k	k		
		0		12	

FG.00-3960-05

### Vehicle name plate

The "vehicle" name plate (2) includes the following information:

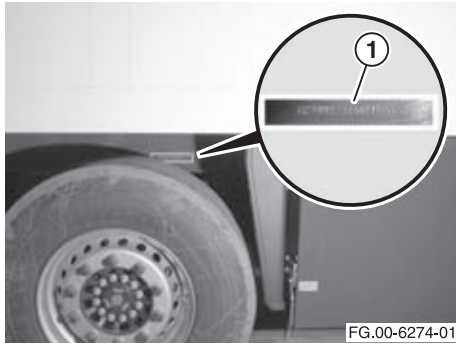
- axle and fifth wheel load,
- approved gross mass,
- external length and width,
- the vehicle identification number.

		Automatisch - lastabhängige Bremskraftbegrenzung (ALB) für Typ: Load sensing device for type: Dispositif de correction automatique de freinage pour type:	
<b>SKO24</b>		_____	
Vorderachse • Front axle • Essieu avant		Hinterachse • Rear axle • Essieu arrière	
Eingangsdruck Inlet pressure Pression d'entrée		0 bar	Eingangsdruck Inlet pressure Pression d'entrée
Werte Nr. Values No.		<b>E4-R13-090284</b>	Werte Nr. Values No.
Werte N°:		<b>ES 20</b> <b>-EBS-</b>	
Achslast Axle load Charge essieu	Federungsdruck Suspension pressure Pression suspension	Ausgangsdruck Output pressure Pression de sortie	Achslast Axle load Charge essieu
0 0	0 0	0 0	4200 27000
			0,5 6,1 0,0 0,0 0,0
			1,5 6,7 0,0 0,0 0,0

FG.00-3960-06

### ALB name plate

The ALB name plate (3) contains the test pressures for the automatic load sensing brake control, depending on the axle loads.

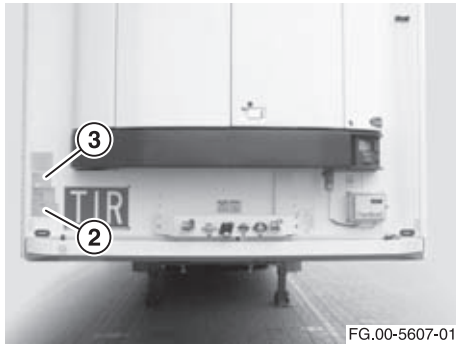


FG.00-6274-01

**Vehicle identification**

- 1 Vehicle Identification Number (VIN)

The Vehicle Identification Number (VIN) (1) is stamped in the vehicle frame on the right in the direction of travel at the height of the front axle. The vehicle identification number can also be read on the vehicle name plate (2).



FG.00-5607-01

**Vehicle name plates and ALB on front wall**

- 2 Vehicle name plate
- 3 ALB name plate

Typ <b>SKO24</b>	<b>SCHMITZ Cargobull</b> SCHMITZ - Cargobull AG		Nachweis der Übereinstimmung mit RL 96 / 53 / EG	
Genehmigung-Nr.			Länge (L)	14 m
Fahrzeugident-Nr.			Breite (W)	2,6 m
z.&. Gesamtgewicht	35000	39000		
zu L. Achslast	8000	9000		
zu R. Achslast	8000	9000		
zu L. Achslast	8000	9000		
zu L. Sattelast	11000	12000		
	kg	kg		
			h min. (m)	h max. (m)
			0,0	12

FG.00-3960-03

**Vehicle name plate**

The "vehicle" name plate (2) includes the following information:

- axle and fifth wheel load,
- approved gross mass,
- external length and width,
- the vehicle identification number.

<b>SCHMITZ Cargobull</b> SCHMITZ - Cargobull AG		Automatisch - lastabhängige Bremskraftregelung (ALB) für Typ: Load sensing device for type: Dispositif de correction automatique de freinage pour type:	
<b>SKO24</b>			
Vorderachse • Front axle • Essieu avant		Hinterachse • Rear axle • Essieu arrière	
Eingangsdruck Input pressure Pression d'entrée		0 bar	Eingangsdruck Input pressure Pression d'entrée
Verbleib. No. Values No. Valeurs N°.		E4-R13-090284	Verbleib. No. Values No. Valeurs N°.
			ES 20 -EBS-
Achslast Axle load Charge essieu	Federungsdruck Suspension pressure Pression suspension	Ausgangsdruck Output pressure Pression de sortie	Achslast Axle load Charge essieu
kg	bar	bar	kg
0	0	0	4200
0	0	0	27000
			0,5
			6,1
			6,7
			0,0
			0,0
			0,0
			0,0

FG.00-3960-04

**ALB name plate**

The ALB name plate (3) contains the test pressures for the automatic load sensing brake control, depending on the axle loads.

# Graphics

## Safety instructions

This manual includes various safety instructions with the following meanings:



### **DANGER!**

Text with this symbol warns you of potential hazards to health and life. If these instructions are not observed accidents and injuries that can result in fatalities may occur.

- ▶ Observe the instructions provided for avoiding hazards.



### **Property damage**

Text with this symbol warns you of potential property damage.

- ▶ Observe the instructions provided for avoiding property damage.

## Supplementary information



### **Note**

Text with this symbol provides tips or supplementary information.

## Directions/procedures

- ▶ Text with this symbol identifies a procedure that should be carried out.
  - ▷ Text with this symbol describes the expected result of the above procedure.

## Direction indicators

Direction indicators in this manual always refer to the direction of travel. Therefore, "on left chassis frame" means: the left side of the vehicle viewed in the direction of travel. "Forward" means "in the direction of travel", "backwards" means "against the direction of travel".

## Optional equipment\*

Text marked with an asterisk\* identifies optional equipment. For this reason text and illustrations in this manual show different equipment from that of your semitrailer.

## Vehicle overview

This operating manual applies to the following Schmitz Cargobull semitrailers.

### **S.KO 18 – 13.62 FP 25 Express**

Two-axle dry goods reefer semitrailer with 30 mm thick FERROPLAST side walls on the bolted and galvanised MODULOS chassis.

### **S.KO 24 – 13.62 FP 25 Express**

Three-axle dry goods reefer semitrailer with 30 mm thick FERROPLAST side walls on the bolted and galvanised MODULOS chassis.

### **S.KO 24 – 13.42 FP 45 . . .**

Three-axle insulated reefer semitrailer with 45 mm thick FERROPLAST side walls in a self-supporting design.

### **S.KO 24 – 13.42 FP 60 . . .**

Three-axle insulated reefer semitrailer with 60 mm (65 mm) thick FERROPLAST side walls in a self-supporting design.

### **S.KO 10 LZG . . .**

Single-axle insulated or dry goods reefer semitrailer with steered axle.

### **S.KO 18 LZG (20 LZG) . . .**

Two-axle insulated or dry goods reefer semitrailer with steered axle.

### **S.KO 24 LZG . . .**

Three-axle insulated or dry goods reefer semitrailer with steered axle.

## Transport solutions

In addition to the above basic types, specially equipped semitrailers, referred to as transport solutions, are available for specialised transport:

- hanging meat transport,
- double-deck transport,
- multitemp,
- flower transport,
- intermodal transport.

# Contents

An overview of the contents of this manual is given below. You can find specific topics with the index at the front of the manual.

There is a list of topics in that chapter at the beginning of every chapter.

## 1 Index

The index is a fast way to find a specific topic. The key words are listed in alphabetical order.

## 2 Safety ..... 17

Here you can find important instructions for safe working with the semitrailer.

## 3 Chassis..... 25

Here you can find information and instructions on the basic operation of the chassis and its attached components, Such as the air suspension or landing legs and spare wheel holder.

## 4 Driving ..... 73

Here you can find information and instructions for driving with the semitrailer, such as coupling and uncoupling, ferry transport or the electronic brake system (EBS).

## 5 Superstructure..... 91

Here you can find information and instruction on all aspects of the superstructure. such as the rear door or air duct\* and moveable bulkhead\*.

## 6 Transport solutions..... 135

Here you can find information and instructions on equipping and operating specialised superstructures. such as for meat or flower transport.

This chapter only describes the equipment that deviates from the basic types. You can find the description of the basic equipment in the chapters on chassis and superstructure.

## 7 Operation ..... 157

Here you can find information and instructions for working with the superstructure. such as loading and unloading and securing loads.

## 8 Maintenance, care ..... 171

Here you can find information on the care and maintenance of the semitrailer, service charts with the specified service intervals and instructions on the required test work.

## 9 Specifications ..... 203

Here you can find the most important specifications and recommended lubricants and fuels.





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<b>Warranty</b>	<b>24</b>

# Operating instructions

## Designated use

Schmitz Cargobull reefer semitrailers are approved exclusively for operation behind tractors with brake systems approved by road traffic regulations or EC Directive 98/12 EC or ECE Regulation No. 13.

Operation of the semitrailer is only approved with properly connected compressed air and electrical supply lines and the EBS connection cable.

The tractors must be fitted with either an ISO 7638-1996 plug connector, 7-pin (EBS), 24 V, or an ISO 7638-1985 plug connector, 5-pin (ABS), 24 V.

Transport of the following is not permitted:

- Livestock
- Persons

Transport of dangerous goods under GGVS/ADR is only permitted with the specified supplementary equipment.

Secure the load together without gaps with suitable equipment before driving. Use suitable equipment such as lashing eyelets and additional equipment such as tension straps. Unsecured or insufficiently secured loads can cause serious accidents with personal injury by sliding or falling from the load area.

Load the semitrailer so the axles and drawbars are neither overloaded or underloaded and the approved gross weight of the semitrailer is not exceeded. Otherwise the driving characteristics will deteriorate and the risk of accident will be higher.

Do not exceed the legally approved length, width and height dimensions. Adjust the driving height of the semitrailer as required.

Only drive with the rear doors and side doors closed. The stability of the body will suffer when driving with open doors (exception: bodies with tail lift connection).

Do not modify the semitrailer in any way. This can negatively affect the safety of the semitrailer. The operating permit will also be cancelled. Schmitz Cargobull does not accept liability for damage caused by modifications to the semitrailer.

Designated use also includes following the directions of this Owner's Manual and the test and service intervals with the service conditions specified by Schmitz Cargobull. This applies to all Owner's Manuals supplied with the vehicle.

## Brake adjustment

Unlike the drum brake the disc brake shows no perceptible loss of braking power when overloaded.

The overload is noticeable more by overheated brake discs, which can result in damage to wheel bearings and brakes and also increased brake disc and pad wear.

To distribute the braking force evenly over all brakes in the combination, all wheel brakes should be adjusted to operate evenly after the first 2000 to 5000 km as per RREG 71/320.

The brake systems of Schmitz Cargobull vehicles are designed so the towing vehicle does not require a pressure advance.

Warranty claims resulting from premature wear can only be considered when the results of the brake adjustment are submitted.

## Service and maintenance

All service and maintenance work must be carried out by qualified workshops only.

Schmitz Cargobull recommends the Schmitz Cargobull service centres for all service and maintenance work. They have all the required tools and the knowledge required for this work.

Have all inspections and services done at the specified intervals.

The service book documents all inspections and forms the basis for any warranty claims.

## Changes to the semitrailer

Vehicle frame, wheels, axles and the wheel brakes are safety-relevant components that must not be modified, repaired or converted in any way.

The following in particular are prohibited:

- welding,
- alignment,
- drilling and
- heat treatment

of any safety-relevant components.

Protect electronic controllers for ABS/EBS, ECAS etc. and batteries by disconnecting them before doing any welding on **components that are not** relevant to safety.

Cover plastic lines and cables before carrying out welding, drilling or grinding work.

## Warning sticker

The warning stickers on the semitrailer are part of the operating manual. Observe the stickers in the same way as the operating manual. Keep the stickers readable and replace illegible or lost stickers immediately. An overview of the warning stickers attached to the vehicle can be found in "Warning sticker overview" on page 210.

## Residual hazards

Schmitz Cargobull reefer semitrailers are designed to the state of the art in technology and the generally accepted safety engineering requirements. However, hazards to life and limb of persons or damage to the reefer semitrailer and other property may occur when working on the reefer semitrailer.

Following, an overview of the residual hazards when working with the reefer semitrailer.

Hazard source	Hazard/consequences
Coupling and uncoupling	<p><b>FATALITY HAZARD!</b>  <b>Persons in the danger zone between the tractor and the semitrailer may be crushed or run over.</b></p> <ul style="list-style-type: none"> <li>■ Direct all persons away from the danger zone when coupling or uncoupling.</li> <li>■ No person is permitted to remain at the fifth-wheel lock of the tractor while coupling or uncoupling.</li> <li>■ Persons directing the tractor driver must stand well away from the vehicles.</li> </ul>
Load pressure	<p><b>INJURY HAZARD!</b>  <b>Load pressure occurs when loads press on the doors from the inside and move suddenly with great force when doors are opened. You or other persons may be crushed or struck under such circumstances.</b></p> <ul style="list-style-type: none"> <li>■ Open the door wing cautiously and beware of load pressure.</li> <li>■ When opening the doors keep clear of the swing area of the door wings.</li> <li>■ If the load is pressing against the door, leave the second revolving rod lock secured and locked.</li> <li>■ Clear the load pressure without endangering yourself or other persons.</li> </ul>
Entering and leaving superstructure	<p><b>INJURY HAZARD!</b>  <b>You may slip and fall if you climb up parts not designed for the purpose.</b></p> <ul style="list-style-type: none"> <li>■ Do not jump down from the superstructure. Use the accesses provided.</li> <li>■ Do not climb up on wheels, sideguards or other attached parts.</li> </ul>
Working in load area	<p><b>FALL HAZARD!</b>  <b>Moisture and ice on the floor of the reefer may cause falls.</b></p> <ul style="list-style-type: none"> <li>■ Wear non-slip work shoes.</li> <li>■ Keep the load area dry and clean at all times to prevent formation of ice.</li> </ul>
Working in refrigerated load area	<p><b>FREEZING!</b>  <b>Cold metal components in the load area may freeze hands.</b></p> <ul style="list-style-type: none"> <li>■ Wear suitable safety gloves and personal protective equipment when working in the refrigerated load area.</li> <li>■ Never enter the refrigerated load area alone.</li> </ul>

Hazard source	Hazard/consequences
Working in load area	<b>HEALTH HAZARD!</b> <b>Germ formation may cause disease.</b> <ul style="list-style-type: none"><li>■ Clean the load area after transporting uncovered meat and other perishable products.</li></ul>
Evaporator and air ducts	<b>HEALTH HAZARD!</b> <b>Germ formation may cause disease.</b> <ul style="list-style-type: none"><li>■ Clean and disinfect all air ducts (air inlet and outlet of evaporator) regularly.</li><li>■ Clean and disinfect air ducts, if installed, regularly.</li></ul>



# Departure inspection

The departure inspection is an important contribution to road safety. Carry out a pre-trip inspection before every trip. Walk around the semitrailer after trip interruptions, such as rest stops on the highway or after the weekend, inspect the most important points and repair any defects if necessary.

## Before

departure

- Is the fifth wheel correctly locked and secured?
- Is the landing leg retracted and the crank secured?
- Are all supply lines connected?
- Are the compressed air connections and lines sealed?
- Is the air suspension valve in the "FAHRT" (DRIVE) position?
- Are the compressed air tanks free of condensed water?
- Are all mounted parts such as ladders, handle rods etc. secured with spring clips, split pins or padlocks?
- Are the spare wheels fixed and secured?
- Are the sideguards unfolded and secured?
- Is the rear folding guard\* unfolded and secured?
- Are the covers of storage compartments, such as toolboxes or pallet boxes closed and secured with spring clips, split pins or padlocks?
- Are all tyres in good condition? Is the tyre pressure correct?
- Are the air spring bellows free of folds and undamaged?
- Does the lighting system function?
- Check the temperature of the load area at the remote thermometer.
- Check that the refrigeration system is operating correctly.

## Weather-dependent

Check the following points depending on the weather:

- Remove water from the roof. Do not endanger yourself.
- Remove ice or snow accumulations from the roof in snow or freezing conditions. Do not endanger yourself.

## Before loading

Clean the load area before loading:

- for hygiene,
- the load area also for load security.

## After loading or unloading

After loading or unloading or after picking up the semitrailer check the following points:

- Is the semitrailer correctly loaded and the load sufficiently secured?
- Are all doors closed and locked?

# Warranty

## Terms and conditions

The contents and scope of warranty claims conform to the Schmitz Cargobull new vehicle supply terms and conditions (purchase contract between Schmitz Cargobull and the customer).

Damage caused by the following is not covered by the warranty:

- Overloading
- Non-designated and improper use
- Unapproved modifications

Wear is also of course excluded from warranty coverage.

The warranty coverage is as follows:

- If the semitrailer is operated as specified and only with components approved by Schmitz Cargobull.
- If spare parts approved by Schmitz Cargobull are used.

## Spare parts

Schmitz Cargobull recommends the exclusive use of Schmitz Cargobull original spare parts.

Schmitz Cargobull original spare parts undergo regular tests for safety and function. The use of Schmitz Cargobull original spare parts guarantees road and operating safety and the operating permit is retained.

Spare parts that have not been approved by Schmitz Cargobull cannot be assessed by Schmitz Cargobull with regard to their suitability, safety and reliability.



## Warranty

The operating permit and the warranty will be cancelled if spare parts that are not approved by Schmitz Cargobull are used.

Have the information on the vehicle name plate (see page 1) ready when ordering spare parts:

- Vehicle type
- Vehicle Identification Number (VIN)

## Spare parts sales

Schmitz Cargobull Parts & Services GmbH  
Spare Parts Center  
Siemensstraße 49  
48341 Altenberge

Telephone: +49 (0) 2558 / 81-2999

Fax: +49 (0) 2558 / 81-2381

Fax: +49 (0) 2558 / 81-2718

E-mail: [Ersatzteil-Center@cargobull.com](mailto:Ersatzteil-Center@cargobull.com)

Internet: [www.cargobull.com](http://www.cargobull.com)

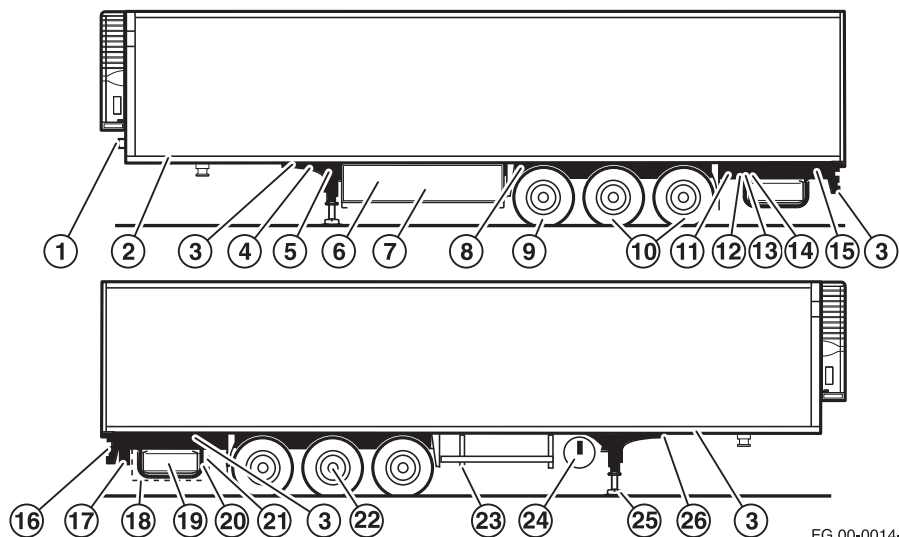
or at one of our authorised service partners.

In the event of breakdown you can contact the Cargobull Euroservice at:

00800-24CARGOBULL

or 00800-24227462855

<b>Chassis</b>		Keywords
<b>Overview</b>	<b>26</b>	
<b>Brake system</b>	<b>28</b>	
<b>Air suspension</b>	<b>37</b>	Safety
<b>Landing leg</b>	<b>46</b>	
<b>Fuel tank</b>	<b>48</b>	
<b>Wheel chocks</b>	<b>49</b>	Chassis
<b>Sideguard</b>	<b>52</b>	
<b>Handle rod for ventilation flaps*</b>	<b>53</b>	
<b>Spare wheel holder</b>	<b>54</b>	
<b>Pallet box*</b>	<b>59</b>	Driving
<b>Toolbox*</b>	<b>62</b>	
<b>Water tank*</b>	<b>63</b>	
<b>Fire extinguisher*</b>	<b>64</b>	Superstructure
<b>Document compartment*</b>	<b>65</b>	
<b>Hub odometer* (Axle hub odometer)</b>	<b>66</b>	Transport solutions
<b>Tail lift*</b>	<b>67</b>	



FG.00-0014-02

Overview of controls on chassis

Item	Name	Page
1	Connections for compressed air and electrical supply lines, EBS plug connector	28
2	Skid plate with king-pin	177
3	Ferry lashing rings*	87
4	Left wheel chock	49
5	Document compartment*	65
6	Left sideguard	52
7	Pallet box*	59
8	Compressed air reservoir/drainage valves	36
9	Lift axle* (country-specific)	40
10	Spring-actuated pressure accumulator emergency release	35
11	Brake/air suspension controls	37
12	Rotary switch for axle lift*	40
13	Axle load indicator*	41

Item	Name	Page
14	Brake pad wear indicator*	180
15	Toolbox*	62
16	Folding guard*	151
17	Tail lift* (manual control)	67
18	Pallet box at rear*	60
19	Spare wheel holder	54
20	Fire extinguisher *	64
21	Water tank*	63
22	Hub odometer*	66
23	Right sideguard	52
24	Fuel tank	48
25	Winch (landing leg)	46
26	Right wheel chock	49
	Steered axle (not shown)	86

Keywords

Safety

Chassis

Driving

Superstructure

Transport solutions

Operation

Maintenance

Data

## Brake system

Schmitz Cargobull semitrailers are fitted with the **Electronic Brake System EBS** as standard equipment (see "EBS" on page 74).

### **i** EBS

The EBS system also includes the ABS function (Antiskid Braking System) and the ALB function (automatic load sensing braking pressure regulation).

All supply lines are combined at the front wall.

The following types of coupling heads may be installed:

- Standard coupling heads (production) with integrated line filters
- Duo-Matic connector\*
- C-coupling heads\* with separate line filter

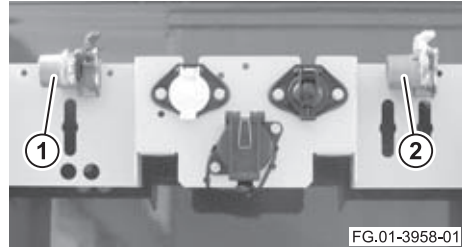
### **i** Coupling heads

Different types of coupling heads can be installed simultaneously for specialised applications.

### **i** Wendelflex lines

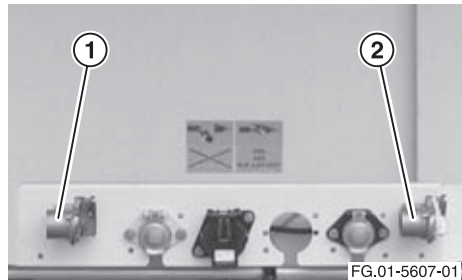
Wendelflex lines that are tangled may come off in very tight curves. Separate them before connecting them.

## Standard coupling heads



### Coupling heads (layout FP 25)

- 1 Supply coupling head (red)
- 2 Brake coupling head (yellow)



### Layout FP 45/FP 60

- 1 Supply coupling head (red)
- 2 Brake coupling head (yellow)

## Connecting to the tractor

Prerequisite: the parking brake of the tractor must be set.

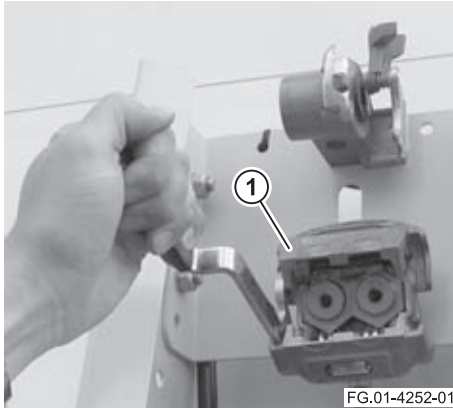
- ▶ Check sealing surfaces of the coupling heads and clean if necessary.
- ▶ Always connect the brake coupling head (2) first.
  - ▷ The semitrailer is braked.
- ▶ Connect the supply coupling head (1).
- ▶ Check coupling heads for leaks and replace leaking rubber seals.

## Disconnecting from the tractor

Prerequisite: The parking brake of the tractor is set.

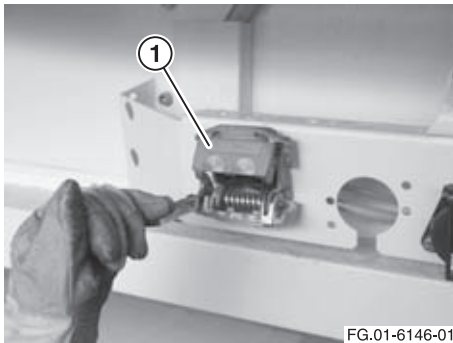
- ▶ Always disconnect the supply coupling head (1) first.
  - ▷ The semitrailer is braked.
- ▶ Disconnect the brake coupling head (2).
- ▶ Close dust caps of coupling heads.

## Duo-Matic coupling head\*



### Duo-Matic connection (FP 25)

- 1 Duo-Matic coupling head



### Duo-Matic connection (FP 45/FP 60)

- 1 Duo-Matic coupling head

## Connecting to the tractor

Prerequisite: the parking brake of the tractor must be set.

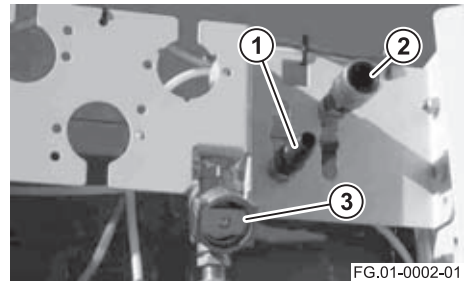
- ▶ Check sealing surfaces of the connections and clean if necessary.
- ▶ Pull lever of coupling head (1) down and insert counterpart.
  - ▷ The semitrailer is braked.
- ▶ Check connections for leaks and replace leaking rubber seals.

## Disconnecting from the tractor

Prerequisite: the parking brake of the tractor must be set.

- ▶ Pull lever of coupling head (1) down and remove counterpart.
  - ▷ The semitrailer is braked.

## C-coupling heads



### C-coupling heads (layout FP 25)

- 1 Supply coupling head
- 2 Brake coupling head
- 3 Line filter



### Layout FP 45/FP 60

- 1 Supply coupling head
- 2 Brake coupling head

## Connecting to the tractor

Prerequisite: the parking brake of the tractor must be set.

- ▶ Check sealing surfaces of the coupling heads and clean if necessary.
- ▶ Always connect the brake coupling head (2) first.
  - ▷ The semitrailer is braked.
- ▶ Connect the supply coupling head (1).
- ▶ Check coupling heads for leaks and repair leaks.

## Disconnecting from the tractor

Prerequisite: the parking brake of the tractor must be set.

- ▶ Always disconnect the supply coupling head (1) first.
  - ▷ The semitrailer is braked.
- ▶ Disconnect the brake coupling head (2).

## ABS/EBS connection



### ACCIDENT HAZARD!

The EBS and thus the ABS and the automatic load sensing brake control will not operate without the ABS/EBS plug connector. This can cause the semitrailer to overbrake and skid and may result in accidents.

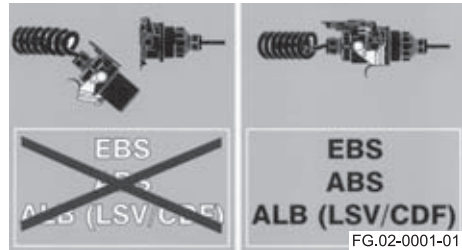
- ▶ Always connect the ABS/EBS plug connector between the tractor and semitrailer.
- ▶ Use only approved ABS/EBS plug connectors registered in the vehicle registration.



## Power supply

Vehicles built from 2002 have an additional power supply for the EBS system. This is supplied by the 7-pin socket of the lighting system. This means that the ABS and ALB will still operate even if the ABS/EBS plug connector is disconnected. The power supply through the 7-pin socket is **only provided as a supplementary power supply** in the event of a fault in the ABS/EBS plug connector!

## ABS/EBS warning sticker

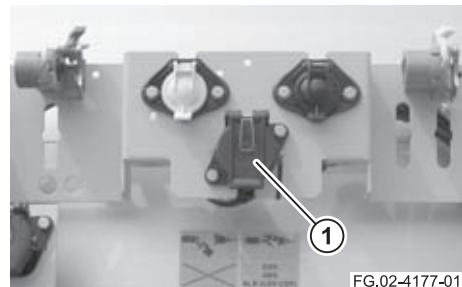


FG.02-0001-01

### "EBS" warning sign on the front wall

The "EBS" warning sign is part of the operating manual. Observe the sticker and keep it readable. Replace the "EBS" warning sticker if it is lost or becomes illegible.

## Approved plug connectors

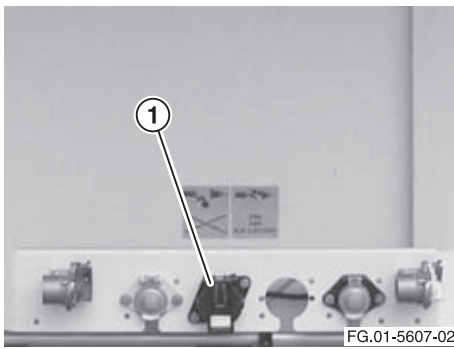


FG.02-4177-01

### EBS socket (layout FP 25)

- 1 EBS socket





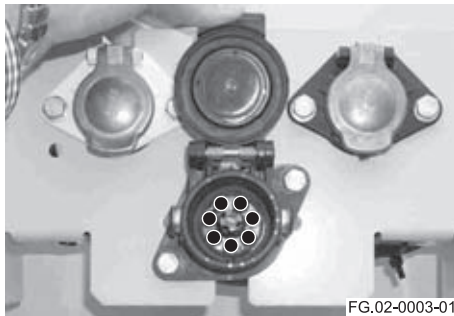
FG.01-5607-02

### Layout FP 45/FP 60

- 1 EBS socket

Schmitz Cargobull semitrailers may only be operated behind tractors with the following ABS/EBS plug connectors:

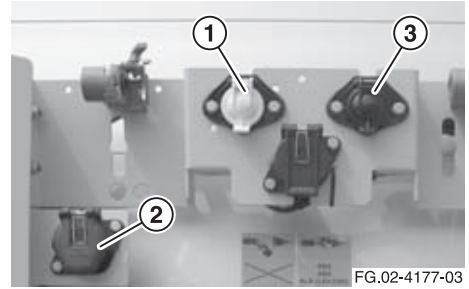
- Enhanced ISO 7638-1996 plug connector, 7-pin, 24 V, on tractors with CAN data line (with EBS)
- ISO 7638-1985 plug connector, 5-pin, 24 V, on tractors without CAN data line (tractors without EBS, with ABS plug connector)



FG.02-0003-01

### 7-pin socket (EBS system)

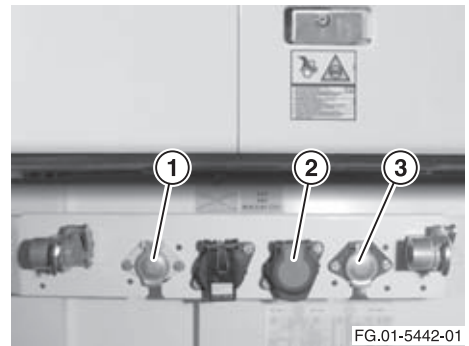
## Electrical connections



FG.02-4177-03

### Electrical connections (layout FP 25)

- 1 7-pin socket
- 2 15-pin socket\*
- 3 7-pin socket



FG.01-5442-01

### Layout FP 45/FP 60

- 1 7-pin socket
- 2 15-pin socket\*
- 3 7-pin socket

Schmitz Cargobull semitrailers have two 7-pin sockets as standard equipment in accordance with ISO 1185 and 3731 (1 and 3). The 15-pin socket (2) as per ISO 12098 is available as optional equipment.

For the terminal assignment of the sockets see page 194.

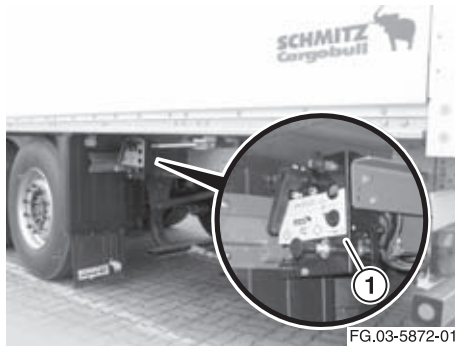
## Brake/air suspension controls

The operating console (1) is installed on the left side of the semitrailer behind the rear axle in models FP 25 and FP 45/FP 60.



### Tail lift

The operating console is installed on the right side of the vehicle on semitrailers with tail lift.



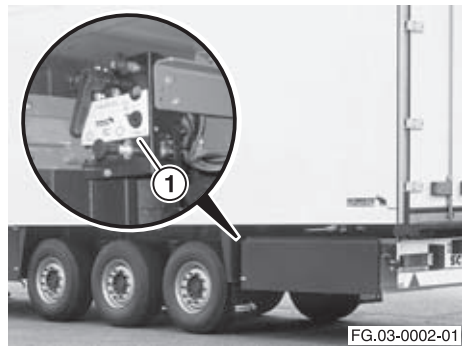
### Operating console for brake/air suspension on chassis (layout FP 25)

1 Operating console



### Layout FP 45/FP 60

1 Operating console



### Layout FP 25 and FP 45/FP 60 with pallet box at rear

1 Operating console

The following functions (all models) are operated at the operating console (1):

- service and parking brake,
- Air suspension up and down function,
- Axle lift\*,
- Axle load indicator\*,
- Test connections,
- Diagnostics connection (depending on the system manufacturer),
- Reversing lock for a trailing steering axle\*.

### Trailer Information System\* (TIS)

The Trailer Information System is available on request. It offers a fast way to access the following information:

- Total kilometre reading,
- Trip meter reading,
- Axle loads,
- Brake pad wear indicator (with additional sensors),
- Tyre pressure gauge for each wheel (with additional sensors),
- EBS fault diagnosis.



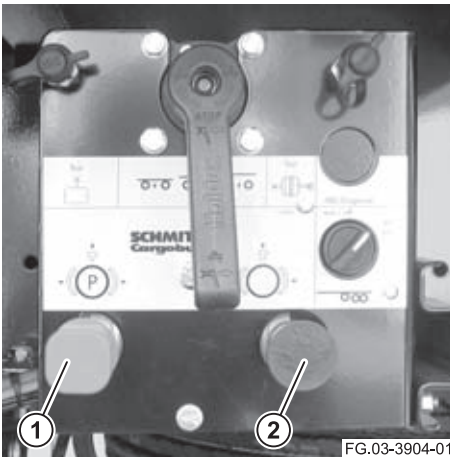
ES.00-0011-01

## TIS by Knorr or Wabco

The TIS control unit is installed on the operating console.

For further information on the operation please contact the manufacturer.

## Parking/manoeuvring valve



FG.03-3904-01

### Operating console with parking/manoeuvring valve

- 1 Red button, parking valve
- 2 Black button, manoeuvring valve

When the supply line is uncoupled the semitrailer is automatically braked. The emergency braking and actuation function is ensured in accordance with ECE-R13.

Release and actuate the brake for manoeuvring the uncoupled semitrailer with the black button (manoeuvring valve).

Actuate the spring-actuated pressure accumulator parking brake with the red button (parking valve). The red button (parking valve) has a lock to prevent accidental release of the brake.

### **i** Parking/manoeuvring valve

The black button (manoeuvring valve) can only be pressed in when the semitrailer is uncoupled.

Always pull the red button (parking valve) out on an uncoupled semitrailer!

When the supply line is coupled the black button (manoeuvring valve) is automatically pressed out in driving position.

The spring-actuated pressure accumulator parking brake is automatically actuated and cannot be released if the pressure is less than 2.6 bar.

The spring-actuated pressure accumulator parking brake can only be released if the pressure in the semitrailer compressed air system is at least 5.2 bar.

## Manoeuvring uncoupled semitrailer

### Requirement

The semitrailer is uncoupled.

- ▶ Press red button (parking valve) in.
- ▶ Press black button (manoeuvring valve) in.
  - ▷ The brake is released, and the semitrailer is unbraked.
- ▶ Pull black button (manoeuvring valve) out.
  - ▷ The brake is actuated, the semitrailer is braked.

Parking the semitrailer:

- ▶ Pull red button (parking valve) out again.

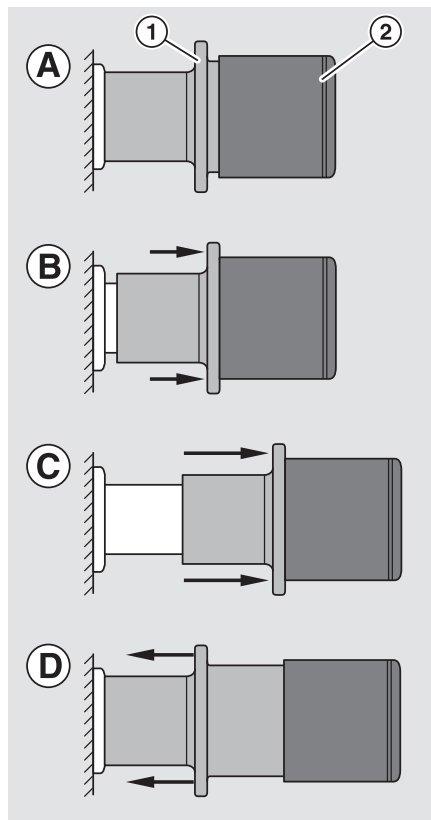
### Release/actuate spring-actuated pressure accumulator parking brake

#### With uncoupled semitrailer

- ▶ Press red button (parking valve) in.
- ▶ Press black button (manoeuvring valve) in.
  - ▷ The spring-actuated pressure accumulator parking brake is released, and the semitrailer is unbraked.
- ▶ Pull red button (parking valve) out.
  - ▷ The spring-actuated pressure accumulator parking brake is set, and the semitrailer is braked.

#### With coupled semitrailer

- ▶ Press red button (parking valve) in.
  - ▷ The spring-actuated pressure accumulator parking brake is released, and the semitrailer is unbraked.
- ▶ Pull red button (parking valve) out.
  - ▷ The spring-actuated pressure accumulator parking brake is set, and the semitrailer is braked.



#### Actuating the red button

- 1 Lock
- 2 Red button
- A Release position
- B Unlocked
- C Actuation
- D Brake position

#### To actuate the red button

- ▶ Pull lock (1) and pull or press red button (2).

## Spring-actuated pressure accumulator emergency release



### ACCIDENT HAZARD!

The unbraked semitrailer may roll away and run over you or other persons.

- ▶ Secure the semitrailer to prevent its rolling before releasing or setting the spring-actuated pressure accumulator parking brake with the emergency release.

The emergency release must be disabled as soon as the operating pressure of the semitrailer is at least 5.2 bar. Only then will the semitrailer be braked by the parking brake again.



### Emergency release

It is easier to screw in the emergency release with vented spring-actuated pressure accumulator brake cylinders.

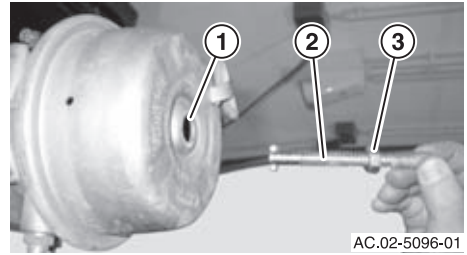


### ACCIDENT HAZARD!

The parking brake does not operate when the emergency release is actuated. The semitrailer may roll away and run over you or other persons.

- ▶ Disable the emergency release in before driving the semitrailer.

## Emergency release



AC.02-5096-01

### Spring-actuated pressure accumulator brake cylinder

- 1 Hole
- 2 Release rod
- 3 Nut

Prerequisite: the semitrailer must be secured to prevent movement.

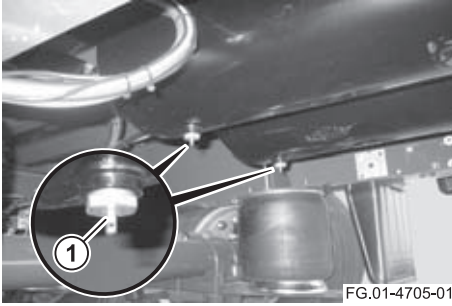
- ▶ Remove release rod (2) from the brake cylinder and insert it in the hole (1).  
The release rod (2) is fastened to the side of the brake cylinder.
- ▶ Rotate release rod (2) 90° and screw in the nut (3) until it contacts the brake cylinder.
- ▶ Screw in the nut (3) completely with a screwdriver.
  - ▷ The spring-actuated pressure accumulator parking brake is released, and the semitrailer is unbraked.

### Deactivation

Prerequisite: the semitrailer must be secured to prevent movement.

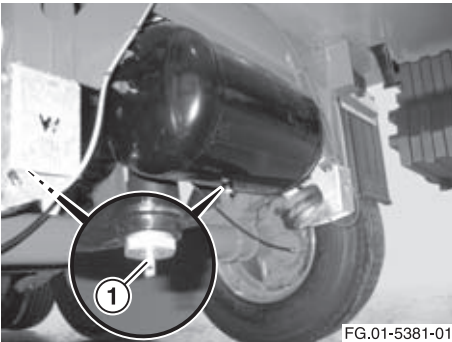
- On all wheels with spring-actuated pressure accumulator brake cylinders:
- ▶ Unscrew the nut (3) completely.
- ▶ Remove release rod (2) and fasten to brake cylinder again.
  - ▷ The emergency release is deactivated, and the semitrailer can be braked with the spring-actuated pressure accumulator parking brake again.

## Compressed air tank



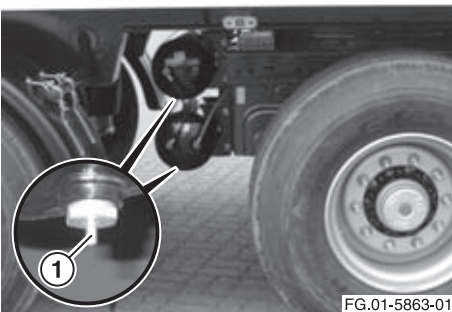
**Compressed air tank (layout FP 25)**

1 Drain valve



**Layout FP 45/FP 60**

1 Drain valve



**Layout SKO 10/18/24 LZG (with steered axle)**

1 Drain valve

Installation site of compressed air tank:

- FP 25, longitudinally in the frame behind the rear axle.
- FP 45/FP 60, cross-wise above the front axle.
- Steered semitrailer, on steering axle pivot.

Modern tractors are fitted with air driers that largely prevent the accumulation of condensation in the compressed air.

For safety reasons regularly check whether there is water in the compressed air tanks.



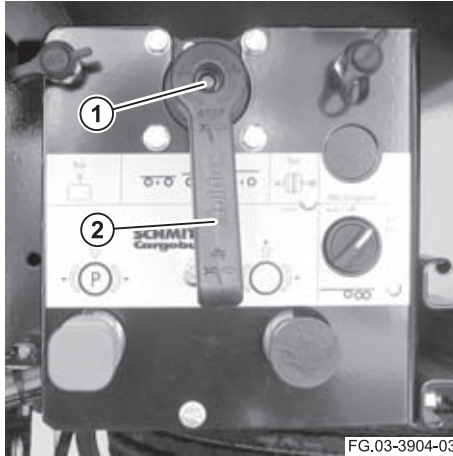
### ACCIDENT HAZARD!

Condensation in the compressed air reservoir may cause brakes to freeze and failure of the brake system!

- ▶ Check the drain valve of the compressed air reservoir for condensation regularly, particularly during cold weather.
  - ▶ Drain any condensation completely.
- ▶ Drain condensation completely from the compressed air reservoir by pulling the drain valve (1).

# Air suspension

## Function



### Operating console

- 1 Up/down valve
- 2 Selector lever (shown in "FAHRT" (DRIVE) position)

The operating console (see page 32) is installed on the left side of the semitrailer behind the rear axle.

In "FAHRT" (DRIVE) position the air suspension continuously maintains the driving level at the same height regardless of the load.

After changing the height for loading or unloading the basic level is reset.



### ACCIDENT HAZARD!

If the air suspension is not set to "FAHRT" (DRIVE) position before starting a trip, poor driving properties or a high level setting may cause to vehicle to be caught at an underpass and cause an accident.

- ▶ Always set the Up and Down valve to "FAHRT" (DRIVE) position before starting a trip.

You can lift and lower the level of the parked semitrailer with the up and down valve (1), e. g. for coupling and uncoupling or to adjust the height for a ramp.

If the up/down valve is **not** in "FAHRT" (DRIVE) position during loading or unloading, the level of the semitrailer will change as the load changes!

The up and down valve returns automatically to driving position when the speed exceeds 16 km/h (Auto-Reset).



### Raise/Lower

If the service or parking brake is set, it may be difficult to lift or lower the vehicle or not possible at all because the springs will not be able to pivot freely.

## Stroke limit

The shock absorbers act as stroke limiters, therefore cables or other types of stroke limit are not required.

To lower the air suspension completely a stop is mounted on the axle ties.

The stop allows the semitrailer to be driven a short distance at low speed without air on the bumper to the nearest workshop if the air suspension system fails. However, make sure that the tyres rotate freely.

## Lift/lower valve

Use the up/down valve

- for height adjustment while loading and unloading,
- before uncoupling,
- during ferry transport,
- during intermodal transport.

Always set the up/down valve to driving position before starting a trip.

Driving with the up and down valve set to "Heben" (Up) or "Senken" (Down) may damage the load, the semitrailer, the brake and the air suspension system and will overload and destroy the shock absorber.

The up and down valve (1) has a safety function, the "dead man's switch".

This safety function ensures that when the selector lever (2) is released the spring bellows are not supplied with air or vented and the lift and lower process is stopped immediately.

In the **lock position** "HEBEN" (UP) or "SENKEN" (DOWN) the selector lever locks. The lift and lower process is **not** interrupted when the selector level is released.

The RtR function(Auto-Reset) is effective also in the lock positions.

The selector lever (2) has the following positions:

**"FAHRT" (DRIVE) position**

The selector lever (2) is pulled out in the centre position and cannot be moved.

**"STOP" position**



**"STOP" position**

Leave the selector lever in "STOP" position or lock position "SENKEN" (DOWN) to leave the semitrailer lowered (e.g. on the ferry) or lifted (e.g. on a ramp).



FG.03-0012-01

**"STOP" position**

- ▶ Press selector lever in from "FAHRT" (DRIVE) position.
  - ▷ It can now be moved.

To restore the driving position pull the selector lever (2) out from the "STOP" position to the "FAHRT" (DRIVE) position.

**"HEBEN" (UP) position**



FG.03-0011-01

**"HEBEN" (UP) position**

- ▶ Move selector lever (2) to the right from the "STOP" position (anticlockwise).
  - ▷ The semitrailer is lifted while you hold the selector lever.
    - When the selector lever is released it automatically returns to the "STOP" position and the lift procedure is stopped.



## Lock position "HEBEN" (UP)



FG.03-0010-01

### Lock position "HEBEN" (UP)

- ▶ Move selector lever (2) to the right from the "STOP" position (anticlockwise).
- ▶ Press the selector level (2) again.
  - ▷ The semitrailer is lifted up to the maximum height.

To end the lock position "HEBEN" (UP), pull the selector lever (2) to "STOP" position.

### "SENKEN" (DOWN) position

- ▶ Move selector lever (2) to the left from the "STOP" position (clockwise).
  - ▷ The semitrailer is lowered while you hold the selector lever.
  - ▷ When the selector lever is released it automatically returns to the "STOP" position and the lowering procedure is stopped.

### Lock position "SENKEN" (DOWN) "

- ▶ Move selector lever (2) to the left from the "STOP" position (clockwise).
- ▶ Press the selector level (2) again.
  - ▷ The semitrailer is completely lowered.

To end the lock position "SENKEN" (DOWN), pull the selector lever (2) to "STOP" position.

## Auto-reset function

### ! Accident hazard!

If you lower the semitrailer to drive through a low underpass, it will automatically be lifted to driving position if the speed exceeds 16 km/h and it may be caught.

- ▶ When you lower the semitrailer to drive through a low underpass always drive at a speed well under 16 km/h.

The Auto Reset function (also called **RtR** function = **Reset to Ride**) is a safety function that adjusts the driving level automatically when the **EBS connecting cable is plugged in**.

The auto-reset function moves the selector lever from the "STOP" position to the "FAHRT" (DRIVE) position from a speed 16 km/h, which automatically sets the driving position.

From the lock positions "HEBEN" (UP) or "SENKEN" (DOWN), the selector level is also pressed to the "FAHRT" (DRIVE) position.

For this reason the semitrailer can only be driven lowered or raised at a speeds of less than 16 km/h.

## Axle lift system\*

The following lift axle types and functions are available for 3-axle semitrailers:

- Axle lift at the first axle
- Axle lift at the first and third axle

For both axle lift variants, the lift axle automatic device can be switched off by a switch mounted on the vehicle as standard.



### Axle lift with ABS/EBS

In older vehicles with **ABS** the lift axle remains lifted when the ignition in the tractor is switched off.

In newer vehicles with **EBS** the lift axle is lowered when the ignition in the tractor is switched off regardless of the load status.

Lower the lift axle when you park the semitrailer unsupervised. In the event of air loss the axle will lower uncontrollably.



### Axle loads

The lift axle lowers only when the axle on the floor exceeds the approved axle load. Depending on the load distribution the vehicle may be driven with the axle lifted with payloads up to 18 t.



### Starting aid

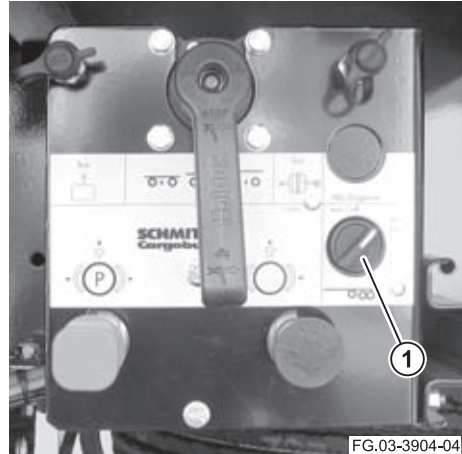
For the starting aid, please note that the maximum load of the axles on the floor is 1.3 times their capacity. Furthermore, the starting aid is active only at speeds lower than 30 km/h.



### Travel through curves

When the lift axle is lifted the wheel base between the tractor and semitrailer increases. This means that the semitrailer moves further in when travelling through curves!

### Switching axle lift on/off



FG.03-3904-04

### Operating console

- 1 Axle lift rotary switch (shown at an/on position)

The axle lift is switched on or off with the axle lift rotary switch (1). When it is switched off the axles are not lifted.



### CRUSHING HAZARD!

The lift axle may crush feet when lowered quickly.

- ▶ Switch off the axle lift before loading the semitrailer quickly with a high tonnage (e.g. coils).

## Switching on axle lift

- ▶ Rotate axle lift rotary switch (1) to "an/on" position (clockwise).
  - ▷ Automatic operation is enabled.

The lift axle is lowered with EBS as soon as the axle loads of the two other axles have reached the maximum approved value. If the load falls below this value while unloading, the lift axle is automatically lifted.

## Switching off axle lift

- ▶ Rotate axle lift rotary switch (1) to "aus/off" position (anticlockwise).
  - ▷ Automatic operation is disabled.

The lift axle remains permanently lowered, even if the semitrailer is empty or partially loaded.

The axle lift can now no longer be operated by the switch in the tractor cab.

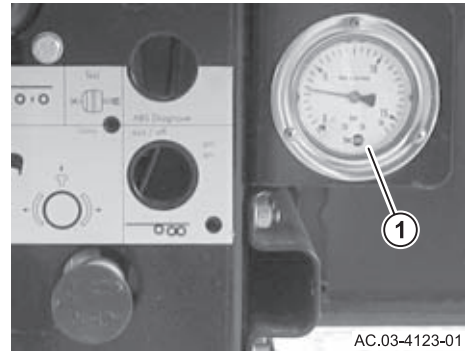
## Switching the axle lift from the tractor

The Axle lift of the semitrailer can also be switched from the tractor, via a key.

The key must be installed tractor-side and it should be assigned to pin 14 of the 15-pin socket or to pin 2 of the white 7-pin socket as plus signal.

- ▶ Press the key for less than five seconds.
  - ▷ The starting aid is activated.
- ▶ Press the key for five seconds or longer.
  - ▷ The lift axle automatic device is disabled.

## Axle load indicator



### Pressure gauge on the operating console

- 1 Pressure gauge (example: 3.5 bar)

The pressure gauge (1) displays the current spring bellows pressure, which depends on the load status. The higher the pressure the higher the axle load.



### Axle load control

Check the axle load before starting a trip to make sure that axle overloads can be detected early.



### Axle load table on vehicle frame

- 2 Axle load scale in kg
- 3 Pressure scale in bar

## Calculating axle load

- ▶ Read spring bellows pressure on the pressure gauge (1).  
Example: 3.5 bar spring bellows pressure.
- ▶ Find the value that you have read on the pressure scale (3) in the axle load table.
  - ▷ The value in the axle load scale (2) shows the axle load in kg.

Example: the 3.5 bar spring bellows pressure that you have read correspond to an axle load of 5510 kg per axle.



### Max. axle load

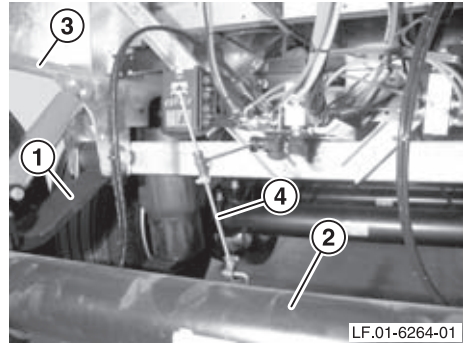
The actual (read) axle load must never be higher than the maximum approved axle load. This can be found on the "vehicle" name plate (see page 2).

When it supports the tractor, axle load can also be determined and displayed via the trailer EBS (see "Axle load indicator" on page 75).

Combined with Trailer Information System (TIS), the load of each axle is shown on the display near the operating console.

For further information on the operation please contact the manufacturer.

## Setting driving height



### Axle tube

- 1 Axle guide
- 2 Axle tube
- 3 Bottom of frame
- 4 Link rod air suspension valve

The driving height is set directly at the link rod of the air suspension valve (4). The air suspension valve is installed behind the left axle, under the superstructure.

Vehicles with trailing steering axle and axle lift on the third axle have the air suspension valve on the second axle.



### Driving height

A tilted semitrailer will have poor driving and braking characteristics.

- ▶ Match the driving height to the fifth wheel height of the tractor.

The driving height is measured from the centre of the axle tube to the underside of the frame. The driving height depends on the installed axle guide (1).

The driving height is changed by adjusting the top rubber coupling of the link rod.

See the table for the adjustable driving height ranges. Do not exceed or fall below the specified values.

The driving height limits in the table (MIN and MAX) apply to every axle on the vehicle.

Note the legal limit of the overall vehicle height (4000 mm as specified by the EC Directive).



### Axle guide

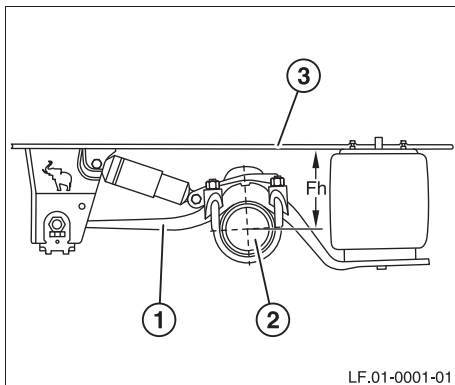
You receive a technical datasheet with your new semitrailer.

This datasheet contains the model of your "suspension type" axle guide and the factory-set driving height in mm.

Datasheet example:

- Suspension type: MRH3-EO30
- Driving height mm: rear 370

### Measuring driving height



LF.01-0001-01

#### Axle guide

**Fh** Driving height

- 1 Axle guide
- 2 Axle tube
- 3 Bottom of frame

- ▶ Measure driving height (Fh) between the centre of the axle tube (2) and the bottom of the frame (3).

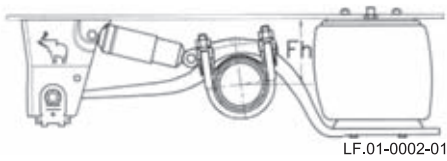
Note the driving height ranges Fh in the table.

### Bolted chassis driving height Fh

Cargobull air suspension system MRH2 and MRH3	Driving height Fh	
	MIN	MAX
KX35 ME <sup>1</sup>	190	310
KM30 <sup>2</sup>	235	350
KM35 <sup>2</sup>	235	350
LM30 <sup>2</sup>	280	350
LM35 <sup>2</sup>	280	350
EO30 <sup>3</sup>	330	440
EO35 <sup>3</sup>	330	440
PM30 <sup>2</sup>	260	350
PM35 <sup>2</sup>	260	350
MM30 <sup>2</sup>	295	350
MM35 <sup>2</sup>	295	350
GO30 <sup>3</sup>	350	440
GO35 <sup>3</sup>	350	440
HO30 <sup>3</sup>	395	440
HO35 <sup>3</sup>	395	440

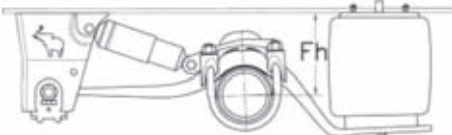
#### Driving height ranges Fh in mm

- 1 X-link
- 2 M-link
- 3 O-link



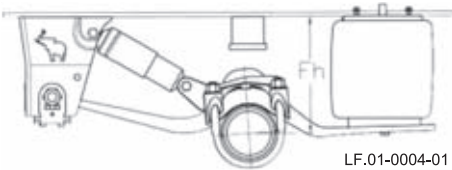
LF.01-0002-01

**X-link (deep offset)**



LF.01-0003-01

**M-link (medium offset)**



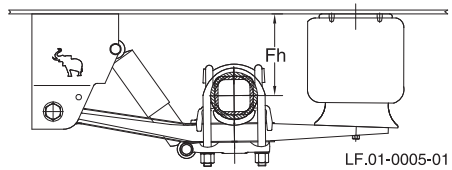
LF.01-0004-01

**O-link (slightly offset)**

**Welded chassis driving height Fh**

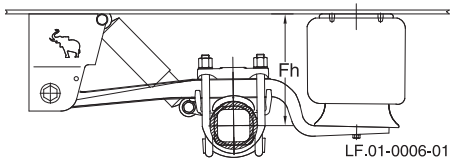
Cargobull System	MIN	MAX
MRH U30	255	370
MRH U30 Ferry	260	370
MRH U30 DB	315	370
MRH M30	345	460
MRH M30 Ferry	350	460
MRH O30 NP	400	460
MRH O30 DB	405	460

**Driving height ranges Fh in mm**



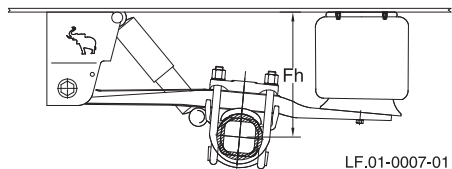
LF.01-0005-01

**MRH U30**



LF.01-0006-01

**MRH M30**



LF.01-0007-01

**MRH O30 NP**

## Changing driving height



### ACCIDENT HAZARD!

The non-braked semitrailer may roll away and cause personal injury.

- ▶ Adjust the driving height on flat horizontal ground only.
- ▶ Always secure the semitrailer with the wheel chocks to prevent its moving.



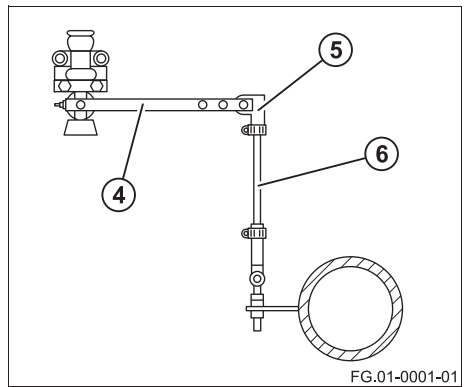
### INJURY HAZARD!

When setting the driving height the chassis may lower and cause personal injury.

- ▶ Keep all parts of the body out of the danger zone between the axle and chassis.
  - ▶ Make sure that there are no other persons in the danger zone.
- 
- ▶ Release main brake of the semitrailer.  
If the brake is set it is more difficult to lift and lower the vehicle.

As required slide rubber coupling (5) until the measured driving height matches the table value.

- ▶ Loosen clamp screw of rubber coupling (5).



#### Air suspension valve

- 4 Valve lever
- 5 Rubber coupling
- 6 Link rod

#### Increasing driving height:

- ▶ Slide rubber coupling (5) upwards.

#### Reducing driving height:

- ▶ Slide rubber coupling (5) down.
- ▶ Tighten clamp screw of rubber coupling (5).

## Landing leg



### ACCIDENT HAZARD!

The semitrailer may cant over and cause personal injury.

- ▶ Before uncoupling make sure that the semitrailer is loaded so it will not tip.
- ▶ Load the uncoupled semitrailer so it will not tip during loading.
- ▶ Do not exceed the maximum approved support load of the landing legs.



### Owner's Manual

Observe the manufacturer's operating manual supplied with the landing leg.

See the instructions on landing legs in the following sections

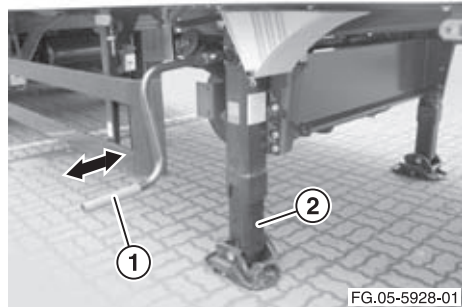
- "Coupling and uncoupling" on page 79
- "Load distribution plan" on page 160



### Landing leg!

The landing leg can be damaged by overloading if you attempt to lift or lower the semitrailer at high speed.

- ▶ Use the landing leg in low speed only after setting the support foot on the ground; whether the semitrailer is empty or loaded.
- ▶ Switch to high speed only after the foot is lifted and relieved of all load.



### Landing leg with switch between low and high speed (arrow)

- 1 Crank
- 2 Support leg

The landing leg supports the uncoupled semitrailer and adjusts the height while coupling and uncoupling. The landing leg has a high speed and a low speed mode.

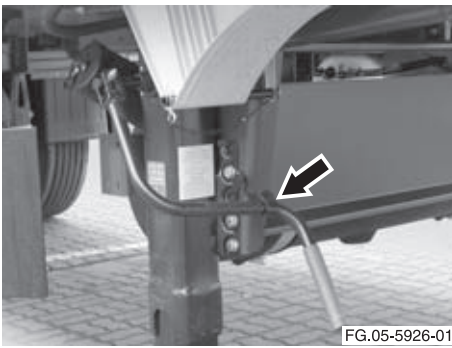
### Lowering support foot

- ▶ Remove crank (1) from retainer.
- ▶ Set high speed by pulling the crank out.
- ▶ Lower landing leg (2) until it touches the ground.
- ▶ Set low speed by pushing the crank in.
- ▶ Extend support foot (2) to desired length and attach crank (1).

### Retracting support foot

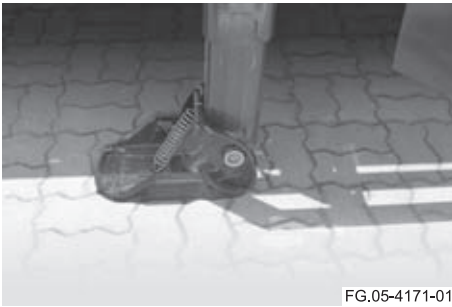
- ▶ Remove crank (1) from retainer.
- ▶ Set low speed by pushing the crank in.
- ▶ Lift foot (2) until it no longer touches the ground.
- ▶ Set high speed by pulling the crank out.
- ▶ Retract support foot (2) completely and place crank (1) in the retainer.





FG.05-5926-01

**Crank retainer on the landing leg**



FG.05-4171-01

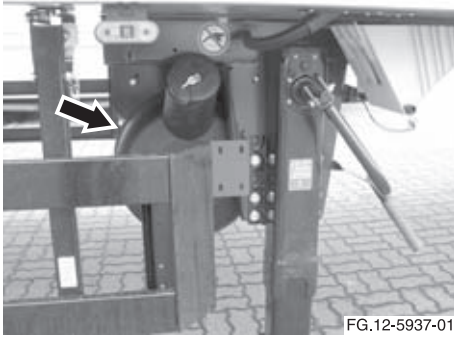
**Pivoted foot**

As the air suspension loses pressure the semitrailer lowers and simultaneously moves forwards (when the air suspension is lifted it moves forwards). Landing legs with length compensation (pivoted foot) compensate for these movements and protect the landing leg from deformation.

Pivoted feet can move approximately 20 cm forward and back.

## Fuel tank

The fuel tank for operation of the refrigerator is behind the landing leg. It is made of plastic and has a capacity of approx. 240 l.



FG.12-5937-01

### Fuel tank

The fuel tank is available with filler funnels on the right side (standard layout), optionally on the left side or on both sides.

The tank cap can be locked\*.

A plug is installed at the bottom for draining the fuel tank as required (e.g. after filling with incorrect fuel).



### Operating faults!

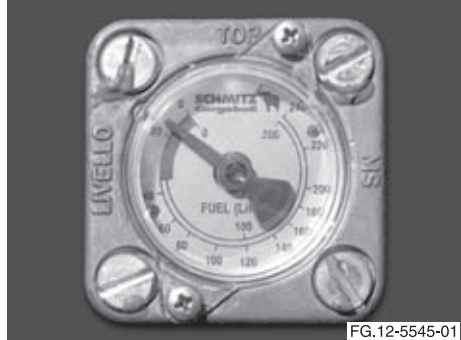
All fuels except for diesel fuel will cause operating faults.

- ▶ Use only diesel fuel (in accordance with DIN EN 590)
- ▶ or "FAME" biodiesel fuel according to DIN EN 14214, if approved by the refrigerator manufacturer.
- ▶ Do not use petrol.



### Service intervals

When using biodiesel fuel remember that the refrigerator service intervals are shorter. Consult the refrigerator manufacturer.



FG.12-5545-01

### Level gauge

The outside scale of the level gauge shows the level in litres of the 240 litre tank.

The inside scale shows the level in litres of the 200 litre tank.

# Wheel chocks

Two wheel chocks are supplied for additional safety when working with the parked semitrailer.

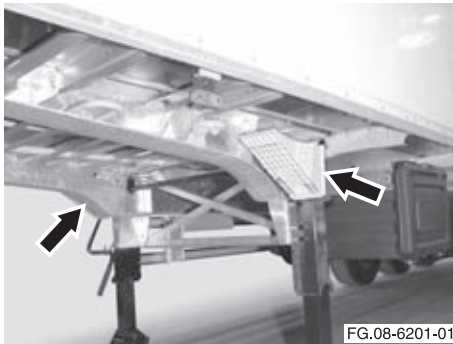
Note that regulations require two wheel chocks to be carried on the semitrailer at all times.

## **i** Rigid axles

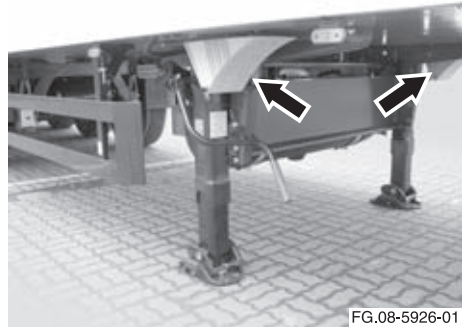
Always place the wheel chocks at wheels on rigid axles, never before wheels on lift or steering axles.

Always secure the semitrailer with the wheel chocks in addition to other measures:

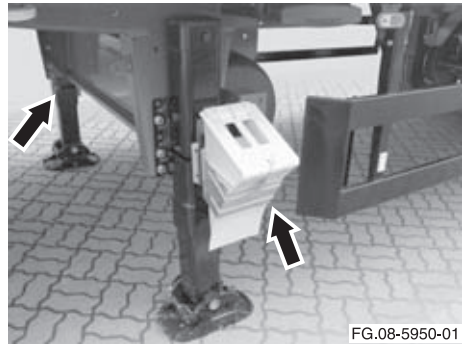
- on up or down slopes,
- while loading and unloading and
- while uncoupled.



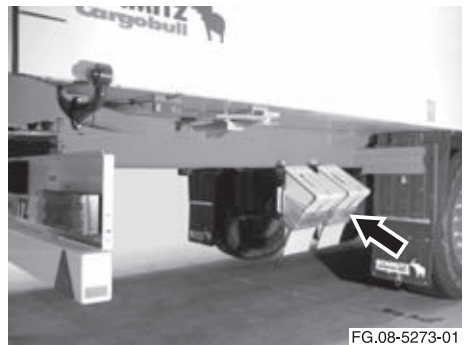
**Wheel chocks (position depending on vehicle type and equipment)**



**Wheel chocks (position depending on vehicle type and equipment)**

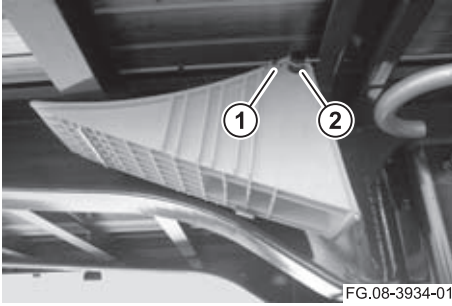


**Wheel chocks, example FP 45/FP 60 "Ferry travel"**



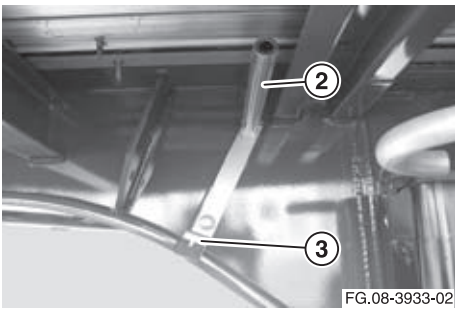
**Wheel chocks, example FP 45/FP 60 "Intermodal transport"**

Standard model



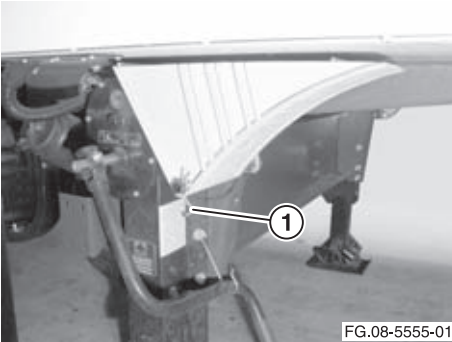
FG.08-3934-01

- 1 Spring clip
- 2 Pipe



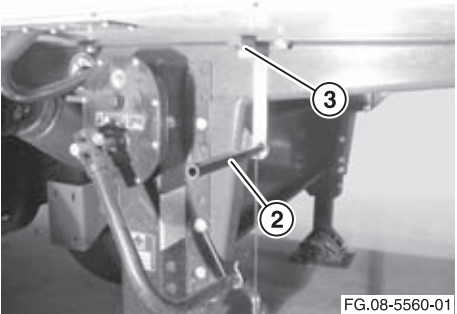
FG.08-3933-02

- 2 Pipe
- 3 Retainer bracket



FG.08-5555-01

- 1 Spring clip



FG.08-5560-01

- 2 Pipe
- 3 Retainer bracket

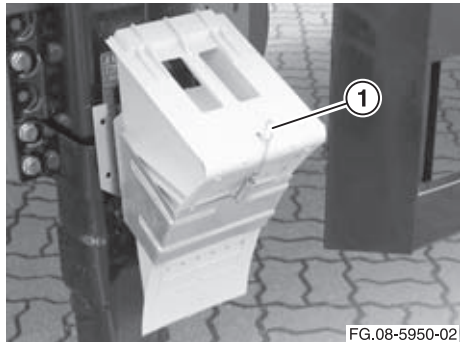
Removing wheel chock

- ▶ Pull out spring clip (1).
- ▶ Pull wheel chock out against the resistance of the retaining bracket (3).

Stowing wheel chock

- ▶ Place wheel chock on the pipe (2).
- ▶ Slide wheel chock back until it clicks into place against the resistance of the retaining bracket (3).
- ▶ Lock wheel chock with the spring clip (1).

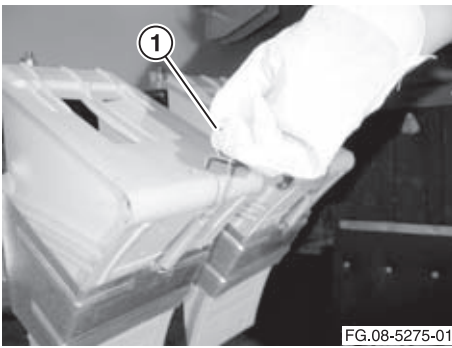
Ferry travel/intermodal transport



FG.08-5950-02

Layout for ferry travel

- 1 Lock



## Layout for intermodal transport

1 Lock

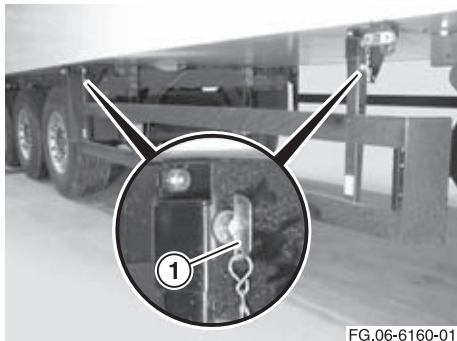
### Removing wheel chock

- ▶ Pull lock (1) up against the spring resistance.
- ▶ Pull wheel chock out.

### Stowing wheel chock

- ▶ Place wheel chock in the holder.
- ▶ Lock wheel chock with the clip (1).

# Sideguard



## Sideguard, driving position

- 1 Lock

The side guard can be folded up. In driving position the sideguard is secured on the right and left with a lock (1) on the left and right.

## Lifting

- Turn locks (1) about 90° against the resistance and pull them out.



## Sideguard, raised

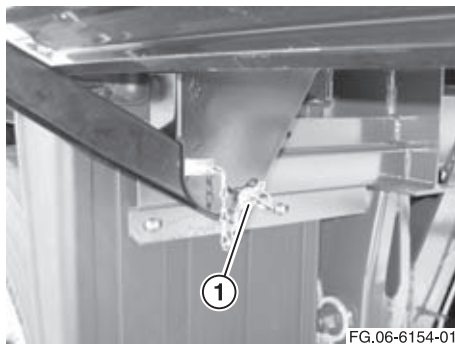
- Swing sideguard up.



## INJURY HAZARD!

The guard can fall down and injure persons kneeling underneath it.

- Secure the raised sideguard with the lock.



## Raised and locked

- 1 Lock

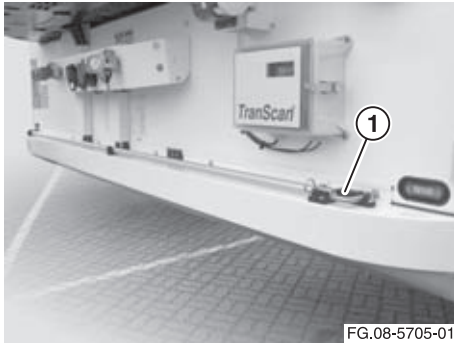
- Secure the raised sideguard with the lock (1).

## Lowering (driving position)

- Lower in reverse order.  
Rotate both locks (1) until they snap in.

Always lower the sideguard and lock it before driving.

## Handle rod for ventilation flaps\*



### Handle rod

#### 1 Handle rod

The handle rod (1) is attached to the front wall.

You will need the handle rod (1) to open and close the ventilation flaps\*.



#### 2 Spring clip

- ▶ Pull out spring clip (2).
- ▶ Pull handle rod (1) out to the right.  
Lock the handle rod (1) after use with the spring clip (2).

## Spare wheel holder

The following spare-wheel racks are installed depending on the space available:

- basket-type model 1, for one spare wheel,
- basket-type model 2, for two spare wheels,
- roller-type model for up to two spare wheels,
- winch-type model, for one spare wheel.

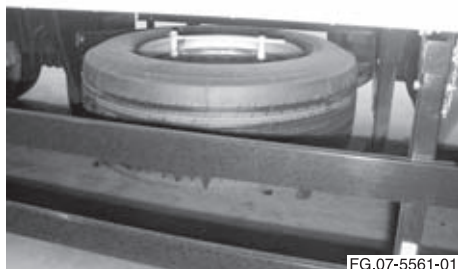
The basket-type models can be installed in front of or behind the axle assembly.

If the spare wheel holder is installed in front of the axle assembly, the sideguard must be raised before removing the spare wheel (see page 52).

### Basket-type model

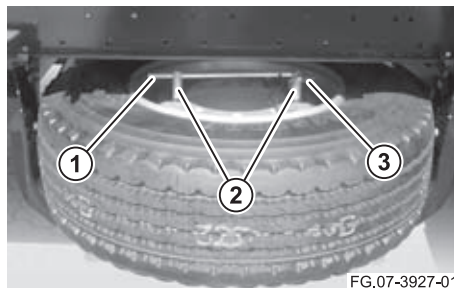


Behind the axle assembly



In front of the axle assembly

### Removing spare wheel

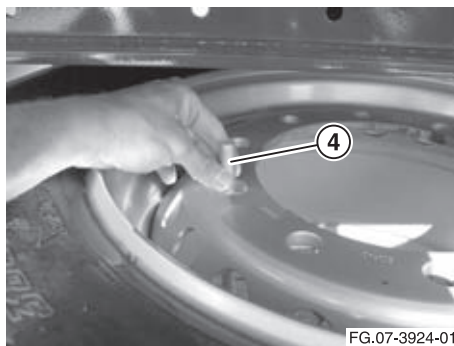


#### Spare wheel, driving position

- 1 Safety bracket
- 2 Nut
- 3 Spring clip

Spare wheels are removed and replaced in the same way with basket-type model 1 and 2.

- ▶ Remove spring clip (3).
- ▶ Use safety bracket (1) to unscrew the two nuts (2).



- 4 Retaining bracket, nut unscrewed



#### CRUSHING HAZARD!

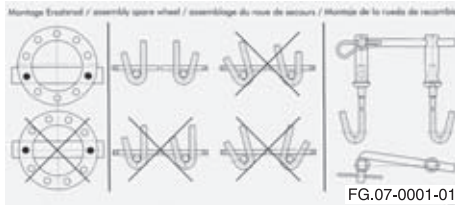
The heavy spare wheel may crush hands and feet.

- ▶ Keep your feet away from the danger area when removing the spare wheel.



- ▶ Remove retaining bracket (4) downwards.
- ▶ Remove spare wheel.

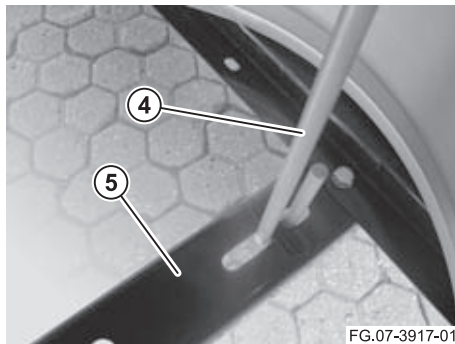
## Replacing spare wheel



### "Mounting spare wheel" instruction plate

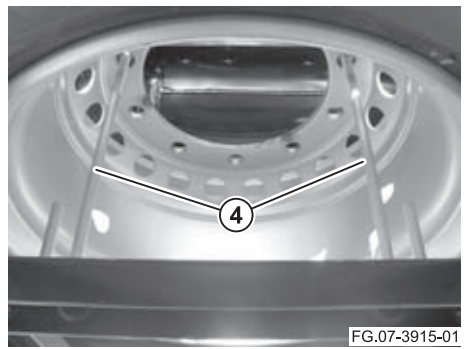
Follow the directions on the "Mounting spare wheel" plate:

- ▶ Position spare wheel centrally on traverse.
- ▶ Place retaining bracket on traverse as shown on the instruction plate.
- ▶ Lock safety bracket with the spring clip ▶▶

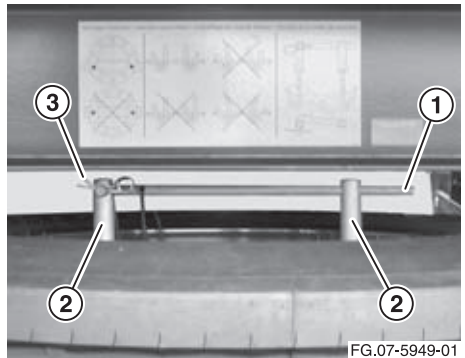


- Retaining bracket (installed)
- Traverse

- ▶ Position spare wheel centrally on traverse.
- ▶ Insert the two retaining brackets (4) through the tie bar (5) from below and pass through the spare wheel rim. Make sure that the retaining brackets (4) are vertical as shown.



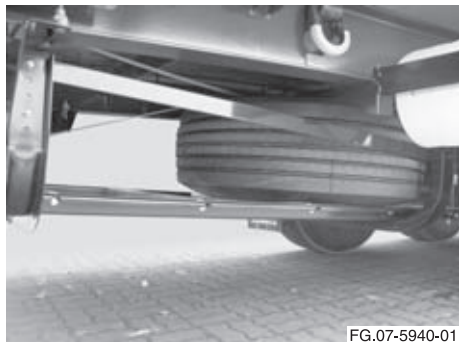
- Retaining bracket vertical, view from below



- Safety bracket
- Nut
- Spring clip

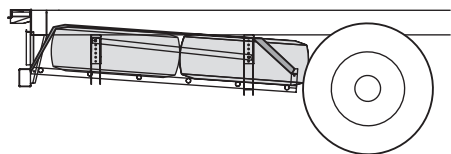
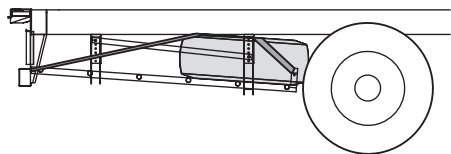
- ▶ Position nuts (2) and screw tight with the safety bracket (1).
- ▶ Insert safety bracket (1) through the two nuts (2) and secure with the spring clip (3).

## Roller model



FG.07-5940-01

## Roller model spare-wheel rack



FG.07-0002-01

## Tension strap guide

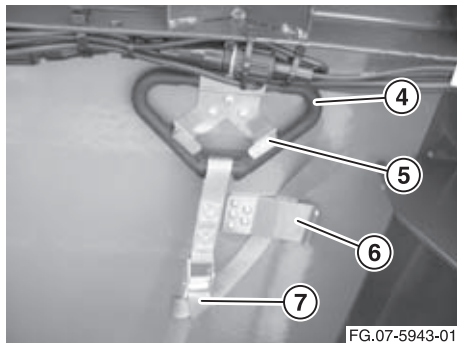
## Removing spare wheel



FG.07-0010-01

## Opening the cover plate

- ▶ To fold out, open both turning locks on the left side.  
The cover plate is hinged on the right side.
- ▶ Loose the tension strap.  
The tension lock is connected to the underrun guard.

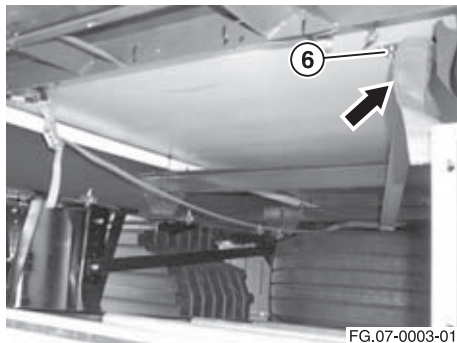


FG.07-5943-01

## Removal tool on floor of body

- 4 Handle
- 5 Retainer
- 6 Tongue
- 7 Removal tool strap

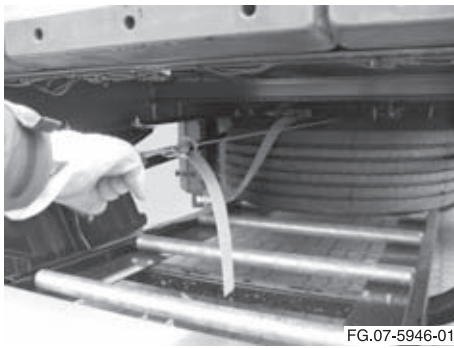
- ▶ Release removal tool handle (4) from the retainer (5).



FG.07-0003-01

## Clamp tension strap (arrow)

- 6 Tongue
- ▶ Clamp loose end of tension strap under the tongue (6).



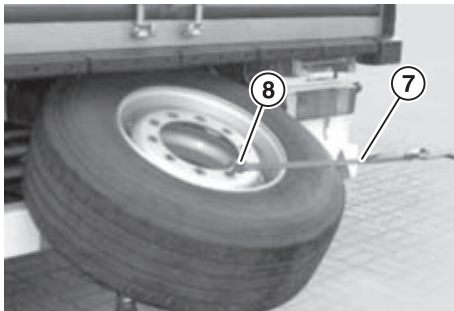
FG.07-5946-01

### Remove spare wheel

- ▶ Remove spare wheel with the removal tool.

### Replacing spare wheel

- ▶ Position spare wheel on underrun guard.
- ▶ Attach removal tool hook (8) to the rim.

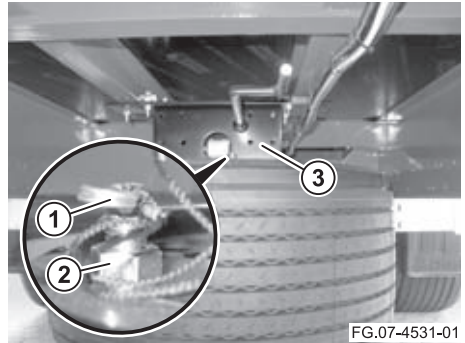


### Attach removal tool belt

- 7 Removal tool strap
- 8 Hook

- ▶ Push spare wheel to the stop.
- ▶ Lock spare wheel with the tension strap.
- ▶ Stow removal tool in the retainer (5).
- ▶ Secure the cover plate with the four knurled screws (1).

## Winch-type model



FG.07-4531-01

### Winch-type model, behind landing leg

- 1 Spring clip
- 2 Nut
- 3 Winch

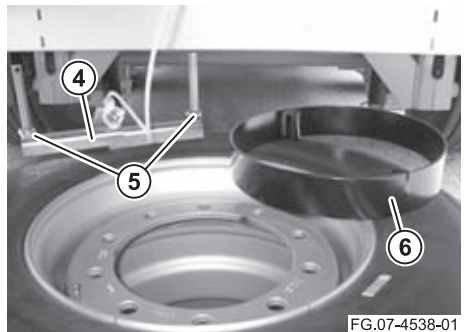


### INJURY HAZARD!

The heavy spare wheel may fall and injure you.

- ▶ Do not remain under the spare wheel when lifting and lowering the spare wheel with the winch.

### Removing spare wheel



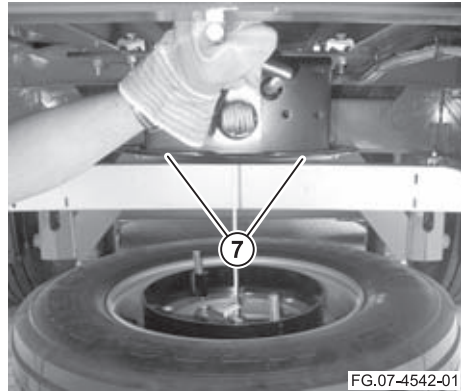
FG.07-4538-01

- 4 Cross member
- 5 Spring ring
- 6 Spacer ring with sleeves

- ▶ Remove spring clip (1).

- ▶ Unscrew the two nuts (2) (spanner size 27).
- ▶ Lower spare wheel to the ground with the winch (3).
- ▶ Pull spare wheel out to the side away from the traffic.

## Replacing spare wheel



### 7 Disc holes

- ▶ Slide cross member (4) through the holes in the rim and the sleeves on the spacer ring (6).  
Make sure that the two spring rings (5) are seated on the cross member threads (4).
- ▶ Wind spare wheel up with the winch (3).  
Guide the two threads of the cross member (4) through the disc holes (7) while winding.
- ▶ Tighten the two nuts (2).
- ▶ Secure nuts (2) with the spring clip (1).

# Pallet box\*

Types:

- Installed **in front of** the axle assembly with a maximum capacity of 36 europallets (800x1200 mm) or 24 industrial pallets (1000x1200 mm).
- Installed **behind** the axle assembly with a maximum capacity of 16 europallets or 8 industrial pallets.

The pallet box can be locked and is accessible from both sides.

If necessary a spare wheel can be stowed and secured. This reduces the storage capacity

- of the front pallet box by 6 europallets
- of the rear pallet box by 8 europallets

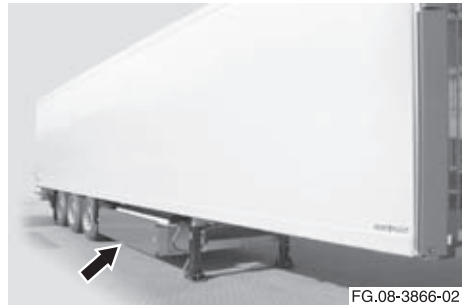
A loading diagram is attached to the inside of the cover.



**Pallet boxes with hook latch (in front of the axle assembly) FP 45/FP 60**

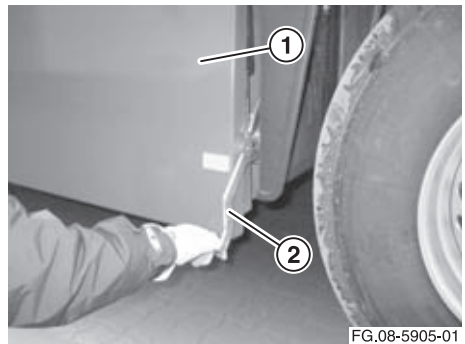


**Pallet boxes with bracket lock (behind the axle assembly) FP 25 and FP 45/FP 60**



**Pallet boxes with bracket lock (in front of the axle assembly) FP 25**

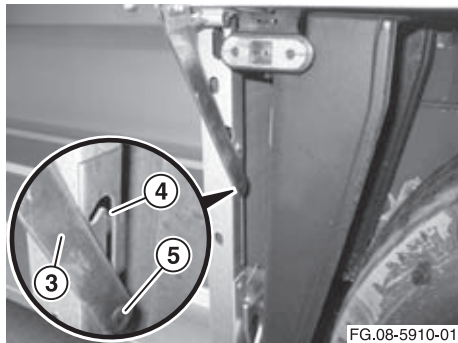
## Hook latch



- 1 Cover
- 2 Hook latch

## Opening

- ▶ Pull hook latch (2) upwards. Leave the cover (1) slightly.
- ▶ Open the other side in the same way.



FG.08-5910-01

- 3 Support
- 4 Groove
- 5 Latch pin

- ▶ Push cover (1) fully up and then lower slightly. Make sure that the pin (5) slides into the groove (4) on both sides of the cover (1).
  - ▷ The extension (3) holds the cover (1) open.



FG.08-5913-01

## Cover open



FG.08-5904-01

## Securing cover

- 2 Hook latch
- 6 Cover pin

## Closing

- ▶ Lift cover (1) slightly and press the supports (3) back on both sides of the cover (1) one after the other.
- ▶ Close cover (1).
- ▶ Lock cover (1) with the latches (2). Make sure that the hook latch (2) surrounds the pin (6).

## Bracket lock



### Pallet box!

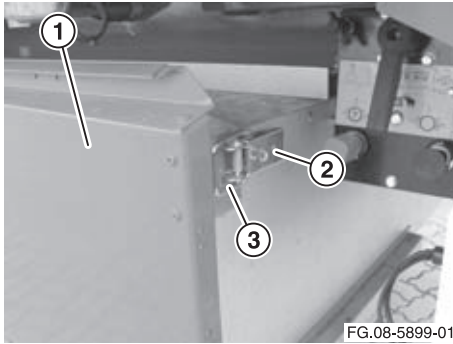
The clearance at the rear is reduced when a pallet box is installed at the rear.

- ▶ When driving over uneven areas and reversing remember that the ground clearance is reduced.

The pallet box can be locked and is accessible from both sides.

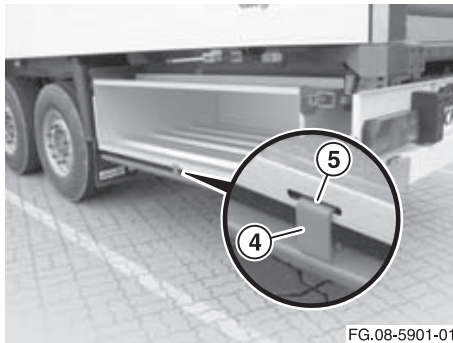
When installed in front of the axle assembly it holds 30 or 24 europallets. When installed behind the axle assembly it holds 16 europallets.

## Opening



- 1 Cover
- 2 Lock
- 3 Retainer bracket

- ▶ Fold lock (2) forward and unhook the retainer bracket (3)
- ▶ Open the other side in the same way.



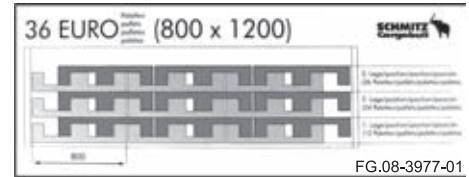
- 4 Tab on cover
- 5 Slot

- ▶ Open cover (1) and slide under the pallet box.
- ▶ Place the tab (4) of the cover in the slot (5) in the pallet box.

## Closing

- ▶ Pull cover (1) out from under the pallet box and close.
- ▶ Attach retaining bracket (3) and press lock (2) back.
- ▶ If necessary, secure with a lock.

## Loading diagram



**Loading plan for pallet boxes in front of the axle assembly, 36 europallets**



FG.08-0009-01

**Loading plan for pallet boxes behind the axle assembly, 16 europallets**

## Spare wheel

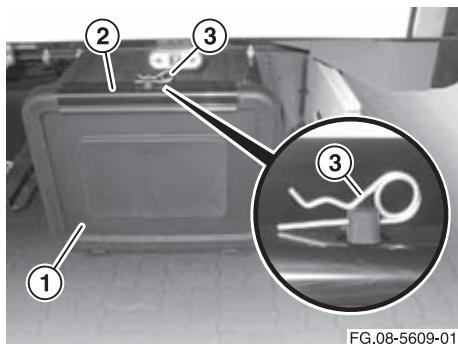
A sparer wheel can be stowed in the pallet box with a special clamp\*. This reduces the capacity of the pallet box by six (front) or eight (rear) europallets.



FG.08-0005-01

**Loading plan for pallet boxes in front of the axle assembly, 30 europallets and spare wheel**

## Toolbox\*



### Toolbox

- 1 Cover
- 2 Latch
- 3 Spring clip

The toolbox is installed in the rear section, but can be attached at other positions.

### **i** Max. load

Do not place a load of more than 50 kg in the toolbox (evenly distributed load).



### Opening

### Opening

- ▶ Remove spring clip (3).
- ▶ Press latch (2) up against the resistance with both hands.
- ▶ Open cover (1); look out for falling objects.



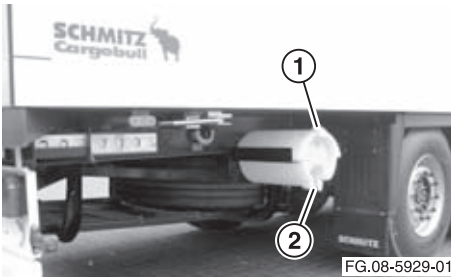
### Drawers in toolbox

### Closing

- ▶ Close cover (1).
- ▶ Press latch (2) down against the resistance until it clicks into place.
- ▶ Always secure latch (2) with the spring clip (3).



# Water tank\*



## Water tank\* on chassis

- 1 Filler funnel
- 2 Tap



### FATALITY HAZARD!

Chemicals, fuels, cleaning agents and other substances can seriously damage health on contact or if swallowed.

- ▶ Fill the water tank with water only.

The water tank can be attached to various points on the chassis. It has a capacity of about 30 l.

## Health information



### POISON HAZARD!

Impure or contaminated water may cause poisoning or damage to health.

- ▶ Use only fresh water from the public water supply.
- ▶ Replace the water at frequent intervals to prevent the growth of microbes.
- ▶ Do not use standard cleaning agents to clean the water tank.

Follow the instructions below if you want to use the water tank to hold drinking water.

- Do not use water from springs, rivers or any other open water.
- Use sterilising agents if you have any doubts about the cleanliness of the water.
- Standard cleaning agents may cause poisoning or damage to health. Use only specially prepared sterilising agents to clean the water tank. Rinse the water thoroughly with clean water before refilling it.
- Clean the water tank regularly and allow it to dry completely after cleaning.

## Winter operation

The full water tank may be damaged by freezing. Make sure that the water tank is empty or only partly filled in winter.

## Fire extinguisher\*

Before starting a trip locate the fire extinguisher.

A fire extinguisher is required when transporting dangerous goods.



### Test intervals

Have the fire extinguisher checked regularly as required by law. Check that it is still in place every day.



FG.08-5885-01

**Rear-mounted fire extinguisher on right side (FP 45/FP 60)**



FG.08-5882-01

**Rear-mounted fire extinguisher on left side (FP 45/FP 60)**

Fire extinguishers can be attached to various points on the chassis. 6 kg powder fire extinguisher are supplied.

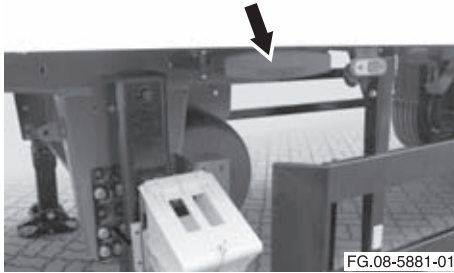


FG.08-5884-01

**Fire extinguisher on front wall (FP 25)**

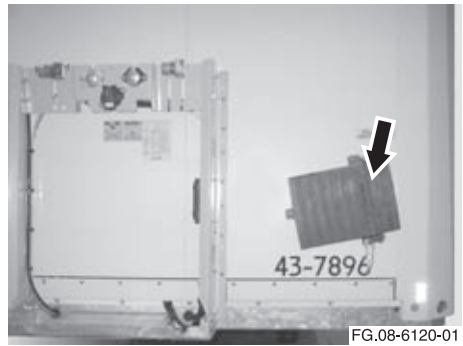
## Document compartment\*

The document compartment holds freight documents. It can be locked and also sealed.



**Document holder under floor (FP 45/FP 60)**

The document holder is installed under the floor at the level of the landing leg as standard equipment.

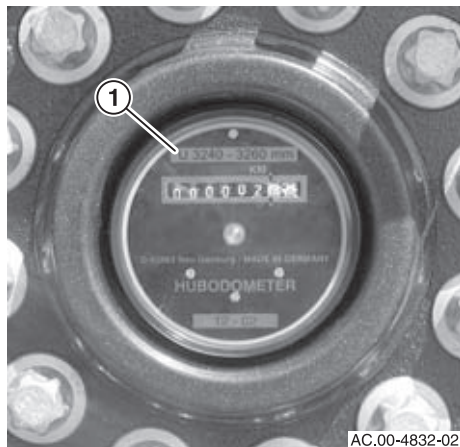


**Document holder on front wall (FP 25)**

On semitrailers without a refrigerator the document holder can be mounted on the front wall.

## Hub odometer\* (Axle hub odometer)

### Mechanical hub odometer



- 1 Approved tyre diameter

The hub odometer (kilometre counter) counts the distance travelled by the semitrailer in kilometres.

The hub odometer must be calibrated for the installed tyre size. The wheel diameter (1) of the approved tyre size is printed on the hub odometer.

#### **i** Tyre size

Have the hub odometer replaced if you change the tyre size.

### Digital kilometre counter



### Digital kilometre counter

- 1 Sensible area

In the digital kilometre counter, the wheel diameter is set once before mounting and it cannot be changed.

### Reading the distance travelled in km

- ▶ Bring a metallic object over the sensible area (1).
  - ▷ The kilometre reading is displayed.
  - ▷ The set wheel diameter is displayed.

When the kilometre reading indicator flashes, the kilometre counter battery must be replaced.

#### **i** Operating instructions

Detailed operating instructions are available at the manufacturer BPW.

# Tail lift\*



## Owner's Manual

Read and follow the manufacturer's operating manual before working with the tail lift.

## Types

- folding tail lift,
- one-piece tail lift with top-hung tailboard,
- one piece standard tail lift to full body height.



Folding tail lift



Tail lift with top-hung tailboard



One piece standard tail lift to full body height

## Power supply

There are three options for the tail lift power supply:

- **spare battery system** with CEE socket to tractor or refrigerator,
- direct supply from the tractor with 2-pin circular socket ("NATO"),
- direct supply from the tractor with 2-pin flat plug ("REALS").

Linguistic usage	Standard designation
CEKON	4-pin CEE socket in accordance with DIN 60309-2
NATO	2-pin circular socket in accordance with VDA 72593 A
REALS	2-pin flat plug SRE160, EN 1175-1

### Standard designations of the plug connectors

### Separate battery system



FG.02-5857-01

### CEE socket ("CEKON")



FG.02-5831-01

### Separate battery system with fuse box

Two 12 V batteries in the semitrailer power the tail lift.

The batteries are charged when the tractor engine is running and the vehicle voltage is greater than 26.5 V.

The batteries are not charged:

- when the engine is not running and the vehicle voltage is less than 25.5 V,
- when the tail lift is operating.

The electronic charging cable is connected to the tractor and semitrailer CEKON sockets and **must** remain connected while driving.

Instructions for servicing the batteries can be found in "Tail lift batteries" on page 186.

### Direct connection

The tractor batteries power the tail lift.



### FIRE DANGER!

If the charging cable is torn off or worn, fire may be caused by short circuit.

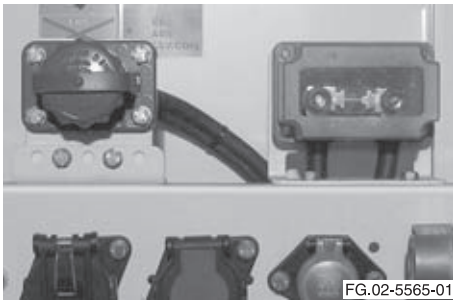
- ▶ If the charging cable must be connected while driving: Use only charging cables that are designed as Wendelflex lines.

Unsuitable charging cables may disconnect or break. Use only Wendelflex lines.

Exception: if the charging cable runs over a swing arm a Wendelflex line is not required.

Remove the charging line before driving as follows:

- you do not have a Wendelflex line and
- your tractor does not have a swing arm.



FG.02-5565-01

**2-pin circular socket ("NATO") with main switch**



FG.02-5569-01

**2-pin circular socket**



FG.02-0017-01

**2-pin flat plug ("REALS") with main switch**

- ▶ Plug charging cable into the socket.
- ▷ The tail lift is supplied with power.

## **i** Current

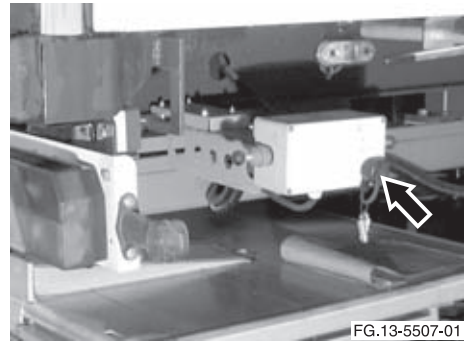
Maximum approved current:

- 2-pin circular socket: 160 A
- 2-pin flat plug: 160 A

## Operation

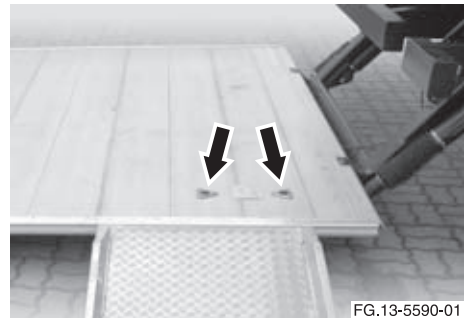
### **i** Owner's Manual

Read and follow the manufacturer's operating manual before working with the tail lift.



FG.13-5507-01

**Manual control with keyswitch (example BÄR Cargolift)**



FG.13-5590-01

**Foot control (example BÄR Cargolift)**

## Tail lift\*

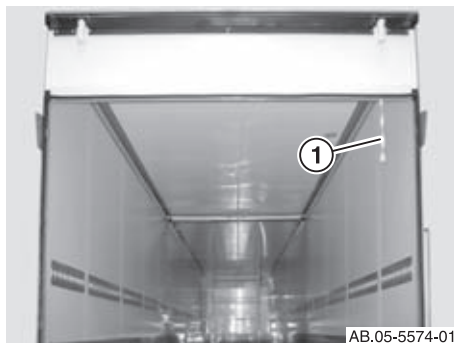
- ▶ Switch on tail lift at the manual control with the keyswitch.
  - ▷ The tail lift is ready for operation.
- ▶ Move tail lift with the manual control or the foot control.



### Handle

Hold on to the handle when you ride on the tail lift.

## Top-hung tailboard\*



### Top-hung tailboard with divided tail lift

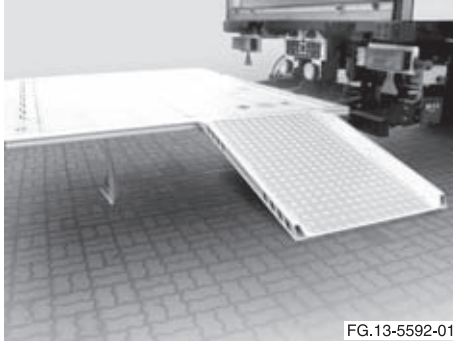
#### 1 Strap

The top-hung tailboard is used,

- if the rear cannot be completely closed by the tail lift platform to its full height,
  - the height of the platform is restricted by the ramp.
- ▶ Open and close top-hung tailboard with the strap (1).



## Guard plate\*



### Guard plate (do not load like this!)

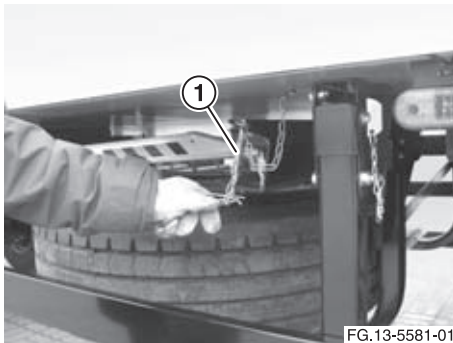
The guard plate is used to access the tail lift from the side with a trolley.



### ACCIDENT HAZARD!

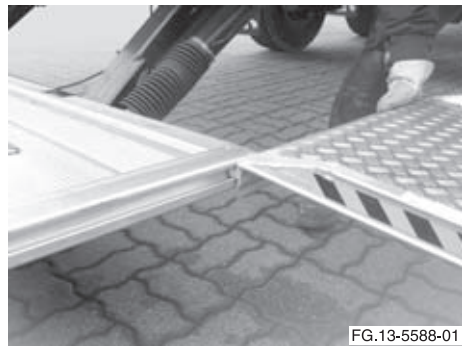
Overloading the guard plate may result in falls from the lift platform.

- ▶ the maximum load of the guard plate is 600 kg.



### 1 Securing pin

- ▶ Remove securing pin (1) and pull guard plate out of the retainer on the chassis.



### Attaching guard plate (shown with groove in the example)

- ▶ Insert guard plate into the tail lift groove from the side.  
Load the guard plate only when the free end is firmly on the ground!



### Guard plate

Guard plates from other manufacturers are attached to the tail lift platform with pins.



### INJURY HAZARD!

If the guard plate slips out it may cause injury.

- ▶ Pull the guard plate out of the tail lift before raising the tail lift to its closed position.



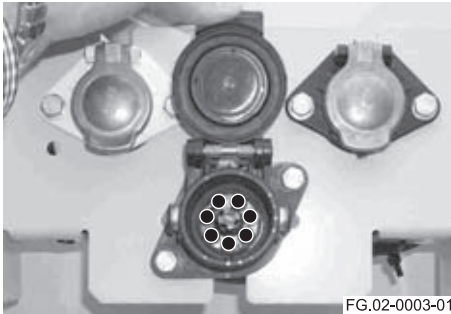
	<b>Driving</b>	Keywords
	<b>EBS</b>	74
	<b>Stability program</b>	76
	<b>First drive</b>	77
	<b>Brake adjustment</b>	78
	<b>Coupling and uncoupling</b>	79
	<b>Clearance zones</b>	83
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	Superstructure	
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	Data	

The **Electronic Brake System** for trailers, trailer **EBS**, is standard equipment on all Schmitz Cargobull semitrailers manufactured since 2002.

EBS is an electronically controlled brake system, which is fitted with automatic antiskid systems (ABV/ABS) and automatic load sensing braking pressure regulation (ALB).

Older vehicles or customised vehicles may still have an ABS system:

- You can recognise an **EBS system** by the **7-pin** socket.
- You can recognise an **ABS system** by the **5-pin** socket.



**7-pin socket (EBS system)**

## Approved plug connectors

To ensure that the EBS operates, semitrailers with trailer EBS may only be towed by tractors that are fitted with one of the following connectors:

- Extended ISO 7638-1996 connector (ABS + CAN), 7-pin, 24 V, on tractors with CAN data line (tractors with EBS)
- ISO 7638-1985 connector, 5-pin, 24 V, on tractors without CAN data line (tractors without EBS, with ABS connector).



### **ACCIDENT HAZARD!**

Without an ABS/EBS connector the semitrailer will overbrake, which may cause it to skid and can result in accidents.

- ▶ Always connect the ABS/EBS connector between the tractor and semitrailer.
- ▶ Use only approved connectors included in the vehicle registration.
- ▶ Only tow semitrailers with trailer EBS with tractors that have a connector compliant with ISO 7638.

In case of a short drive without EBS connector or cable break, a safety function is activated. In this case, the EBS is powered by the brake light voltage, ensuring the ALB function (automatic load sensing braking pressure regulation) and the ABV function (Antiskid Braking System).

## Advantages of trailer EBS

Trailer EBS offers a number of advantages over conventional brake systems:

- The braking forces between tractor and semitrailer can be optimally matched, resulting in even wear of the brake pads.
- Even application of all wheel brakes in the entire semitrailer, which improves the driving stability of the complete semitrailer during braking.
- The electrical actuation of valves and the electronic pressure regulation reduce the response times, resulting in shorter braking paths.
- Automatic axle lift control and starting aid function\* can be shown.

For information on the function and operation of the axle lift and starting aid see "Axle lift system\*" on page 40.



### ACCIDENT HAZARD!

Trailer EBS is not a system that can cancel the laws of physics. Trailer EBS optimises braking operations within the physical limits and in emergency situations may help to prevent accidents.

- ▶ Do not allow the extra safety of trailer EBS tempt you to drive faster and take more risks.

## Warning displays

The tractor has warning lights that display the status of the trailer EBS and any faults.

The red light must not be on continuously while driving.

Any faults in the EBS must be repaired at a qualified workshop as soon as possible.

## Axle load indicator

The trailer EBS allows to calculate the semitrailer axle load based on the air spring bellows pressure.

When it supports the tractor, axle load can be displayed in the driver's cab. The display precision is around +/- 3%.

The calculated value is transmitted through pins 6 and 7 of the 7-pin EBS socket (24 V CAN; CAN messages in accordance with ISO 11992-2).

## Stability program

The (driving dynamics) stability program is an enhanced function of the trailer EBS and is standard equipment in all Schmitz Cargobull semitrailers.

The stability program uses specific braking operations to bring the semitrailer to a stable position in critical driving situations such as swerving to avoid accidents or excessive speed in curves. In many cases it can prevent the vehicle from tipping over.

But this also applies: the stability program cannot cancel the laws of physics; it simply exploits all the options offered by those laws. The stability program can prevent the semitrailer from tipping over in many emergency situations if the stabilisation process remains within the physical limits.

If you exceed these limits, such as with excessive speeds around tight curves, even the stability program will not be able to prevent the trailer from tipping over.



### ACCIDENT HAZARD!

The stability program is not a system that can cancel the laws of physics. The stability program optimises driving characteristics within the physical limits and in emergencies may help to prevent accidents.

- ▶ Do not allow the extra safety of the stability program tempt you to drive faster and take more risks.



### Stability program

The stability program of the trailer EBS operates completely independently of the make, model and equipment of the tractor.

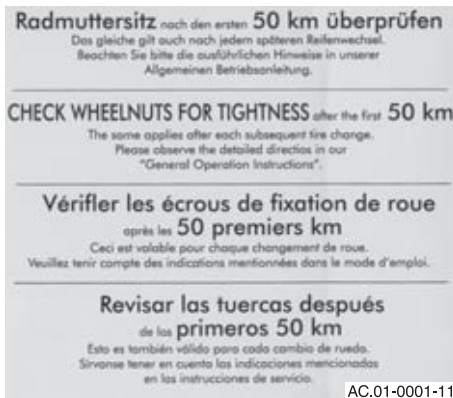
# First drive



## ACCIDENT HAZARD!

Loose wheel nuts will cause wheels to shear off, which can cause accidents with personal injury.

- ▶ Tighten the wheel nuts on all wheels to the specified torque during the first trip with a load, and in any case no later than after 50 km of driving.
- ▶ Tighten the wheel nut to the specified torque after every wheel change and after no more than 50 km of driving.



### "Wheel nut seating" warning sign

Because of settling processes the wheel nuts will loosen during the first few kilometres of driving the new semitrailer.

For this reason the wheel nuts must be tightened to the specified torque after 50 km of driving.

The wheel nuts of the changed wheel must also be tightened to the specified torque after every wheel change.

The specified torques for installing and tightening the wheel nuts can be found on page 207.

Follow the directions of the axle manufacturer.

## Brake adjustment

Unlike the drum brake the disc brake shows no perceptible loss of braking power when overloaded.

Overload is noticeable more by overheated brake discs, which can result in damage to wheel bearings and brakes and also increased brake pad wear.

To distribute the braking force evenly over all brakes in the combination, all wheel brakes should be adjusted to operate evenly after the first 2000 to 5000 km as per RREG 71/320.

The brake systems of Schmitz Cargobull vehicles are designed so the towing vehicle does not require a pressure advance.

Warranty claims resulting from premature wear can only be considered when the results of the semitrailer brake adjustment are submitted.



# Coupling and uncoupling

When coupling and uncoupling no person is permitted to be in the danger zone between the tractor and the semitrailer.



## FATALITY HAZARD!

Persons in the danger zone between the tractor and the semitrailer may be crushed or run over.

- ▶ Direct all persons away from the danger zone when coupling or uncoupling.
- ▶ No person is permitted to remain at the fifth-wheel lock of the tractor while coupling or uncoupling.
- ▶ Persons directing the tractor driver must stand well away from the vehicles.

## ACHTUNG!

Vor dem Abstellen auf Stützwinden die Luftfederung entlüften!  
Beim Aufsatteln erst die Stützwinden entlasten, dann die Luftfederung belüften.

## ATTENTION!

Detaching trailer - Dump air from suspension before lowering legs.  
Attaching Trailer to unit - wind up legs before inflating suspension.

## ATENCIÓN!

Desenganchar el semirremolque- dejar escapar el aire de la suspensión neumática antes de bajar los pies de apoyo  
Acoplar el semirremolque al tractor- descargar los pies de apoyo, después llenar la suspensión neumática con aire.

FG.05-0001-01

### "Landing legs" warning sign

Note the sequence:

- Vent the air suspension before parking on the landing leg.
- When coupling release the load on the landing legs first, then vent the air suspension.

## Before coupling

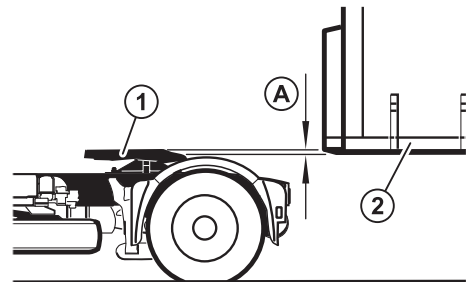
Check the following before coupling:

- Is the wear on the king-pin still within approved limits?
- Is the king-pin tight? Are all fastening bolts present?
- Is the semitrailer correctly loaded? Is the load secured?
- Do the coupling heights of the tractor and semitrailer match?
- Is the parking brake on the semitrailer set?

Never couple the semitrailer unless all the above items have been checked.

See also the information at page 82 when coupling a **steered** semitrailer.

## Coupling



FG.00-0004-01

### Height difference when coupling

- A Height difference approx. 5 cm
- 1 Fifth-wheel plate
- 2 Semitrailer skid plate

When coupling and uncoupling no person is permitted to be in the danger zone between the tractor and the semitrailer.

- ▶ Back tractor as straight as possible to the semitrailer.
- ▶ Open fifth wheel. Follow the manufacturer's operating manual.
- ▶ Set height difference so the skid plate (2) is approx. 5 cm lower than the contact surface of the fifth wheel (1).  
Set the height difference either with the air suspension of the tractor or the landing leg of the semitrailer (see page 46).
- ▶ Reverse the tractor slowly until the fifth wheel locks.
- ▶ Set the parking brake on the tractor.

## After coupling

### Tractor parking brake

Make sure that the parking brake of the tractor is activated!

- ▶ Check that the fifth wheel is correctly locked and secure it. Follow the manufacturer's operating manual.  
The skid plate must not have a visible air gap between it and the fifth wheel.



### Coupling

If the skid plate is not correctly positioned or if the fifth wheel cannot be locked, repeat the coupling process.

- ▶ Connect compressed air and electrical supply lines.  
For information on connection the supply lines see chapter "Brake system" from page 28.

Connect EBS connector cable.

- ▶ Raise landing leg and lock crank.
- ▶ Collect and stow wheel chocks.
- ▶ Release spring-actuated pressure accumulator parking brake of the semitrailer.
- ▶ Bring air suspension to driving position.
- ▶ Check that the supply lines move freely by slowly driving around a tight curve.
- ▶ Carry out departure check.

### Semitrailer with steered axle

The coupling plate (fifth wheel) can be rotated with steered semitrailers.

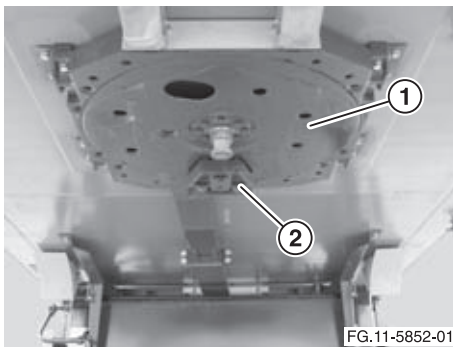
During coupling a wedge (2) grips the fifth wheel and connects the coupling plate (1) and fifth wheel.



### Damage to steering system!

Incorrect coupling may damage the steering system and cause the semitrailer to run crooked.

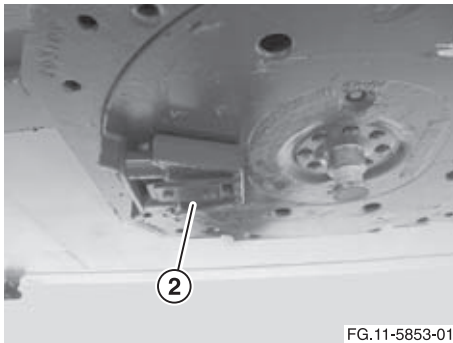
- ▶ Maintain the correct coupling height.  
Do not lift the semitrailer during coupling.
- ▶ Drive the tractor straight under the semitrailer.



FG.11-5852-01

### Coupling plate with wedge

- 1 Coupling plate
- 2 Wedge



FG.11-5853-01

- 2 Wedge

For information on the operation of the single tie-rod steering see "Steered axle" on page 86.

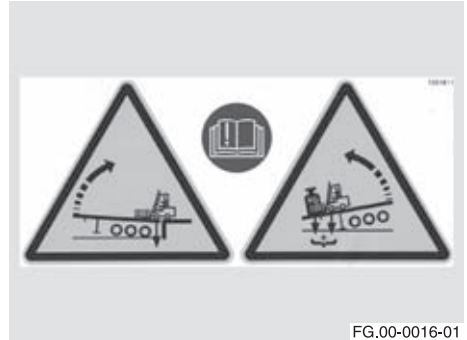
## Uncoupling

### ACCIDENT HAZARD!

The semitrailer will tip if it is loaded so it is head or tail heavy and may cause personal injury.

- ▶ Only uncouple the semitrailer if it is loaded so that it cannot tip forwards or backwards.

See also the information on "Stability" on page 158.



FG.00-0016-01

### Warning sticker "Stability with uncoupled semitrailer"

### Avoid tension

Before uncoupling vent the air spring bellows of the semitrailer and then move the semitrailer forward or back slightly. This prevents any tension from damaging the chassis and the landing legs when the uncoupled semitrailer sinks on to the air suspension after loss of pressure.

- ▶ Select a suitable parking area (level hard ground).

- ▶ Actuate the parking brake of the tractor and the semitrailer.
- ▶ Place wheel chocks under semitrailer (not at lifting or steering axles).
- ▶ Place suitable steel plates under landing legs if required by the quality of the ground. Follow the manufacturer's operating manual.
- ▶ Raise the semitrailer with the air suspension of the tractor and then extend the landing legs  
or  
Raise semitrailer with the landing legs at low speed (tractor without air suspension).
- ▶ Disconnect compressed air and electrical supply lines and EBS connector (first red coupling head supply, yellow brake coupling head).
- ▶ Unlock and open fifth wheel. Follow the manufacturer's operating manual.
- ▶ Slowly drive tractor forward.

### Semitrailer with steered axle



#### Damage to steering system!

Incorrect uncoupling may damage the steering system and cause the semitrailer to run crooked.

- ▶ Uncouple only on level ground.
- ▶ Extend the landing legs enough to ensure that the semitrailer remains at the same height during uncoupling.
- ▶ Drive the tractor straight away from the semitrailer.

For information on the operation of the single tie-rod steering see "Steered axle" on page 86.

# Clearance zones

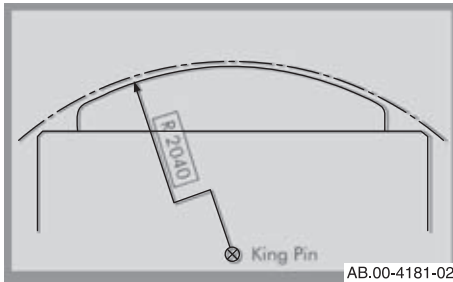
## Swivel radius (turning circle)

The swivel radius is the distance from the king-pin to the front trailer corner. If a refrigerator is installed, it must remain inside this radius.

If the distance from the centre of the fifth wheel to the rear of the driver's cab or any attached equipment is less than the swivel radius plus a safety margin, the semitrailer must not be coupled. The tractor and the semitrailer would contact each other when driving around a curve.

Schmitz Cargobull reefer semitrailers generally have a front swivel radius of 2040 mm.

The swivel radius is reduced if the semitrailer is tilted forward (see page 84, position B).



Swivel radius

## Supply lines

Check the layout of the supply lines. They must not hang down too much and wear and they must not be too tight for driving around curves.



## Wendelflex lines

Wendelflex lines that are tangled may come off in very tight curves. Separate them before connecting them.

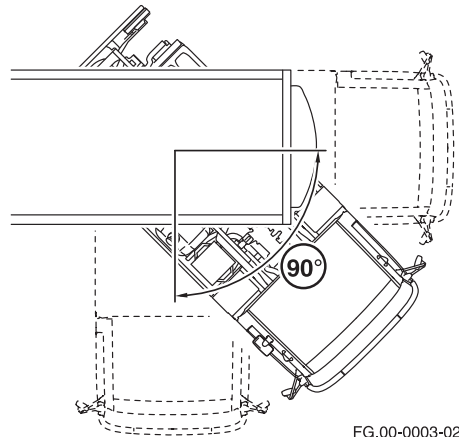
## Turning angle



## Supply lines

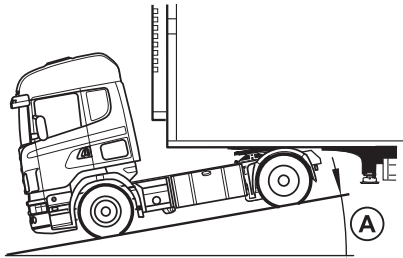
If the maximum turning angle is exceeded, the supply lines will be torn off.

- ▶ Always be aware of the approved turning angle when driving around curves and manoeuvring.



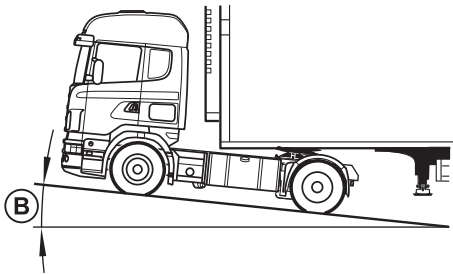
Maximum turning angle 90°

## Clearance zones Tilt angle



FG.00-0001-02

A Tilt angle to rear



FG.00-0002-02

B Tilt angle to front

The tilt angle should be at least  $6^\circ$  to the front (B) and  $7^\circ$  to the rear (A) (in accordance with the DIN ISO 1726 standard – for two-axle tractors).

The actually possible tilt angles depend on the tractor and is influenced by the wheel base, coupling height and mudguard layout.

Note the free wheel space between the tractor and semitrailer.



### Three-axle tractors

Three-axle tractors frequently do not confirm to DIN ISO 1726. When using three-axle tractors note particularly the rear radius and the free space to the landing leg.



### Property damage

If you exceed the maximum approved tilt angle, you risk damaging the semitrailer and the tractor.

- ▶ Be aware of the approved tilt angle when driving over obstacles.
- ▶ The values are reduced for the semitrailer when turning.
- ▶ The values may be lower for semitrailers with steered axle!

# Air suspension

## Driving instructions

A stop on the axle allows a semitrailer with defective air suspension (no air in the spring bellows) to be driven at low velocity (max. 25 km/h) to the nearest workshop.



### Tyre damage!

Tyres may be damaged if they contact the semitrailer frame while driving.

- ▶ Check that the tyres can rotate freely before driving.
- ▶ Do not drive with faulty air suspension if the tyres contact the semitrailer frame.

Driving with the semitrailer raised or lowered may cause accidents because of poor driving properties and may result in damage to the semitrailer and its load.

Pay particular attention to the position of the Up and Down valve:

- after driving on to a ferry,
- after railway transport in intermodal transport,
- after height adjustments, such as at a ramp,
- after breaks in driving.

Always set the Up and Down valve to "FAHRT" (DRIVE) position before starting a trip.



### ACCIDENT HAZARD!

If the air suspension is not set to "FAHRT" (DRIVE) position before starting a trip, poor driving properties or a high level setting may cause to vehicle to be caught at an underpass and cause an accident.

- ▶ Always set the Up and Down valve to "FAHRT" (DRIVE) position before starting a trip.



### Auto-reset

On vehicles with an auto-reset function (see page 39) the driving position is automatically reset when the speed exceeds 16 km/h.

## Axle lift

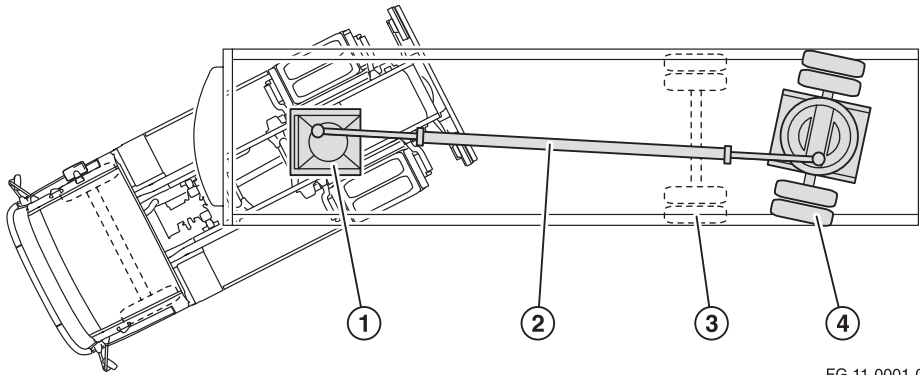


### Travel through curves

When the lift axle is lifted the wheel base between the tractor and semitrailer increases. This means that the semitrailer moves further in when travelling through curves!

## Steered axle

Steered axle



FG.11-0001-02

### Functions of steering system

- 1 Coupling plate (rotary bearing)
- 2 Tension/compression rod
- 3 Rigid axle(s)
- 4 Fifth wheel



### ACCIDENT HAZARD!

The widely swinging rear of the semitrailer may cause accidents and injuries.

- Note that the rear of a steered semitrailer will swing out more in curves than the rear of an unsteered semitrailer.

When steering the tractor a wedge that grips the fifth wheel transfers the steering movement to the coupling plate. A tension/compression rod transfers the rotary movement of the coupling plate to the fifth wheel and thereby steers the semitrailer.

The result is that the rear of the semitrailer swings out more than that of an unsteered semitrailer.





## ACCIDENT HAZARD!

The semitrailer may tear loose if improperly lashed and cause accidents with personal injury.

- ▶ Vent the spring bellows of the air suspension completely when you park the semitrailer on the ferry.
- ▶ Do not lash the semitrailer until the air suspension has completely lowered.

If the spring bellows have air in them the semitrailer must not be lashed to the deck of the ferry. The lashing may become loose as the semitrailer air suspension settles (e.g. loss of air in the spring bellows).

Lower the semitrailer completely before lashing it down.



## Avoid tension

Do not actuate the spring-actuated pressure accumulator parking brake of the semitrailer until the semitrailer has been fully lowered by the air suspension. This will prevent tension in the body and landing leg.

Semitrailers used for ferry transport have four pairs of ferry lashing rings (fastening rings) for lashing the semitrailer to the ferry.

The ferry lashing rings are painted bright yellow.

## Leaving the ferry

Return the air suspension to driving position before driving off the ferry. Follow the directions in the chapter on "Chassis" below

- "Lift/lower valve" on page 37,
- "Auto-reset function" on page 39.

## Accompanied ferry transport

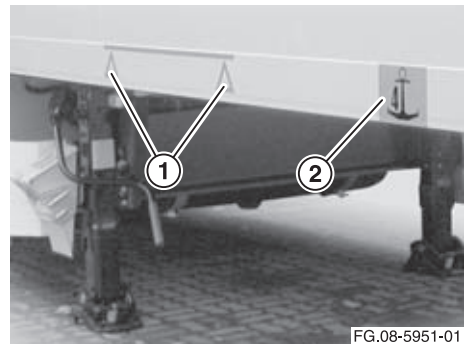
During accompanied ferry transport the semitrailer is loaded on the ferry without a tractor and supported on a support block.

## Unaccompanied ferry transport

During unaccompanied ferry transport the semitrailer is loaded on the ferry without a tractor and supported on a support block.

### FP 45/FP 60

On the semitrailers with self-supported body, FP 45/FP 60, the first pair of ferry lashing rings is indented in the skid plate and indicated by a mark on the body. The area of the support block contact is also indicated with a sticker.



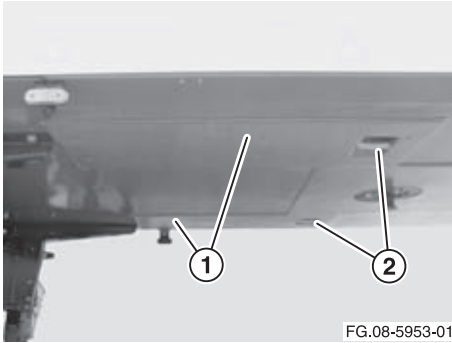
### Marks on the body

- 1 Support block contact mark
- 2 Ferry lashing ring marks



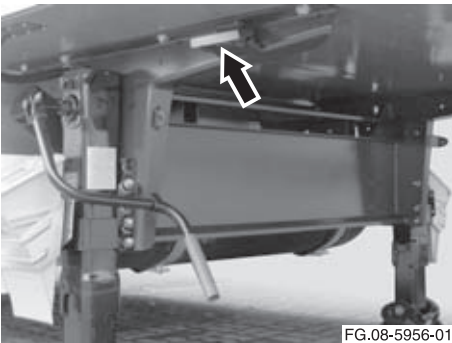
### Support block contact

The support block must only be in the area between the marks.



FG.08-5953-01

- 1 Support block contact
- 2 First pair of ferry lashing rings, sunken



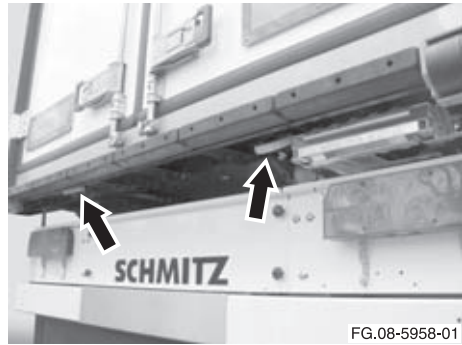
FG.08-5956-01

Second pair of ferry lashing rings on the landing leg



FG.08-5957-01

Third pair of ferry lashing rings on the longitudinal chassis beam



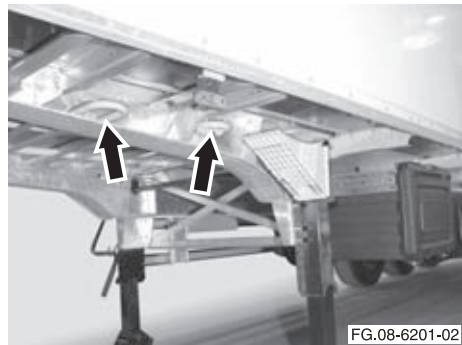
FG.08-5958-01

Fourth pair of ferry lashing rings on the rear (optional, instead of on the longitudinal chassis beam)

### FP 25

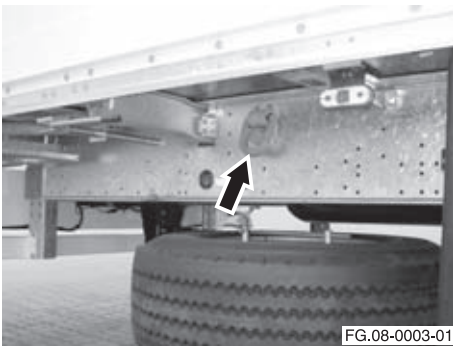
On semitrailers with bolted chassis, FP 25, three pairs of ferry lashing rings are fastened to the longitudinal chassis beam, the fourth pair to the head frame (area of underrun guard).

The support block contacts the longitudinal chassis beam.

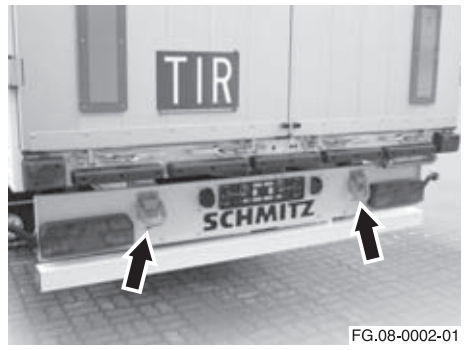


FG.08-6201-02

First and second pair of ferry lashing rings on the front of the longitudinal member



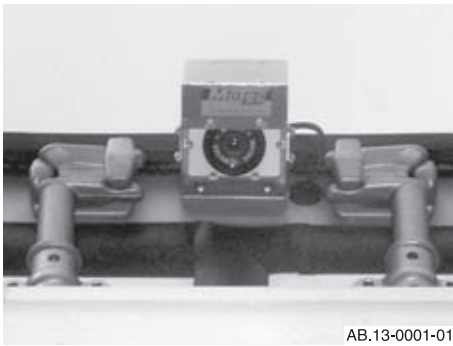
**Third pair of ferry lashing rings on the rear of the longitudinal chassis beam**



**Fourth pair of ferry lashing rings on the head frame at the rear (optional, instead of on the longitudinal chassis beam)**

## Reversing camera

Reversing camera



Reversing camera

The reversing camera shows a view of the area immediately behind the semitrailer.

Before backing into at loading docks make sure that the reversing camera has sufficient free space.

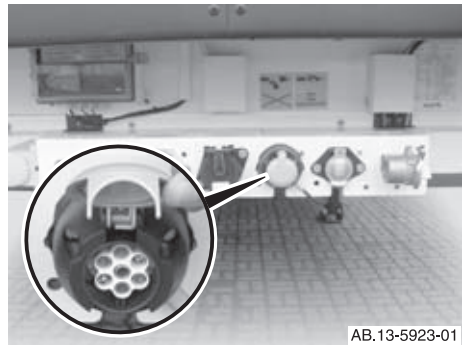


Monitor in cab



### Owner's Manual

Read and observe the accompanying operating manuals from the manufacturers of the monitor and reversing camera before working with the system.



7-pin socket for reversing camera

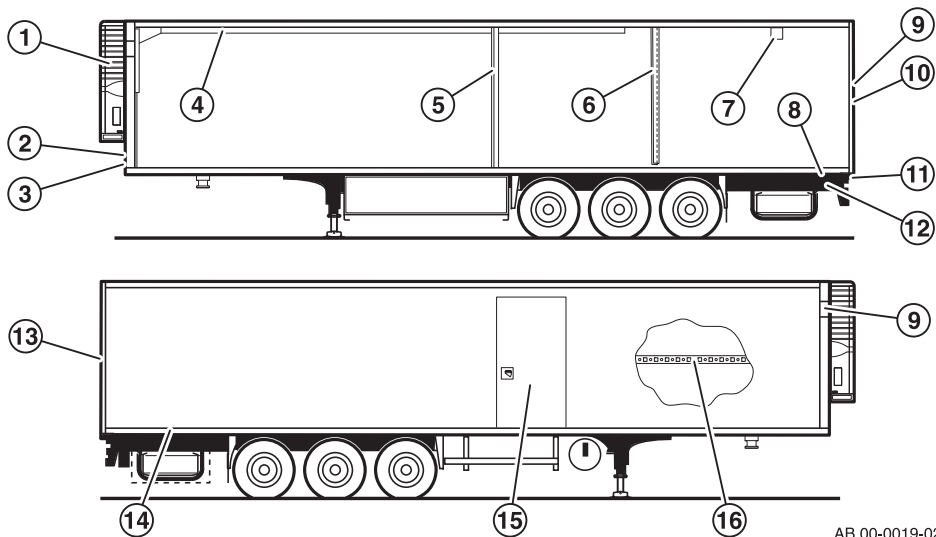
Unsuitable connecting cables may disconnect or break. Use only Wendelflex lines.

Exception: if the connecting cable runs over a swing arm a Wendelflex line is not required.

# Superstructure

<b>Overview</b>	<b>92</b>	Keywords
<b>Rear door FP 45/FP 60</b>	<b>93</b>	Safety
<b>Rear door FP 25 Express</b>	<b>96</b>	
<b>Holdback stay</b>	<b>99</b>	Chassis
<b>Roller door</b>	<b>100</b>	
<b>Side door</b>	<b>107</b>	Driving
<b>Entry aids</b>	<b>109</b>	
<b>Load area lighting</b>	<b>110</b>	Superstructure
<b>Moveable bulkhead</b>	<b>111</b>	
<b>Air ducts</b>	<b>118</b>	Transport solutions
<b>Vertical curtain</b>	<b>120</b>	
<b>Drain</b>	<b>122</b>	Operation
<b>Charging socket</b>	<b>123</b>	
<b>Ventilation flaps</b>	<b>124</b>	Maintenance
<b>Remote thermometer</b>	<b>125</b>	
<b>Temperature recorder</b>	<b>126</b>	Data
<b>Refrigerator</b>	<b>127</b>	
<b>Equipment for load securing gear</b>	<b>128</b>	

# Overview



AB.00-0019-02

## Overview of superstructure controls

Item	Name	Page
1	Refrigerator*	127
2	Temperature recorder*	126
3	Remote thermometer*	125
4	Air ducts*	118
5	Moveable bulkhead*	111
6	Vertical curtain*	111
7	Charging socket* for attached forklift	123
8	Water drain*	122
9	Ventilation flaps*	124
10	Rear doorFP 45/FP 60	93
	Rear doorFP 25	96
11	Entry aids	109
12	Load area lighting (light switch)	110
13	Roller door*	100
14	Holdback stay	99
15	Side door*	107
16	Equipment for load securing gear*	128

# Rear door FP 45/FP 60

Types:

- rear doors with two revolving rod locks.
- rear doors with four revolving rod locks\* (standard equipment with reefer semitrailers for hanging meat transport).

The revolving rod locks can be locked and are suitable for customs sealing.

For information on the holdback stay see page 99.



## ACCIDENT HAZARD!

Open door wings can cause injury if they swing unexpectedly, such as when blown by the wind.

- ▶ Always secure the door wings with the holdback stays after opening, even if you do not move the semitrailer.



## Superstructure stability

Driving with the tailboard open may cause damage.

- ▶ Do not drive with rear doors or tailgate open or unlocked.



AB.05-5690-01

Rear door with two revolving rod locks



AB.05-5652-01

Rear door with four revolving rod locks



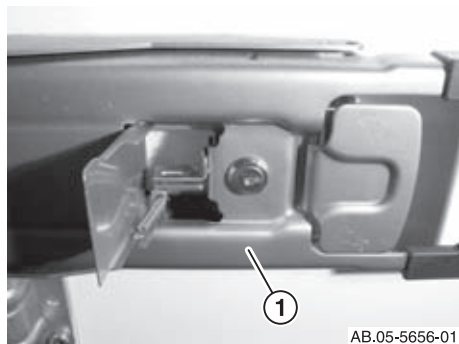
**INJURY HAZARD!**

The rear door can open suddenly by pressure from the load, parts of the load can fall out of the superstructure and cause injury.

- ▶ Open the door wing cautiously and beware of load pressure.
- ▶ When opening the doors keep clear of the swing area of the door wings.
- ▶ If the load is pressing against the door, leave the second revolving rod lock secured and locked.
- ▶ Clear the load pressure without endangering yourself or other persons.

The rear door with four revolving rod locks is described below.

**Opening the door wing**



AB.05-5656-01

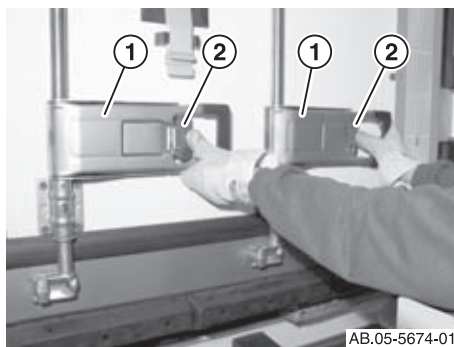
**Locking and unlocking revolving rod locks**

- 1 Revolving rod lock



**Key**

In new vehicles the key is stored behind the revolving rod lock.



AB.05-5674-01

**Unlocking revolving rod lock**

- 1 Revolving rod lock
- 2 Handle

Open the right-hand door wing first:

- ▶ Release both revolving rod locks (1). To do this press the handle (2) down with your thumb.
- ▶ Open both revolving rod locks (1) slightly at the same time.



AB.05-5678-01

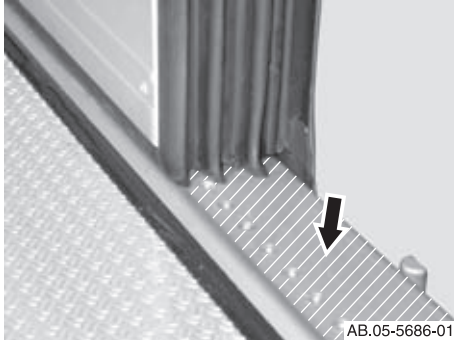
**Opening door wing**

- ▶ If you do not detect any load pressure, open both revolving rod locks (1) at the same time and open the door wing.
- ▶ Close both revolving rod locks (1) to prevent damage to the body.
- ▶ Secure the right door wing with the holdback stay. (see "Holdback stay" on page 99.)



If necessary open the left door wing and secure with the holdback stay.

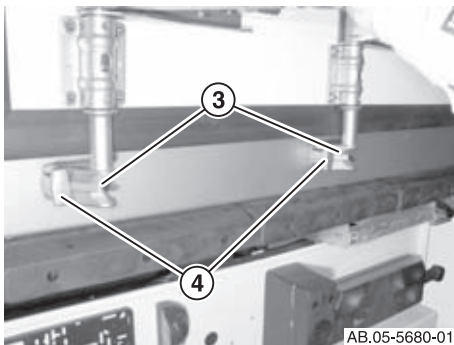
### Closing the door wing



#### Cleaning the door seals

Close the left-hand door wing first:

- ▶ Clean the door seal area.

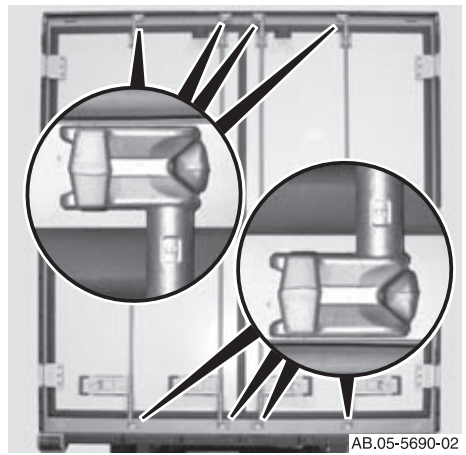


#### Closing door wing

- 3 Striker
- 4 Support

- ▶ Close door wing and place the two strikers (3) against the support (4) at the same time.

Make sure that the top strikers also grip the supports.



#### Wing door closed

- ▶ Press the two revolving rod locks (1) until the catches (2) audibly click into place.
- ▶ Close the right-hand door wing in the same way.

## Rear door FP 25 Express

For information on the holdback stay see page 99.

The revolving rod locks can be locked and are suitable for customs sealing.



### ACCIDENT HAZARD!

Open door wings can cause injury if they swing unexpectedly, such as when blown by the wind.

- ▶ Always secure the door wings with the holdback stays after opening, even if you do not move the semitrailer.



### Superstructure stability

Driving with the tailboard open may cause damage.

- ▶ Do not drive with rear doors or tailgate open or unlocked.



AB.05-5932-01

### Aluminium rear door with four revolving rod locks

## Opening and closing door wings

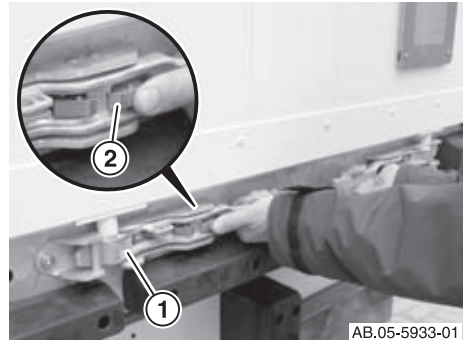


### INJURY HAZARD!

The rear door can open suddenly by pressure from the load, parts of the load can fall out of the superstructure and cause injury.

- ▶ Open the door wing cautiously and beware of load pressure.
- ▶ When opening the doors keep clear of the swing area of the door wings.
- ▶ If the load is pressing against the door, leave the second revolving rod lock secured and locked.
- ▶ Clear the load pressure without endangering yourself or other persons.

## Opening the door wing



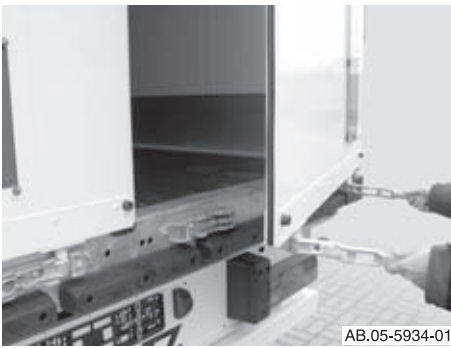
AB.05-5933-01

### Unlocking revolving rod lock

- 1 Revolving rod lock
- 2 Handle

Open the right-hand door wing first:

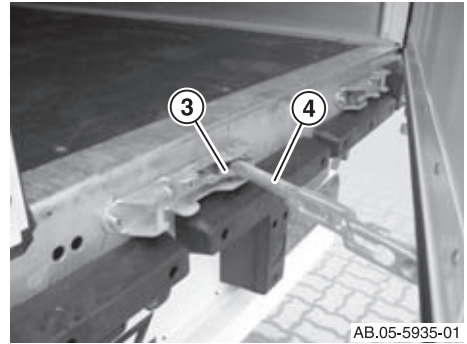
- ▶ Release both revolving rod locks (1). To do this press the handle (2) down with your thumb.
- ▶ Open both revolving rod locks (1) slightly at the same time.



### Opening door wing

- ▶ If you do not detect any load pressure, open both revolving rod locks (1) at the same time and open the door wing.
- ▶ Close both revolving rod locks (1) to prevent damage to the body.
- ▶ Secure the right door wing with the holdback stay.  
(see "Holdback stay" on page 99.)
- ▶ If necessary open the left door wing and secure with the holdback stay.

### Ventilation position of door wing



### Door wing open slightly and secured

- 3 Handle
  - 4 Locking lever with locking cam
- ▶ Attach locking lever to the catches (3) with the locking cam (4).



### Holding door wing open

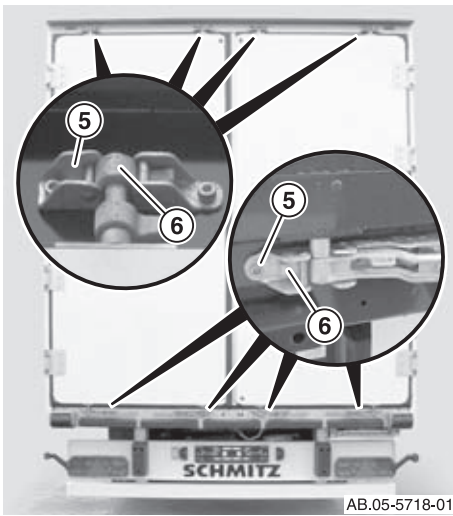
The door wing can be locked open slightly with the locking levers to dry or air out the interior of the body.

Do not drive the tractor with the door in this position.

### Closing the door wing

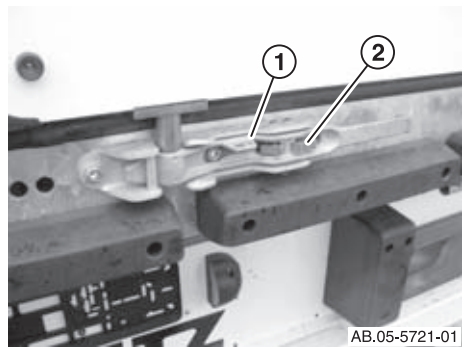
Close the left-hand door wing first:

- ▶ Clean the door seal area.
- ▶ Close door wing and insert the locking cams (6) into the supports (5) at the same time  
Make sure that the top locking cams also grip the supports.



**Locking pin**

- 5 Support
- 6 Locking cam



**Securing revolving rod lock**

- 1 Locking lever
- 2 Handle

- ▶ Press both locking levers (1) until the catches (2) click into place.
- ▶ Close the right-hand door wing in the same way.

# Holdback stay



## ACCIDENT HAZARD!

Open door wings can cause injury if they swing unexpectedly, such as when blown by the wind.

- ▶ Always secure the door wings with the holdback stays after opening, even if you do not move the semitrailer.



AB.05-5650-01

### Open door wing, secured

- 1 Holdback stay



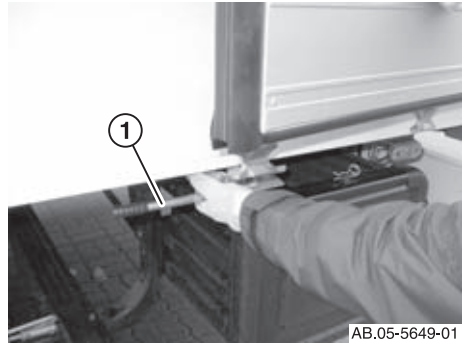
## CRUSHING HAZARD!

The spring-loaded holdback stay can crush fingers and hands.

- ▶ Wear work gloves.
- ▶ Grip the holdback stay as far down as possible, slightly above the bend, when securing the wing doors.

The holdback stays hold open rear doors in place.

- ▶ Pull holdback stay under the superstructure out and swing it up.
  - ▷ The door wing is secured.



AB.05-5649-01

### Holdback stay in home position

- 1 Holdback stay

- ▶ After use return holdback stays (1) to the horizontal home position.



### Insulating curtain

When entering and leaving through ramps and lock seals the holdback stays may be rotated by an insulating curtain. If this occurs secure the doors again.

# Roller door

Roller door



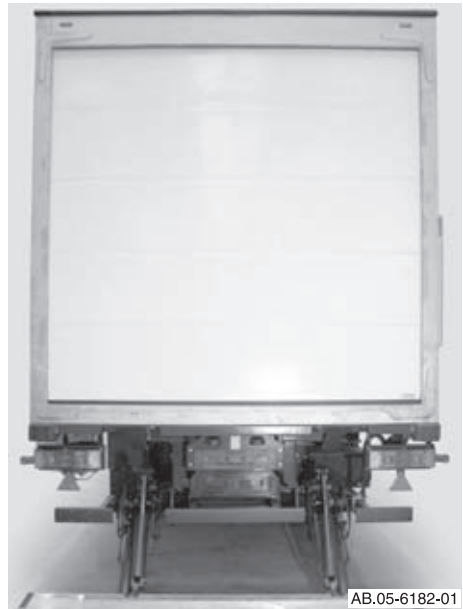
**Manually operated roller door on FP 45/60**



**Manually operated roller door on FP 25**

Types:

- manually operated roller door, insulated and uninsulated,
- pneumatically operated roller door, insulated.



**Pneumatically operated roller door on FP 45/60**

## Manually operated roller door



"Roller door" safety notice

The roller door is kept in equilibrium by robust springs for easy opening and closing.



### Safety notice

If suspended loads and strong springs malfunction they may cause accidents.

Read and observe the "roller door" safety notice inside the body. Replace the safety notice if it becomes illegible or is missing.



### INJURY HAZARD!

The door belt may tear and cause falls from the load area.

- ▶ Never use the door belt to enter or exit the body.



### Driving

Movement while driving will damage the open roller door after a short time.

- ▶ Close and lock the roller door before driving.

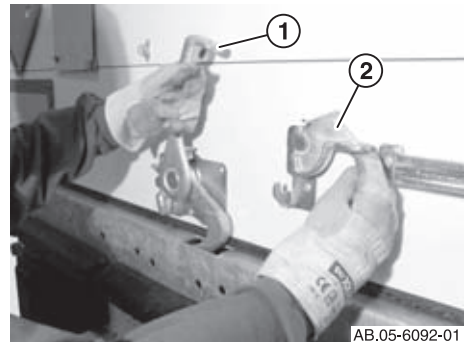
### Opening the roller door



### INJURY HAZARD!

Parts of the load may fall from the body and injure persons.

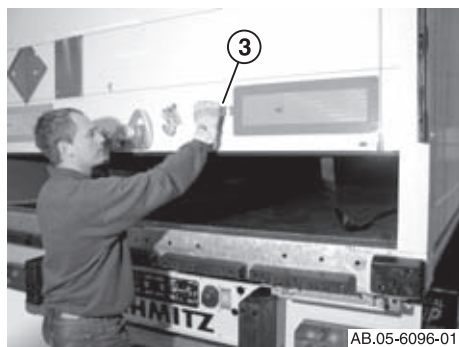
- ▶ Open the roller door cautiously and beware of load pressure.
- ▶ Clear the load pressure without endangering yourself or other persons.



### Unlocking roller door

- 1 Locking hook
- 2 Drop lock

- ▶ Lift drop lock (2).
- ▶ Open locking hook (1).  
Allow locking hook to click into open position.



**Opening roller door**

- 3 Handle

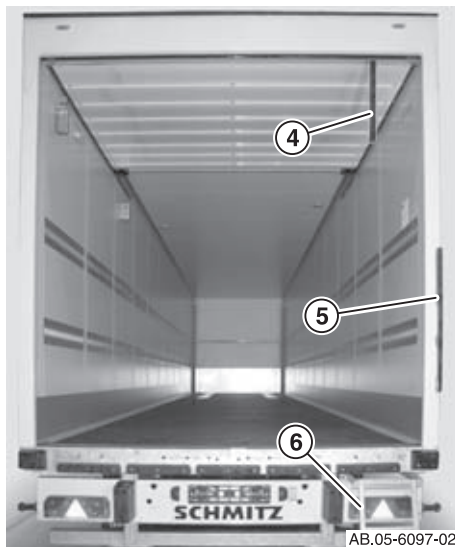
► Open roller door by swinging the handle (3) completely up.



**Opening size**

The rear door frame of the roller door reduces the standard size of the rear access in both height and width.

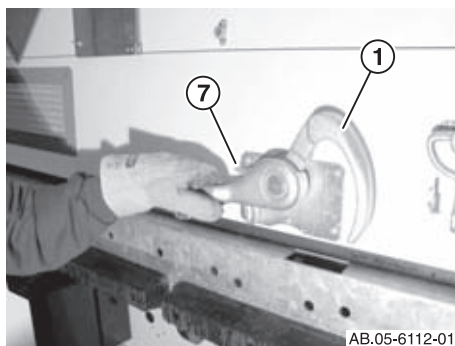
**Closing the roller door**



**Closing roller door**

- 4 Door strap
- 5 Handle
- 6 Extension ladder

► Close roller door with the door strap (4). When closing use the handle (5) and extension ladder (6).

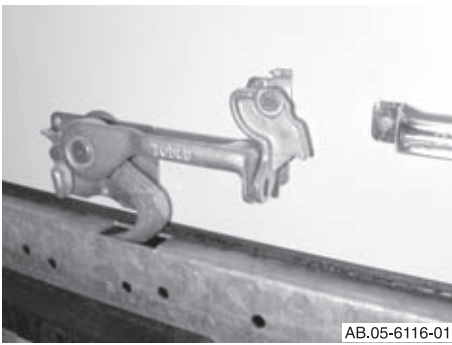


**Locking and securing roller door**

- 1 Locking hook
- 7 Locking pawl

► Press locking pawl (7) and lock roller door with the locking hook (1).





AB.05-6116-01

**Roller door locked and secured**

**i** **Difficulty in opening**

Stow the load to prevent the vibration during driving moving it and blocking the roller door.

**Pneumatic roller door**



AB.05-6163-01

**"Roller door" safety notice**

The roller door is moved by a pneumatic closing cylinder.

The closing cylinder is under continuous pressure!

**i** **Safety notice**

Read and observe the "roller door" safety notice inside the body. Replace the safety notice if it becomes illegible or is missing.

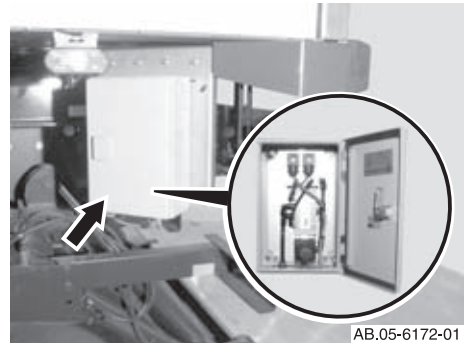
**!** **Driving**

Driving with the roller door open will damage the roller door after a short time.

- ▶ Close the roller door before driving.

If the compressed air fails the roller door can be opened manually (see "Emergency opening pneumatic roller door" on page 105).

**Opening and closing**



AB.05-6172-01

**Roller door valve box**

- ▶ Switch on roller door in the tractor cab. Optional: switch on roller door in the valve box with the keyswitch\*.



**CRUSHING HAZARD!**

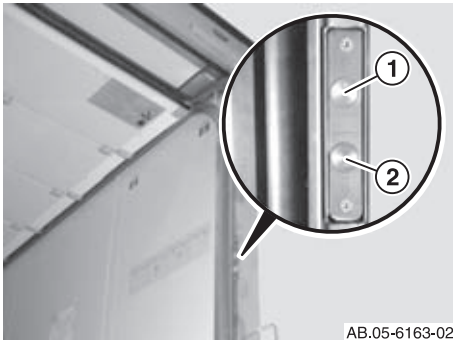
Parts of the body may be crushed by the roller door.

- ▶ Always open and close the roller door completely for any work in the door area.
- ▶ Never reach into the door area, even to remove jammed goods.
- ▶ Make sure that there are no other persons under the roller door when opening or closing it.



**Opening size**

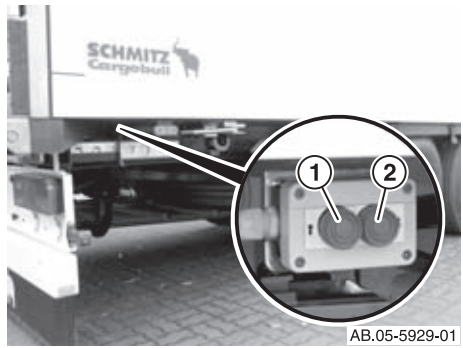
The rear door frame of the roller door reduces the standard size of the rear access in both height and width.



AB.05-6163-02

**Roller door switch at rear door\***

- 1 Opening
- 2 Closing



AB.05-5929-01

**Roller door switch under body\***

- 1 Opening
- 2 Closing

**Opening**

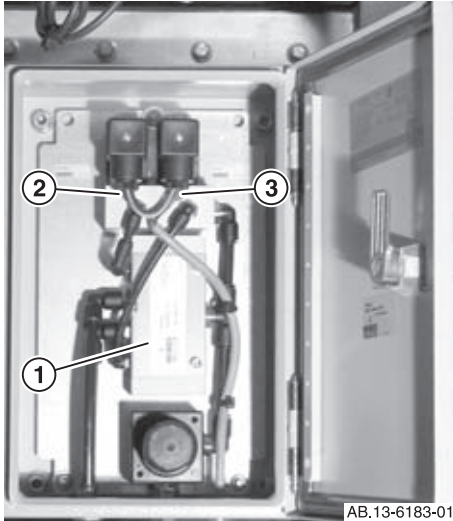
- ▶ Press Open switch (1).
  - ▷ The roller door opens.

**Closing**

- ▶ Press Close switch (2).
  - ▷ The roller door closes.

## Emergency opening pneumatic roller door

### If the vehicle electrical system fails

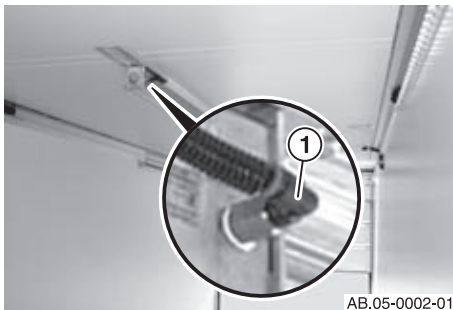


#### Valve box

- 1 Solenoid valve (5/3 way valve)
- 2 "Door open" screw
- 3 "Door close" screw

### Opening from outside

- ▶ Press screw (2) on solenoid valve (1) and rotate clockwise.
  - ▷ The roller door opens.
- ▶ Press screw (3) on solenoid valve (1) and rotate clockwise.
  - ▷ The roller door closes.



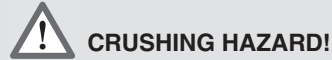
### Closing cylinder in body

- 1 Compressed air line

### Opening from inside

- ▶ Disconnect rear compressed air line (1) on closing cylinder.
- ▶ Open top roller door panel manually.
- ▶ Slide roller door up manually.

### If the compressed air system fails



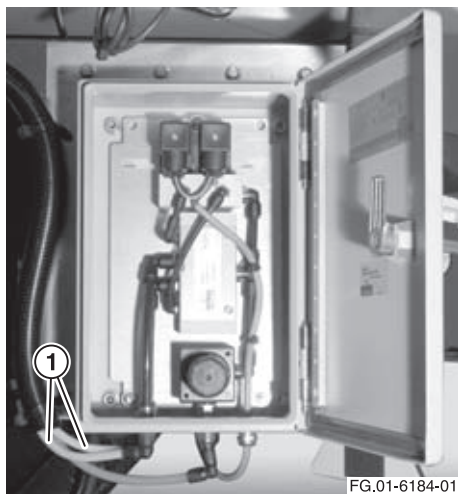
Without compressed air the roller door will drop suddenly and may crush persons.

- ▶ Always open the roller door completely.
- ▶ Never close the roller door without compressed air support.
- ▶ Make sure that there are no other persons under the roller door when opening or closing it.



### "Emergency opening roller door" body box

1. Disconnect air hose from cylinder
2. Fold top section inwards
3. Raise roller door



### Opening from inside

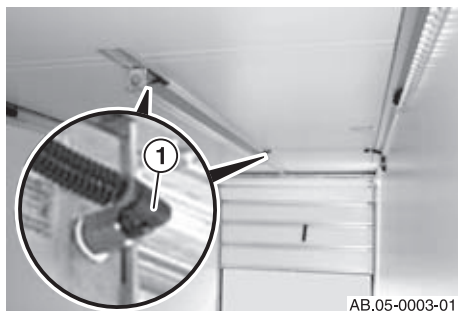
- ▶ Disconnect both compressed air lines (1) on closing cylinder.
- ▶ Open top roller door panel manually.
- ▶ Open roller door completely manually.

### Valve box

- 1 Closing cylinder compressed air lines

### Opening from outside

- ▶ Disconnect compressed air lines (1).
- ▶ Open top roller door panel manually.
- ▶ Open roller door completely manually.



### Closing cylinder in body

- 1 Closing cylinder compressed air lines

## Side door



### ACCIDENT HAZARD!

Open door wings can cause injury if they swing unexpectedly, such as when blown by the wind.

- ▶ Always secure the door wings with the holdback stays after opening, even if you do not move the semitrailer.



### ACCIDENT HAZARD!

Jumping down from the superstructure may cause injury by slipping or falling.

- ▶ Do not jump down from the superstructure.
- ▶ Use assistance to enter, e.g. a ladder.



Side door open

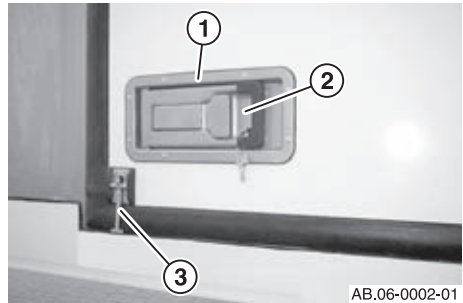
## Opening the door wing



### INJURY HAZARD!

The side door can open suddenly by pressure from the load, parts of the load can fall out of the body and cause injury.

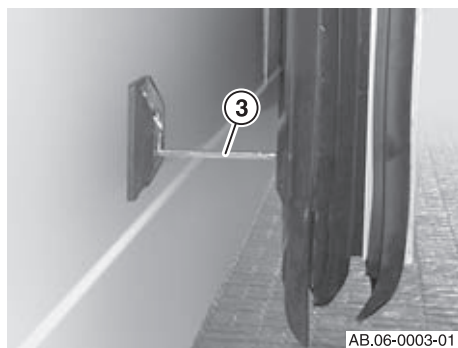
- ▶ When opening the side door keep clear of the swing area of the door.
- ▶ Open the side door cautiously and beware of load pressure.
- ▶ If the load is pressing against the door, leave the revolving rod locks secured and locked.
- ▶ Clear the load pressure without endangering yourself or other persons.



### Opening door wing

- 1 Revolving rod lock
- 2 Handle
- 3 Holdback stay

- ▶ Release revolving rod lock (1). Press the catch (2) in.
- ▶ Open revolving rod lock (1) slightly.
- ▶ If you do not detect any load pressure, open the revolving rod lock (1) and open the door.
- ▶ Close the revolving rod lock (1) to prevent damage to the body.

**Locking door wing open**

3 Holdback stay

- ▶ Secure door with the holdback stay (3).

**Closing the door wing**

- ▶ Clean the door seal area.
- ▶ Closing door.
- ▶ Press revolving rod lock (1) until the catch (2) audibly clicks into place.

**Holdback stay**

The holdback stay can also be installed as a retainer type (see "Holdback stay" on page 99).

# Entry aids



## INJURY HAZARD!

You may slip and fall on unsuitable ladders.

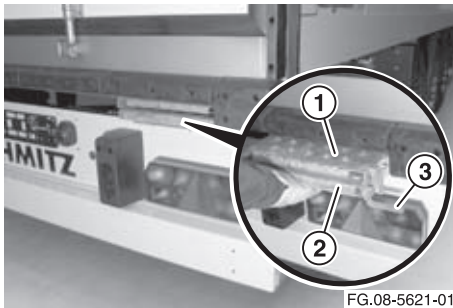
- ▶ Do not use the underrun guard or other mounted parts to climb in or out.
- ▶ Always use the ladders on the vehicle, such as extension ladders and handles, when you want to enter or exit the body.



## INJURY HAZARD!

Jumping down from the superstructure may cause injury by slipping or falling.

- ▶ Do not jump down from the superstructure.
- ▶ Always use the ladders on the vehicle for exiting the vehicle, such as extension ladders and handles.

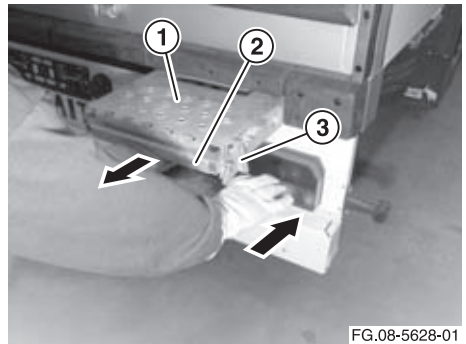


FG.08-5621-01

### Extension ladder at rear

- 1 Top section
- 2 Bottom section
- 3 Lock

- ▶ Press lock (3) and pull out extension ladder to the first stop.



FG.08-5628-01

### Pull out bottom section

- 1 Top section
- 2 Bottom section
- 3 Lock

- ▶ Press lock (3) again and pull out the bottom section (2) to the stop and fold down.

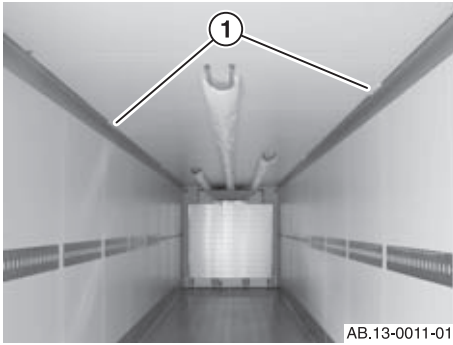


FG.08-5634-01

### Hold on to the handle

After use slide the extension ladder back completely. Make sure that the lock on the extension ladder is locked in place.

## Load area lighting



### Load area lighting

- 1 Ceiling light

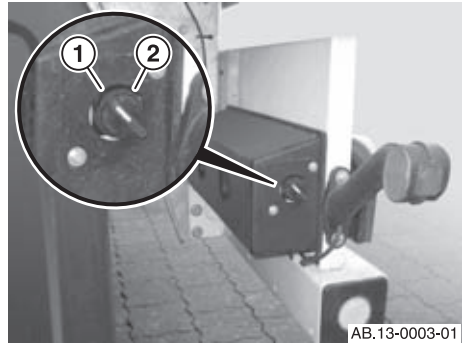
Eight ceiling lamps (1) are mounted in the reefer body, four per side.



### Ceiling light

#### **i** Lights

For instructions on replacing incandescent light globes see "Load area lighting" on page 191.



### Light switch

- 1 Off "0"
- 2 On "1"

#### **i** Switch on

The load area lighting only operates when the tractor parking light is switched on or an external power source is connected (e.g. supplementary batteries).



# Moveable bulkhead

Types:

- standard moveable bulkhead.
- moveable bulkhead with ventilation fan.



## ACCIDENT HAZARD!

Moveable bulkheads are not designed to resist load pressure. Displayed loads may cause accidents with personal injury.

- ▶ Moveable bulkheads are not suitable for securing loads.
- ▶ Secure the load with the appropriate load securing gear.

Moveable bulkheads are used to separate the load area into two chambers (temperature zones). In this case the front section of the body is generally the cooler chamber (exception: bodies with two evaporators, see "Multitemp" on page 147).

Rubber seals on the edges of the moveable bulkhead seal the two chambers from each other.



AB.14-5753-01

Moveable bulkhead open in park position



AB.14-5781-01

Moveable bulkhead closed and secured

However, over time the temperature directly at the moveable bulkhead may fall below freezing and cause frost damage to sensitive loads. If heat is not fed to the separate chambers, the separate temperatures will gradually equalise (depending on the temperature, temperature difference and air circulation).



## Damages to the load!

Cold penetrating the moveable bulkhead may cause frost damage to loads.

- ▶ Do not load frost-sensitive loads directly at the moveable bulkhead but leave a space.
- ▶ If necessary special protection is required for cold-sensitive loads.
- ▶ Make sure that warm air can reach the backflow check valve in the front chamber.

**i** Two-level loading

Moveable bulkhead with two-level load see "Double deck loading" on page 136.

**Air duct**

**!** Transport damage!

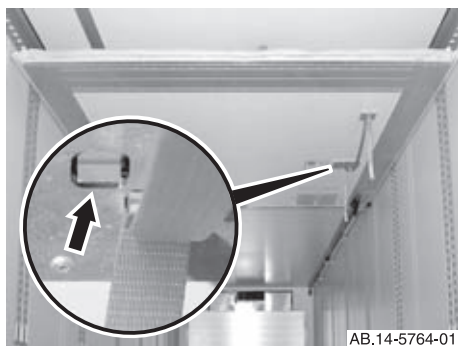
Insufficient cooling may perish the load.

- ▶ Before closing the moveable bulkhead: open the air duct zips in the front chamber.
- ▶ Position the moveable bulkhead to allow cold air to blow out with the zip open.

**i** Air duct

For information on the hose-type air duct see "Air ducts" on page 118.

**Opening/closing moveable bulkhead**



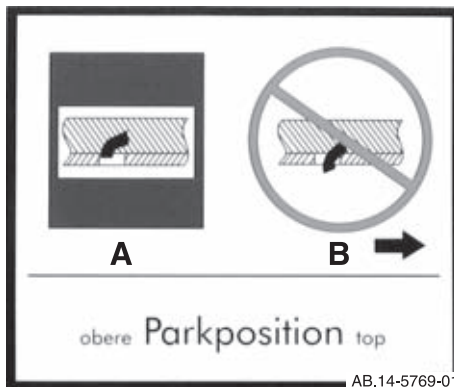
AB.14-5764-01

**Moveable bulkhead in park position, the indicator (arrow) is down**

**!** Passage height!

The passage height in the area of the moveable bulkhead is reduced.

- ▶ Note the passage height when entering the inside of the reefer with forklifts.



**"Park position" warning sign**

The moveable bulkhead in the top park position is swung up under the ceiling and locked in place.

A red indicator shows whether the moveable bulkhead is locked:

- The indicator protrudes (B): the moveable bulkhead is **not** locked and may come down unexpectedly!
- The indicator is lowered (A): the moveable bulkhead is locked in place.

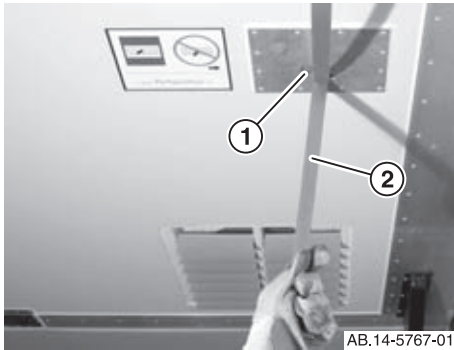
## Moving the moveable bulkhead



### INJURY HAZARD!

Gas studs may lose their spring force. The moveable bulkhead may come down suddenly when unlocked and cause head and body injuries.

- ▶ Do not stand under the moveable bulkhead when unlocking it but outside the swing area.



### Unlocking moveable bulkhead

- 1 Indicator
- 2 Strap

- ▶ Pull the strap (2).
    - ▷ The indicator clicks out, the moveable bulkhead is unlocked and can be moved.
- The moveable bulkhead is supported by gas struts.



### Swinging moveable bulkhead down

- ▶ Pull moveable bulkhead down with the strap (2).
- ▶ Hold moveable bulkhead with one hand ▶▶



### INJURY HAZARD!

When moving backwards you may fall from the body.

- ▶ Look behind when pulling the moveable bulkhead towards the rear door.



### Moving moveable bulkhead

- 3 Handle

- ▶ Hold moveable bulkhead at the handles (3) and move it to the desired position.  
The moveable bulkhead can be moved anywhere between the end stops.  
Do not change the positions of the end stops. Never remove the end stops!

**Closing the moveable bulkhead**



AB.14-5775-01

**Closing moveable bulkhead (shown: moveable bulkhead with ventilation fan)**

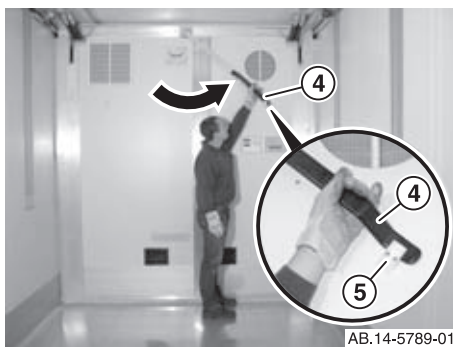
- ▶ Unlock moveable bulkhead and move to desired position.  
See "Moving the moveable bulkhead" on page 113.
- ▶ Close moveable bulkhead completely ▶▶



**Locking moveable bulkhead!**

An unlocked moveable bulkhead will move uncontrolled while driving and may damage the load and the body.

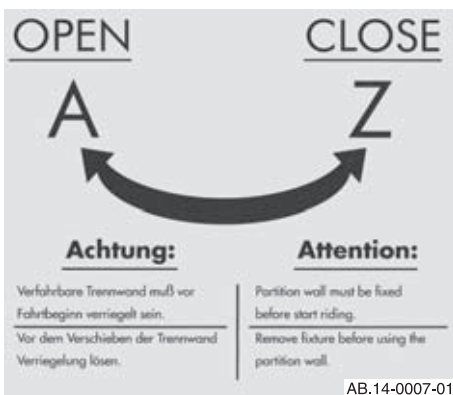
- ▶ Always lock the moveable bulkhead!



AB.14-5789-01

**Locking moveable bulkhead**

- 4 Lever for locking mechanism
- 5 Retainer

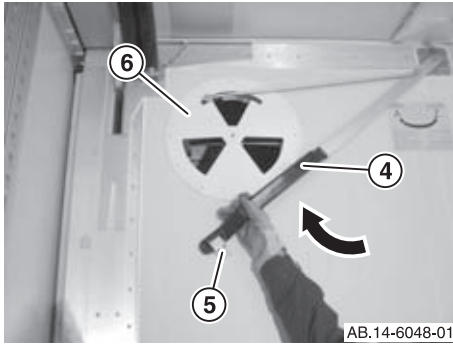


AB.14-0007-01

**"Locking moveable bulkhead" warning sign**

- ▶ Move lever (4) strongly to the right.
  - ▷ The rubber seals are pressed to the side wall of the body.
- ▶ Position lever (4) in retainer (5).
  - ▷ The moveable bulkhead is locked in place and sealed.

## Opening the moveable bulkhead



### Unlocking moveable bulkhead (shown: standard moveable bulkhead)

6 Pressure equalisation flap

- ▶ Move lever (4) left.
  - ▷ The flap (6) opens and the pressure is equalised.

Equal pressure between the two chambers makes it easier to open the moveable bulkhead.

- ▶ Position lever (4) in retainer (5).
  - ▷ The moveable bulkhead can be moved.

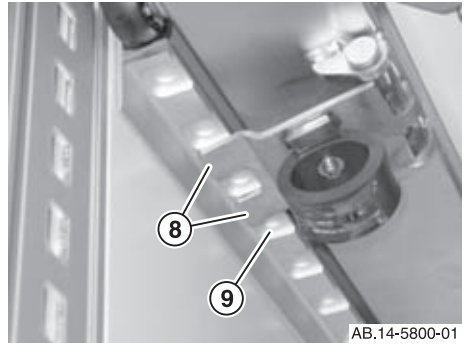


### Lifting moveable bulkhead

7 Strap

- ▶ Pull strap (7) out of the moveable bulkhead.

- ▶ Open moveable bulkhead with the strap (7).  
Use the strap to save your back.
- ▶ Lift moveable bulkhead until it audibly clicks into place.
  - ▷ The red indicator (1) must be in.



### Lock (shown: not locked)

- 8 Handle
- 9 Slide rail

In the top park position the locking handles (8) must be clicked into the openings in the slide rail (9) (not visible in top park position). The moveable bulkhead may move several centimetres before it locks.

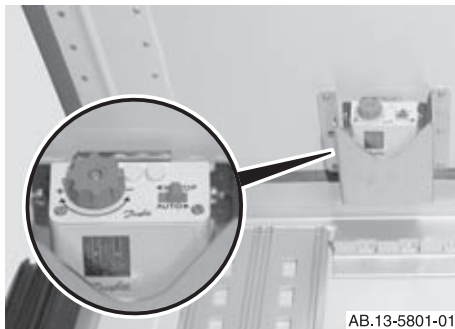
## Moveable bulkhead with ventilation fan



### Ventilation fan (fan shown from the other side of the moveable bulkhead)

The ventilation fan moves cold air from the front chamber to the rear chamber. This makes it possible to maintain the two chambers at different temperatures to a limited extent.

A thermostat regulates the fan and thus the rear chamber temperature.



### Thermostat for fan regulation

The fan is powered by the refrigerator starter battery (12 V).

For instructions on moving, closing and opening the moveable bulkhead see page 111.

Rubber seals on the edges of the moveable bulkhead seal the two chambers from each other.

However, over time the temperature directly at the moveable bulkhead may fall below freezing and cause frost damage to sensitive loads. If heat is not fed to the separate chambers, the separate temperatures will gradually equalise (depending on the temperature, temperature difference and air circulation).



### Damages to the load!

Cold penetrating the moveable bulkhead may cause frost damage to loads.

- ▶ Do not load frost-sensitive loads directly at the moveable bulkhead but leave a space.
- ▶ If necessary special protection is required for cold-sensitive loads.
- ▶ Furthermore make sure that warm air can reach the backflow check valve in the front chamber.



### Temperature differences

Note the following:

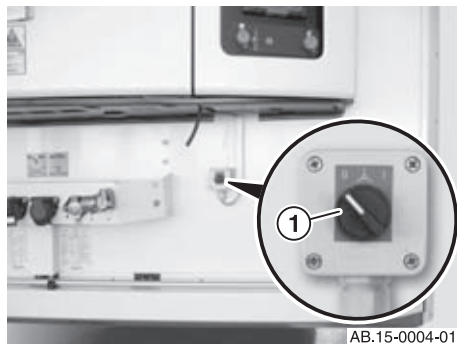
- The temperature in the rear chamber depends on the temperature in the front chamber.
- The temperature in the rear chamber cannot be lower than the temperature in the front chamber.
- Air distribution in the rear chamber is limited in refrigerated operation.
- The air blown to the rear is at the temperature of the front chamber and may be very cold.



## Starter battery

To prevent the starter battery of the refrigerator from being flattened: switch off the fan if cooling is not required in the rear chamber.

In the refrigerator there is a 15 Ampere, 12 Volt flat fuse (vehicle type).



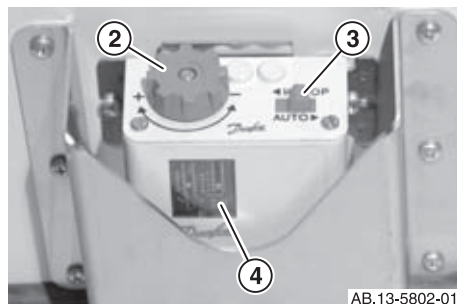
AB.15-0004-01

### Refrigerator control unit (example)

- 1 Switch

### Switching fan on/off

- ▶ Switch (1) in position "1".
  - ▷ The fan is ready for operation.
- ▶ Switch (1) in position "0".
  - ▷ The fan has no power.



AB.13-5802-01

### Thermostat for fan regulation

- 2 Temperature selection dial  
 3 Mode switch  
 4 "RANGE" and "DIFF" scale

### Setting "μSTOP" mode

- ▶ Move mode switch (3) left to "μ STOP" position.
  - ▷ The fan is switched off.

### Setting "AUTO" mode

- ▶ Move mode switch (3) right to "AUTO" position.  
 In automatic mode the fan switches on and off automatically depending on the selected temperature

### Setting temperature

- ▶ Rotate selector dial (2) clockwise towards "+".
  - ▷ The set temperature in the rear chamber is increased.
- ▶ Rotate selector dial (2) anticlockwise towards "-".
  - ▷ The set temperature in the rear chamber is reduced.

The selected temperature can be read on the left (4) "RANGE" scale.

The right (4) "DIFF" scale shows the number of degrees by which the temperature is above or below the set temperature.

The temperature difference is set at the factory.

## Air ducts



AB.15-6029-01

### Tube-type air ducts

Air ducts distribute the air in the body. When a moveable bulkhead is installed the tubes have zip fasteners.

When the moveable bulkhead is closed the tubes are crushed and cannot deliver cold air. The front chamber will not be sufficiently cooled!

Therefore open the tubes in the area of the front chamber before closing the moveable bulkhead.



### Transport damage!

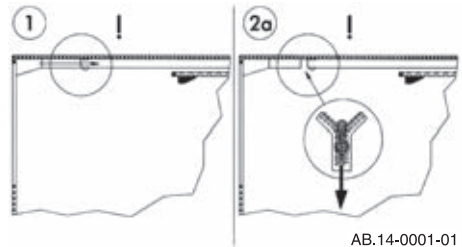
Insufficient cooling may perish the load.

- ▶ With moveable bulkhead closed: open the air duct zips in the front chamber.
- ▶ Position the moveable bulkhead to allow cold air to blow out with the zip open.
- ▶ Note that when the moveable bulkhead is closed cold air is not delivered to the rear chamber!
- ▶ Keep the air ducts open and clean (do not store brooms in them).

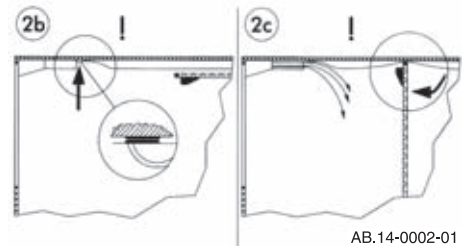


AB.14-6003-01

### "Air duct" sticker (with moveable bulkhead only)



AB.14-0001-01



AB.14-0002-01

### "Air duct" sticker



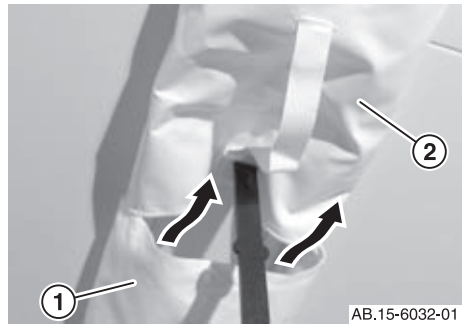


AB.15-6031-01

### Opening zip

Before closing the moveable bulkhead:  
(see "Closing the moveable bulkhead" on  
page 114.)

- ▶ Open the zip in the tube.



AB.15-6032-01

### Fasten opening

- 1 Front tube section
- 2 Rear tube section

- ▶ Press the rear tube section (2) up with  
a rod or stick.
  - ▷ An adhesive strip keeps the tube  
section open and allows the cold air  
to flow unhindered from the front tube  
section (1) (arrows).

## Vertical curtain



AB.14-5959-01

### Vertical curtain

The curtain reduces losses of cold air:

- It prevents cold air from being lost when the rear door or side loading door is open.
- It reduces the load area requiring cooling with partial loads.
- It reduces air movement and thus heat transfer to the side loading door if a rear door is not available.
- It is not suitable for dividing the load area into two temperature zones.

Depending on the option the vertical curtain

- can be moved across and along in three parts,
- can be moved across in three parts,
- has fixed strips.



### Passage height!

The passage height in the area of the vertical curtain is reduced.

- ▶ Note the passage height when entering the inside of the reefer with forklifts.

### Closing vertical curtain



AB.14-5960-01

### Closing vertical curtain

- 1 Pull strap



### INJURY HAZARD!

When moving backwards you may fall from the body.

- ▶ Move forwards when pulling the vertical curtain towards the rear door.

- ▶ Pull strap (1) down.

- ▷ The vertical curtain can be moved along the body.

Not in the area of installations such as an air duct.

- ▶ Release pull strap (1).

- ▷ The vertical curtain is locked in the longitudinal direction.

## Moving sections

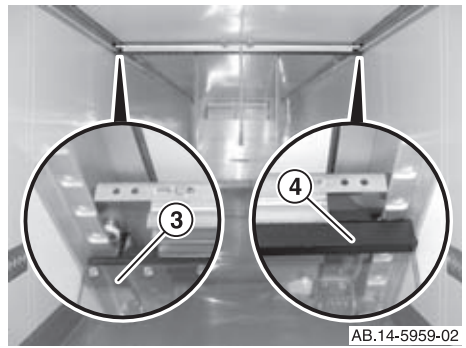


### Moving sections

#### 2 Pull rope

The three sections can be moved separately.

- ▶ Pull rope (2) down.
  - ▷ The section can be moved.
- ▶ Release pull rope (2).
  - ▷ The section is locked.



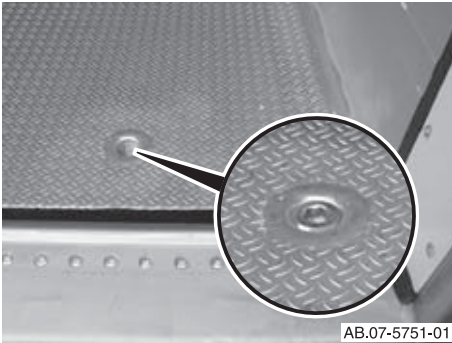
### Moving sections

#### 3 Left section

#### 4 Right section

The left and right sections are different. The vertical curtain will only seal at the slide rail if the left section (3) is at the left and the right section (4) is at the right.

## Drain



### Drain in floor for liquids

A drain for liquids is installed in the floor on the left and right at the rear. The drains are closed with a 10 mm Allen screw.

Water can be drained through a hose under the vehicle floor.



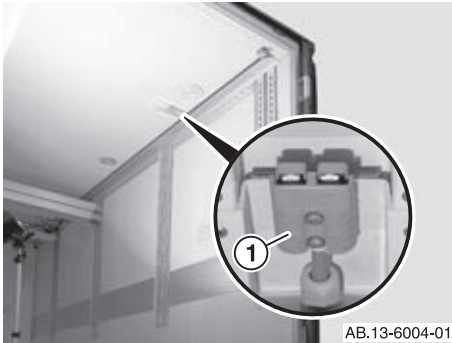
### Ball valve\* (shown closed)

The ball valve\* is used to drain liquids when necessary.

### Environmental warning

Do not drain dirty or contaminated liquids such as wash water or blood into the open but only at permitted places.

# Charging socket



AB.13-6004-01

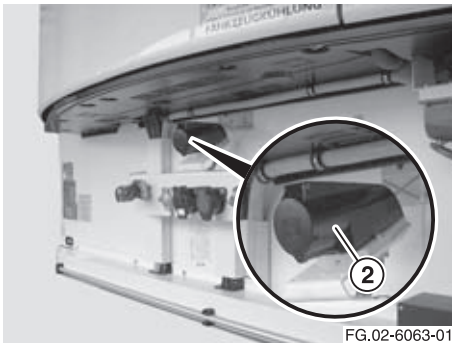
## Charging socket in body (left or right rear)

1 2-pin connecting plug

An electrically powered forklift can be connected to the charging socket. The connecting plug (1) is a 2-pin plug CB175, EN 1175-1.

The fuses are installed in a fuse box on the longitudinal chassis beam on the left behind the axle assembly.

The maximum approved charging current is 50 A. For the pin assignment of the CEE socket please see page 197.



FG.02-6063-01

## CEE socket ("CEKON") for power supply

2 CEE socket 7H, 4-pin

The battery connector (1) is powered from the tractor through the CEE socket (2).



## FIRE DANGER!

If the charging cable is torn off or worn failure may be caused by short circuit.

- Use only charging cables that are designed as Wendelflex lines.

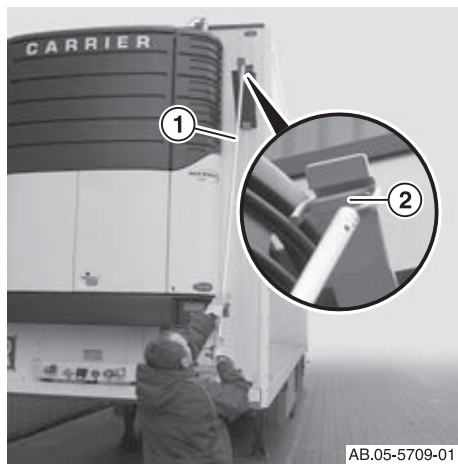
Use a suitable Wendelflex line to connect the CEE socket (2).



## Charging socket

The charging socket has power only if the ignition is switched on.

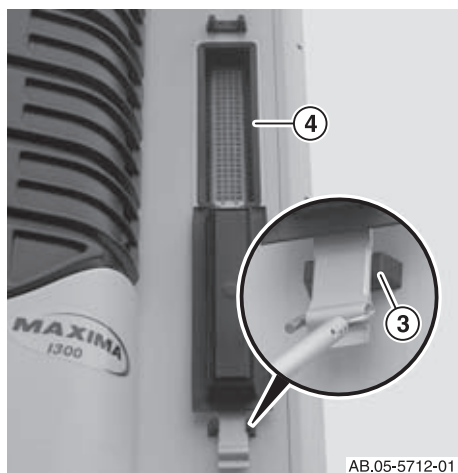
## Ventilation flaps



### Ventilation flap in the front wall

- 1 Handle rod
- 2 Strap

The ventilation flaps ventilate and air the inside of the reefer. For information on the use of the ventilation flaps see "Ventilation flaps" on page 165.



### Opening and fixing ventilation flap

- 3 Retainer
- 4 VA customs protection grille

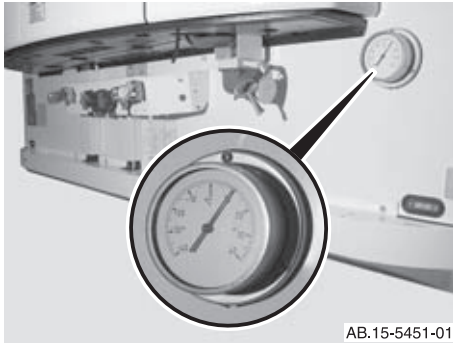
- ▶ Attach handle rod (1) in the strap (2) and give it a strong pull.  
(see "Handle rod for ventilation flaps\*" on page 53.)



### Ventilation flap left, right or both sides in rear door

- ▶ Push the ventilation flap into the retainer (3) with a strong push.
  - ▷ The ventilation flap is locked in place.
- Close in reverse order.

## Remote thermometer

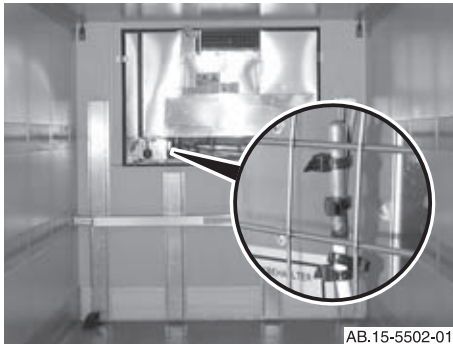


AB.15-5451-01

### Remote thermometer on front wall

The remote thermometer shows the temperature of the air in the load area in the backflow area of the evaporator or refrigerator.

The remote thermometer does not show the temperature of the load. The load area temperature may vary from the displayed temperature depending on the air circulation and temperature distribution.



AB.15-5502-01

### Temperature sensor in the backflow area of the refrigerator on the front wall



### Temperature gauges

Temperature gauges must be calibrated for the application as specified by the law!

# Temperature recorder

Temperature recorder



## Temperature recorder on front wall

The temperature recorder is attached to the front wall.

Temperature recorders from different manufacturers may be installed at the factory.

The temperature recorders are protected against spray water. Direct the spray of a high-pressure cleaner at the case only from a sufficient distance no less than 70 cm. Do not direct the spray at the electrical terminals.



## Temperature recorder (TranScan in this case)

## Owner's Manual

Read and follow the manufacturer's operating manual before working with the temperature recorder.



## Temperature sensor

One, two or more temperature sensors are installed inside the reefer: One in the backflow area of the refrigerator and if necessary a second 10 m from the front wall under the roof.



# Refrigerator



## Refrigerator (CARRIER in this case)

Refrigerators from different manufacturers may be installed at the factory.



### Owner's Manual

Read and follow the manufacturer's operating manual before working with the refrigerator.

Do not leave the refrigerator more than one month without operation.

## Mains operation

The refrigeration units can be operated in two modes:

- Road operation with the included internal combustion motor.
- In mains operation from an external power source.



### FIRE DANGER!

Unsuitable electrical terminals and connections may cause fires by overheating.

- ▶ Use only cables that comply with the specifications of the refrigeration system manufacturer.
- ▶ Observe the connection requirements of the refrigerator manufacturer.



## Mains connection for mains operation

Before driving check that the mains cable has been disconnected.



### Torn mains cable

In mains operation the refrigerator is connected to an external power source.

- ▶ Disconnect the power cable from the external power source before driving.

## Equipment for load securing gear

This chapter gives you an overview of the vehicle equipment for securing and handling loads in the vehicle.

Instructions on load securing gear can be found in "Load securing gear" on page 167.

### Load securing tracks

Load securing tracks for holding:

- telescopic round locking bars,
- telescopic locking bars,
- telescopic loading bars,
- tension straps (for horizontal loading only).

Types of load securing tracks:

- one row,
- two or more rows.



Load-securing tracks (shown: two row)

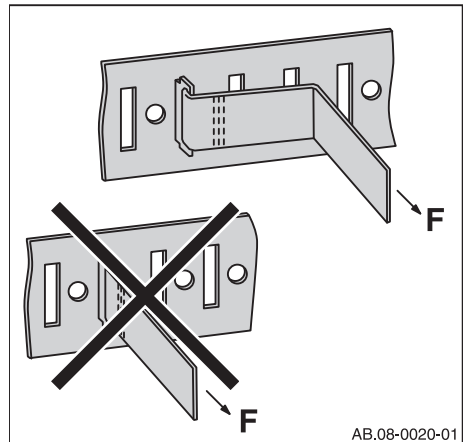


### ACCIDENT HAZARD!

Sliding loads may cause accidents with personal injury.

- ▶ Load-securing tracks may come loose, because they are not designed for loads caused by tensile forces across the direction of travel. Do not tighten tension straps that are suspended between opposite load-securing tracks.

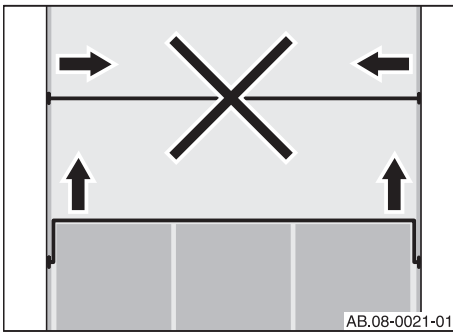
Fasten loads on load-securing tracks with tension straps as shown on the next page.



AB.08-0020-01

### "Fastening to load-securing tracks" sticker

The tension strap must be placed on the load without tension – looping around the load (see diagrams).



### Looping around the load (top view over the load)

This is the only way to prevent tension on the load-securing tracks.

### Locking bar

Locking bars prevent the load from sliding in the direction of travel.

Types (examples):

- telescopic round locking bars,
- telescopic locking bars.



### ACCIDENT HAZARD!

Sliding loads may cause accidents with personal injury.

- ▶ Locking bars will yield to excessive loads. Consider the forces that the load will place on the locking bars during braking and acceleration.



### Minimum strength

A form fitted load must be secured at the front with 80 % of its weight and 50 % of its weight at the rear.



### Resistance

The maximum resistance of the load-securing components varies according to the type and manufacturer.

### Telescopic round locking bar



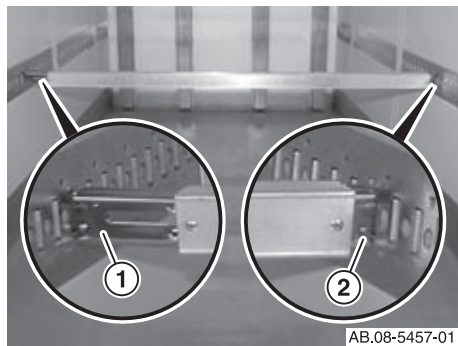
### Telescopic round locking bar

- 1 Sliding section
- 2 rigid side

### Positioning

- ▶ Insert round locking bar with the sliding section (1) first into the load-securing track.
- ▶ Press round locking bar together and insert the rigid side (2) into the opposite load-securing track.

## Telescopic locking bars

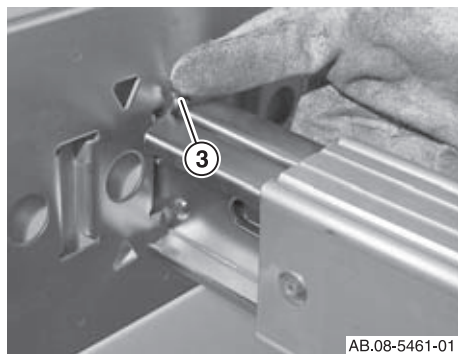


### Telescopic locking bars

- 1 Sliding section
- 2 rigid side

### Positioning

- ▶ Insert locking bar with the rigid side (2) first into the load-securing track.
- ▶ Pull out sliding section (1) and insert into the opposite load-securing track.



### Telescopic locking bars

- 3 Locking pawl

### Removing

- ▶ Press locking pawl (3) on sliding section (1) and lift sliding section out of the load-securing track.
- ▶ Press locking pawl (3) on the rigid side (2) and lift locking bar out of the load-securing track.

Telescopic locking bars may also be fitted with a spring-loaded end piece.

### Retainer\* for telescopic locking bar



### Retainer\* for telescopic locking bars under the roof (across direction of travel)

#### **i** Retainer across

The passage height is reduced by about 25 cm. The retainer\* extends about 1.2 cm into the interior on each side.



### Retainer\* for telescopic locking bars under the roof (in the direction of travel)

#### **i** Retainer along

The retainer\* extends about 8.2 cm into the interior in each side.

## Telescopic clamping bars

Telescopic clamping bars prevent the load from sliding in the direction of travel.

Types:

- rubber feet at both ends,
- pivots at both ends,
- one end with rubber foot, one end with pivot.



### ACCIDENT HAZARD!

Sliding loads may cause accidents with personal injury.

- ▶ Telescopic clamping bars will yield to excessive loads. Consider the forces that the load will place on the telescopic clamping bars during braking and acceleration.



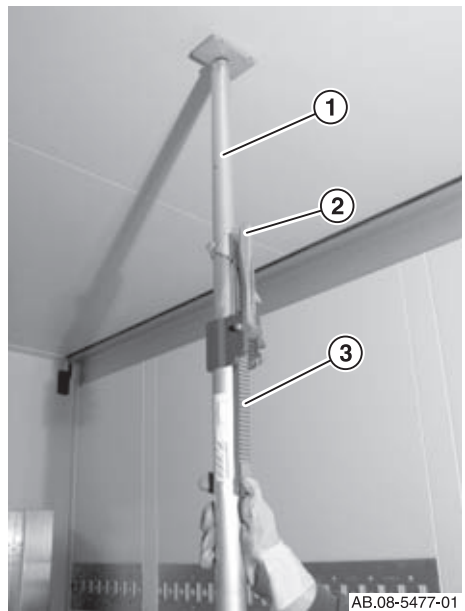
### Minimum strength

A form fitted load must be secured at the front with 80 % of its weight and 50 % of its weight at the rear.



### Resistance

The maximum resistance of the telescopic clamping bars varies according to the type and manufacturer.



AB.08-5477-01

### Positioning telescopic clamping bars (shown: with rubber feet)

- 1 Sliding section
- 2 Hand lever
- 3 Gear rack



### CRUSHING HAZARD!

Hand lever and gear rack may crush hands and fingers.

- ▶ Hold the telescopic clamping bar below the gear rack.
- ▶ Wear work gloves.

### Tensioning

- ▶ Fold hand lever (2) upwards.
- ▶ Push sliding section (1) along the gear rack (3) until it touches the ceiling.



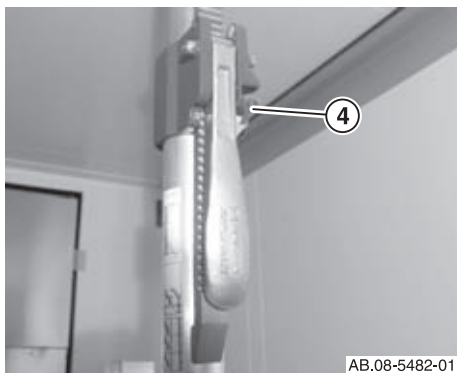
AB.08-5478-01

### Clamping telescopic clamping bar



#### Antislip foil

If necessary place antislip foil between the telescopic clamping bars and the roof/load bed to increase the friction.

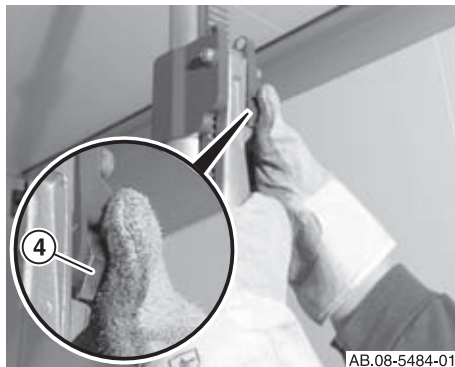


AB.08-5482-01

### Telescopic clamping bar tensioned and locked

4 Locking pawl

- ▶ Press hand lever (2) strongly down until the locking pawl (4) clicks into place.



AB.08-5484-01

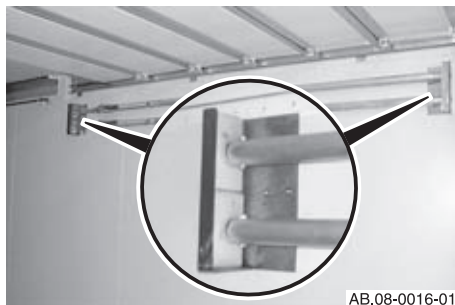
### Releasing telescopic clamping bar

4 Locking pawl

#### Releasing

- ▶ Tension hand lever (2) and press locking pawl (4) upwards.
- ▶ Release hand lever (2) slowly.
- ▶ Lower sliding section below the gear rack with one hand.

### Retainer\* for telescopic clamping bar



AB.08-0016-01

### Retainer for telescopic clamping bar

The retainer is suitable for all types of telescopic clamping bar.



#### Retainer

The retainer extends about 8.2 cm into the interior in each side.

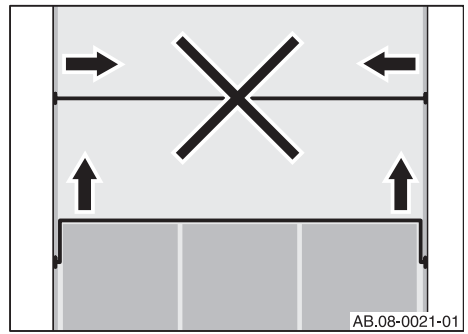
## Tension straps



### ACCIDENT HAZARD!

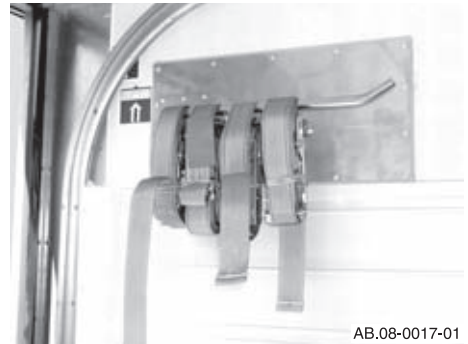
Sliding loads may cause accidents with personal injury.

- ▶ Load-securing tracks may come loose, because they are not designed for loads caused by tensile forces across the direction of travel. Do not tighten tension straps that are suspended between opposite load-securing tracks.

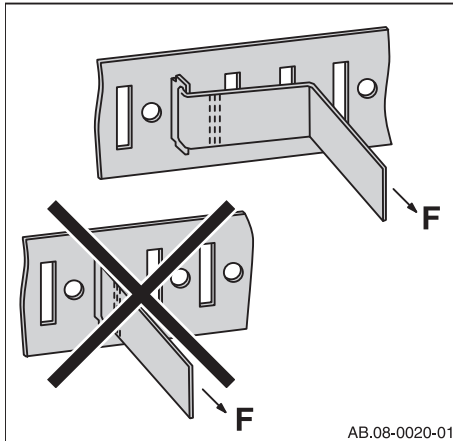


Looping around the load (top view over the load)

### Retainer\* for tension straps



Retainer\* for tension straps

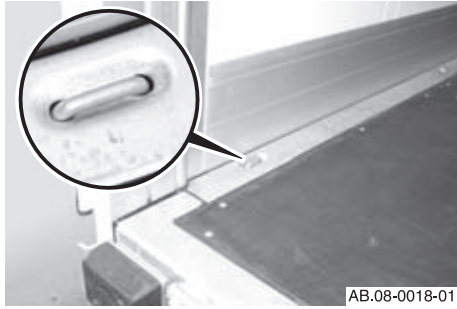


"Fastening to load-securing tracks" sticker

The tension strap must be placed on the load without tension – looping around the load (see diagrams).

This is the only way to prevent tension on the load-securing tracks.

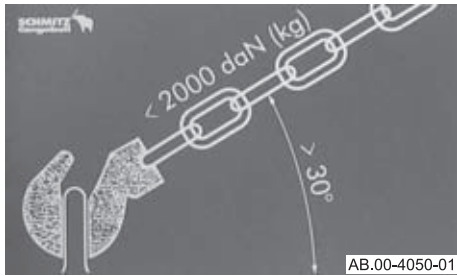
**Lashing rings\* on outside frame  
FP 25**



AB.08-0018-01

**Lashing rings on outside frame (dry freight)**

Optional: 13 pairs of retractable lashing rings in accordance with DIN EN 12640; anchored in outside frame.



AB.00-4050-01

**"Lashing ring load" sticker**

Note the maximum load of the lashing rings:

The maximum load on a lashing ring must not exceed 2000 kg. The lashing angle must be greater than 30 degrees.

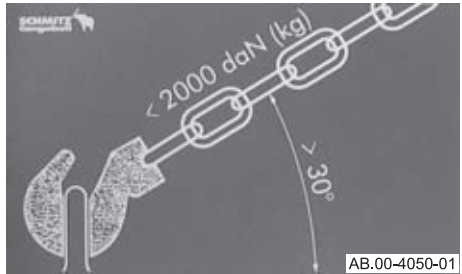
**Lashing eyelets\* in the floor  
FP 45/FP 60**



AB.08-0038-01

**Lashing eyelets\* in the floor FP 45/FP 60**

Optional: 13 pairs of lashing eyelets.



AB.00-4050-01

**"Lashing eyelet load" sticker**

Note the maximum load of the lashing eyelets:

The maximum load on a lashing eyelet must not exceed 2000 kg. The lashing angle must be greater than 30 degrees.



## Transport solutions

<b>Double deck loading</b>	<b>136</b>
<b>Meat hanging system</b>	<b>141</b>
<b>Multitemp</b>	<b>147</b>
<b>Flower transport</b>	<b>149</b>
<b>Intermodal transport</b>	<b>151</b>

Keywords

Safety

Chassis

Driving

Superstructure

Transport solutions

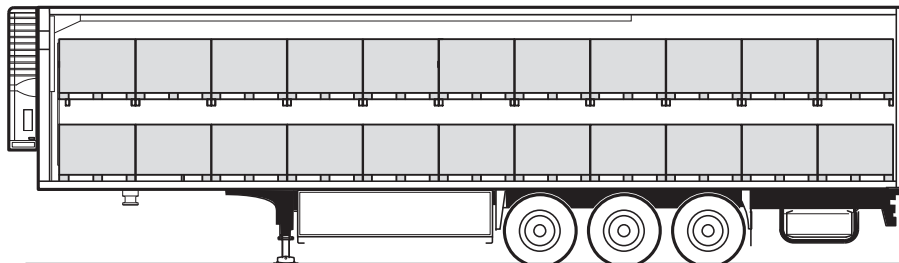
Operation

Maintenance

Data

## Double deck loading

### Height adjustable double deck system



AB.09-0016-02

#### Double deck system with second deck loaded

The Schmitz Cargobull double deck system for the reefer semitrailer allows up to 33 additional euro pallets to be loaded on a second deck.

The double deck system includes:

- 12 pairs of double deck rails about 1650 mm long with 50 mm height adjustment.
- Optionally 12 pairs of double deck rails about 2050 mm long with 50 mm height adjustment.
- Cross beams with a maximum approved weight capacity of 1000 kg each.
- A handle rod installed in the first double deck rail for the cross beams.

Optional:

- Tube-type air ducts
- Circulation wall (high design)



#### Moveable bulkhead

A raised moveable bulkhead\* cannot be moved under the cross beam in its highest position.

#### Loading the second level



#### INJURY HAZARD!

Falling loads may injure persons standing under them.

- ▶ Make sure that there are no persons under the loaded top deck.
- ▶ Be aware of the maximum approved load capacity of the double deck system.
- ▶ Never move loaded cross beams.
- ▶ Follow the guidelines for securing loads.

Note the following:

- Never lash a load on the top deck to the floor but only to the cross beams on the top deck.
- Always load against the front wall and work back to the rear using the cross beams to secure the load.

- Load heavy pallets on the bottom deck and lighter pallets on the top deck.

### Load capacity of top deck

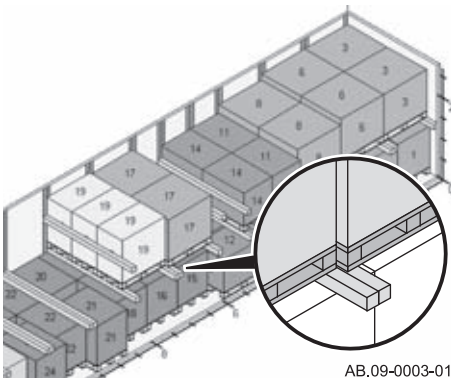
The load capacities in the table are applicable for an evenly distributed load.

Part	Load capacity max.
Total on top deck	max. half payload (approx. 12–13 t)
per pallet	666 kg
per cross beam	1000 kg
per double deck rail	1000 kg

Note that the total of the separate load capacities must not exceed the total load capacity of the top deck:

Example: with three pallets each with a total of 666 kg, each of the cross beams on which the pallets are stowed is loaded with its permitted load capacity of 1000 kg.

Every row of pallets must be on two cross beams. Two rows of pallets must not share one cross beam!



AB.09-0003-01

Example for loading



AB.09-6018-01

Load on cross beam

### Cross beam



AB.09-0017-01

Cross beam in park position

#### Park position

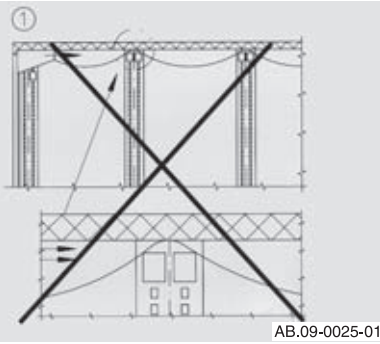
Slide the cross beams to the top to park position:

- during loading,
- if they are not required.

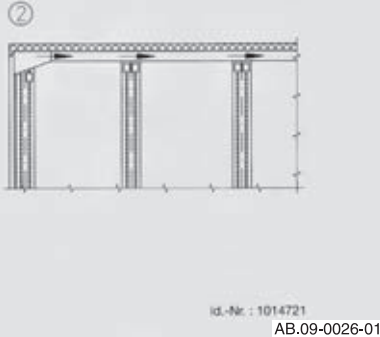
#### Transport damage!

Insufficient cooling may perish the load.

- After loading lower cross beams that are not required low enough so the air ducts are not crushed and cold air can circulate freely to the rear.



AB.09-0025-01



id.-Nr. : 1014721  
AB.09-0026-01

**Tube-type air duct**

- 1 Air duct crushed by cross beam
- 2 Air duct not crushed, cross beam lowered



AB.09-6021-01

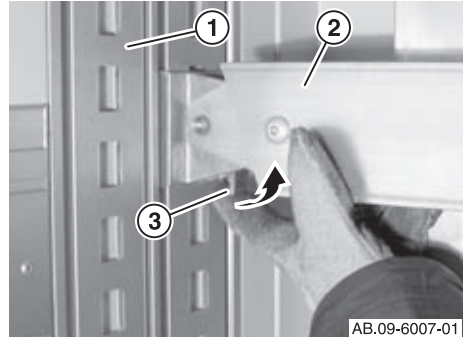
The distance of the cross beams is measured longitudinally for euro pallets

Pallets must be placed on the total width of the beam.

**i Adjustment**

Always adjust the cross beams in a horizontal position: in transport position and in park position.

**Slide cross beam to required height**

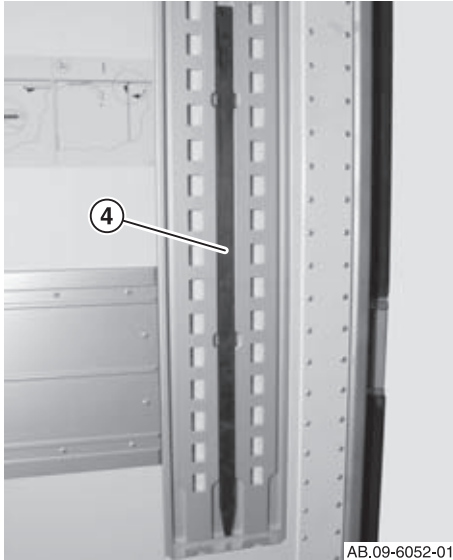


AB.09-6007-01

**Sliding cross beam**

- 1 Double deck rail
  - 2 Cross beam
  - 3 Locking pawl
- Unlock locking pawl (3) by pulling it and slide cross beam (2) to the desired height.  
The cross beam (2) will click into the double deck rail (1) when the locking pawl (3) is released.

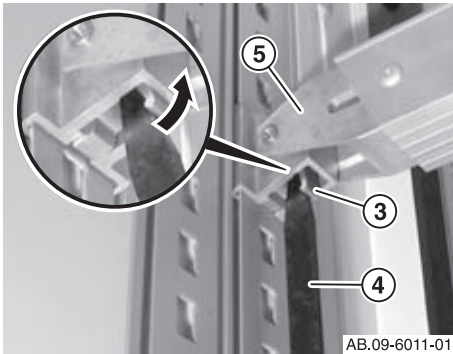
## Sliding cross beam above head height



AB.09-6052-01

### Double deck rail with integrated handle rod for cross beams

- 4 Handle rod



AB.09-6011-01

### Slide cross beam with handle rod

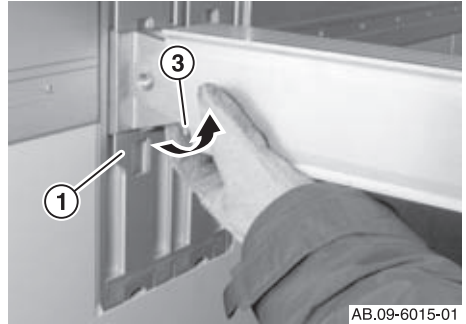
- 3 Locking pawl
- 4 Handle rod
- 5 Guide shoe

- ▶ Insert handle rod (4) into guide shoe (5).

- ▶ Move handle rod (4) in the direction of the arrow and slide cross beam (2) to the desired height.

Moving the handle rod (4) to the wall locks the cross beam (2).

## Removing/installing cross beams



AB.09-6015-01

### Sliding cross beam

- 1 Double deck rail
- 3 Locking pawl

- ▶ Unlock locking pawl (3) by pulling it and lower cross beam (2).



AB.09-6016-01

### Removing/inserting cross beam from double deck rail

- ▶ Remove cross beam (2) from double deck rail (1).

- ▶ Remove the other side in the same way.  
Install cross beam (2) in reverse order.  
After installation: centre cross beam in the side sliders in the middle of the body.

## Cross beams for securing load



## Cross beams for load securing (example)

With a partial load secure the last row of pallets from the rear with one cross beam.

# Meat hanging system

Schmitz Cargobull reefer semitrailers for transport of hanging meat have the following equipment:

- reinforced roof,
- reinforced side walls,
- rear doors with four revolving rod locks,
- pipes or rails for meat hanging system,
- tube-type\* air ducts.

The meat hanging system is mounted under the roof and reduces the usable height.

Types of meat hanging system:

- European meat hanging system with galvanised rails (60 mm diameter) for clockwise meat hooks in accordance with DIN 5047, hook length 307 mm.
- Danish meat hanging system with galvanised rails (48 mm diameter) for anticlockwise meat hooks.
- Rail meat hanging system (closed system) with five C-rails.



Hanging meat transport



## Roof load distribution

The insulated vehicles supplied by Schmitz Cargobull AG with meat hanging systems are designed for even roof load distribution of **24000 kg** over a length of 13200 mm.

Load all rails as evenly as possible and insert the stopper.

## European meat hanging system

The European meat hanging system is an open system. The meat hooks can be exchanged with the abattoir at the connecting couplings of the rails.



European meat hanging system for clockwise meat hooks (the hooks rotate clockwise from the rail)



"Stopper" warning sign in body



"Stopper" warning sticker



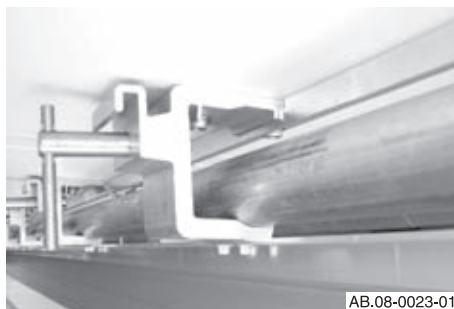
### Transport damage

Uncontrolled sliding of the load may damage the body and the load itself.

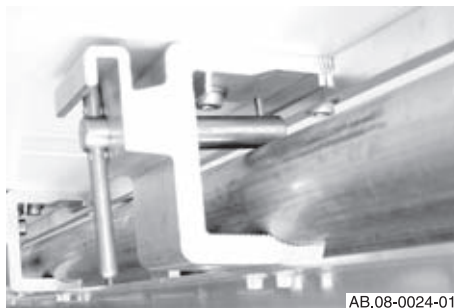
- To transport hanging meat lock every stopper to reduce the movement of the load as much as possible.

The stoppers are placed at intervals of 1.2 m (every 2nd console).

When the stoppers are locked the meat hooks between them cannot slide during braking and acceleration.

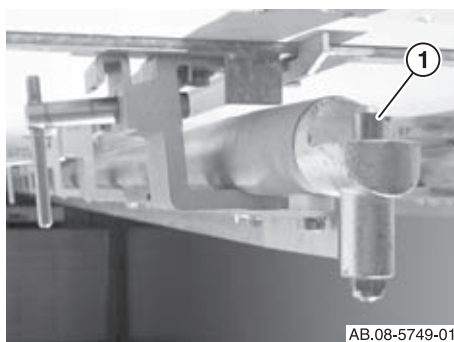


Stopper open



Stopper locked

### Rail connection coupling



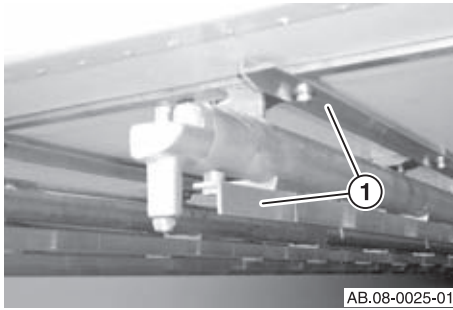
### Rail connection coupling

- 1 Connection coupling

The connection coupling connects the rails in the semitrailer to those of the abattoir.



## Hook retainer lock\*

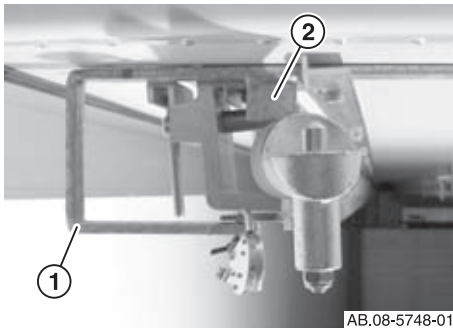


### Hook retainer lock

- 1 Hook retainer lock

The hook retainer lock prevents the hook from jumping off the rail during driving or during loading and unloading (only with 60 mm rails with sliding hooks in accordance with DIN 5047). The hooks can only be removed to the rear.

## Antitheft system\*



### Antitheft system closed

- 1 Lever
- 2 Straps

One strap (2) per rail prevents the meat hooks from being removed from the rails.

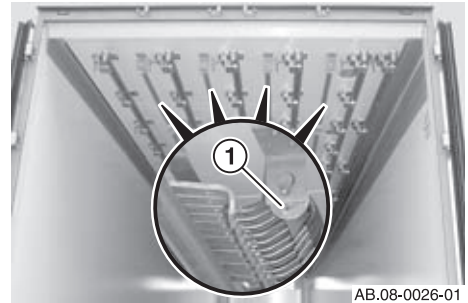
The antitheft bracket (1) can be locked.

## Hook storage\*

### ! Hook storage!

The hook storage may be torn from the ceiling under load.

- ▶ Attach only empty meat hooks to the hook storage.
- ▶ Do not hang loaded meat hooks on the hook storage.



### Hook storage

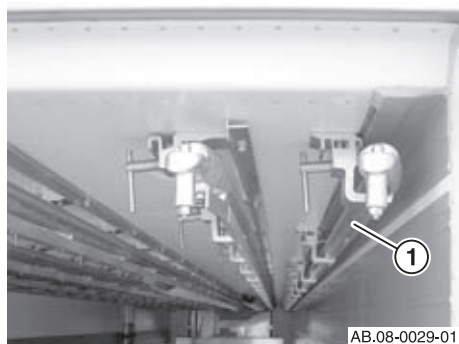
- 1 Hook storage

## Spare rail\*

### ! Spare rail!

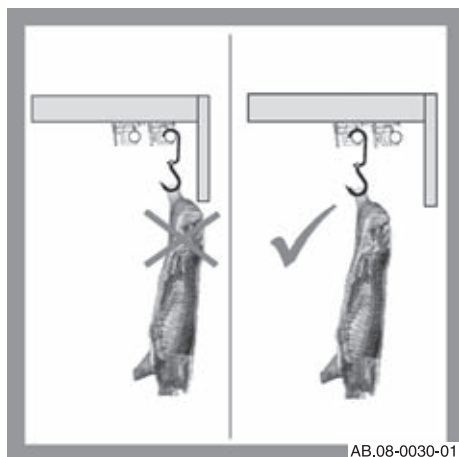
The spare rail may be torn from the ceiling under load.

- ▶ Hang unloaded meat hooks only on the spare rail.
- ▶ Do not hang loaded meat hooks on the spare rail.



Spare rail as hook storage

1 Spare rail!



"Spare rail" warning sticker

### Danish meat hanging system

The Danish meat hanging system is an open system. The meat hooks can be exchanged with the abattoir at the connecting couplings of the rails.



Danish meat hanging system for anticlockwise meat hooks (the hooks rotate anticlockwise from the rail)

### Stopper

The stoppers are placed at intervals of 1.2 m (every 2nd console).

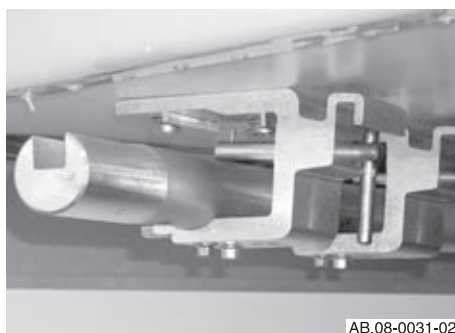
When the stoppers are locked the meat hooks between them cannot slide during braking and acceleration.



### Transport damage

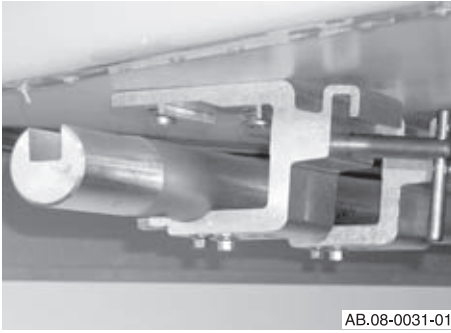
Uncontrolled sliding of the load may damage the body and the load itself.

- ▶ To transport hanging meat lock every stopper to reduce the movement of the load as much as possible.



Stopper locked

## Rail connection coupling



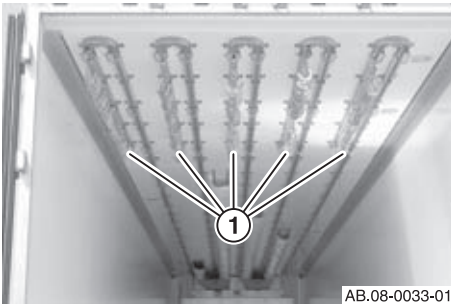
### Rail connection coupling

#### 1 Connection coupling

The connection coupling connects the rails in the semitrailer to those of the abattoir.

## Rail meat hanging system

The rail meat hanging system is a closed system. The meat hooks cannot be exchanged with the abattoir.



### Closed meat hanging system

#### 1 Parking rail

Slide unwanted meat hooks to the parking rail (1).

## Chain stopper

### ! Transport damage

Uncontrolled sliding of the load may damage the body and the load itself.

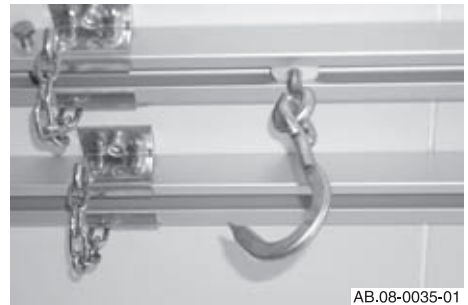
- To transport hanging meat lock every chain stopper to reduce the movement of the load as much as possible.

The chain stoppers are placed at intervals of 1.2 m (every 2nd console).

Other stoppers may also be present instead of chain stoppers.



### Chain stopper open

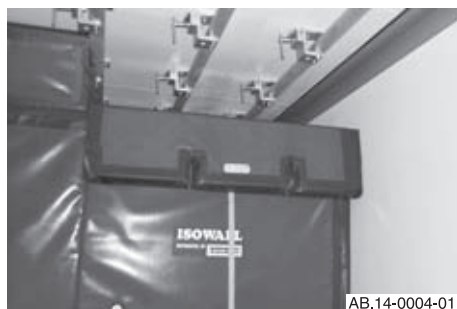


### Stopper locked/closed

**Mattress moveable bulkhead****Mattress moveable bulkhead**

The mattress moveable bulkhead is not permanently installed. It is a freestanding insulated moveable bulkhead that reduces loss of cold air:

- It prevents cold air from being lost in large quantities when the rear door is open.
- It reduces the load area requiring cooling with partial loads.
- It is not really suitable for dividing the load area into two temperature zones.

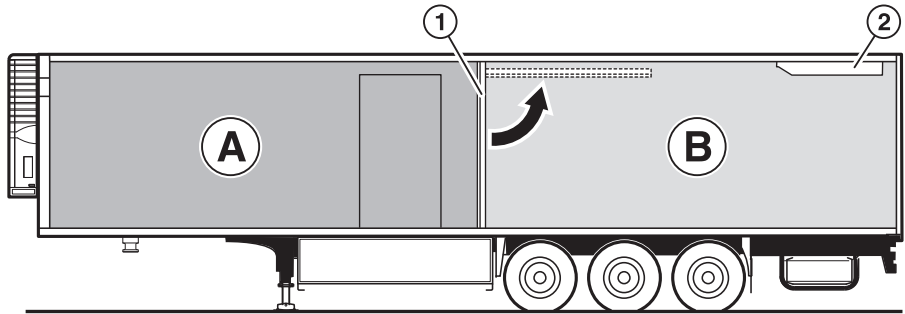
**Folding top sections**

The top section of the mattress moveable bulkhead can be folded down. Fold down the top sections with the pull straps to move the mattress moveable bulkhead.

**Mattress moveable bulkhead**

The mattress moveable bulkhead can be folded in the middle. Hold the mattress moveable bulkhead by the handles and fold it together to move it or remove it.

Weight of mattress moveable bulkhead approx. 45 kg, length approx. 2.60 m.



AB.15-0002-02

## Multitemp two-chamber vehicle (example)

- A** Freezer section down to  $-20\text{ }^{\circ}\text{C}$
- B** Above-freezing section for fresh food
- 1** Movable bulkhead
- 2** Ceiling evaporator

The Schmitz Cargobull Multitemp two-chamber vehicle can transport loads in two independent temperature zones.

Multitemp two-chamber vehicles have the following equipment:

- a refrigerator that can power an additional evaporator,
- an additional evaporator under the roof towards the rear of the vehicle (usually),
- a refrigerant duct in the roof to supply the ceiling evaporator,
- a condensate drain pipe in the side wall,
- a moveable bulkhead that can be moved along the vehicle.



### Chamber size

The size of the chambers depends on the desired temperature, the volume of the load and the evaporator performance.



### Distribution of chambers

The functions of the chambers can also be reversed: chamber A above freezing and chamber B as freezer chamber.

## Ceiling evaporator



### Passage height!

The passage height in the area of the ceiling evaporator is reduced.

- Note the passage height when entering the inside of the reefer with forklifts.



AB.15-5990-01

### Ceiling evaporator at rear

### Condensate drain



AB.15-6058-01

### Outlet of condensate drain at left rear

Check the hole in the condensate drain regularly. Clear any blockages.

### Refrigerator

Refrigerators for Multitemp two-chamber vehicles are specially designed for operation with two evaporators. The temperatures for the front and rear chambers are set at the refrigerator control panel.

### Temperature recorder

When a temperature recorder is installed, the second temperature sensor is installed in the backflow area of the ceiling evaporator.

### Moveable bulkhead

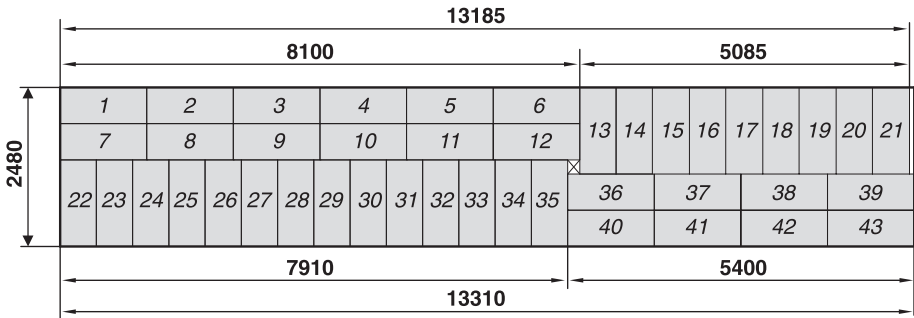
#### **i** Evaporator clearance

The closed moveable bulkhead must be at least **1.7 m** from the ceiling evaporator. Otherwise the refrigerator may not operate correctly.

Do not move the factory-installed moveable bulkhead stopper.

Operating the moveable bulkhead see "Moveable bulkhead" on page 111.

# Flower transport



AB.00-0032-01

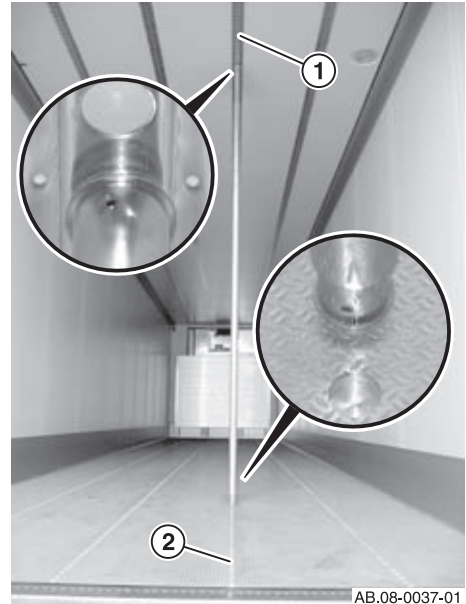
## Loading diagram for 43 flower trolleys (Danish flower trolleys)

The FP 45 COOL reefer semitrailer with an internal width of about 2490 mm is the standard vehicle for transporting Danish flower trolleys.

The reefer semitrailer can be optionally fitted as follows for flower transport:

- four perforated rails in the roof with holes 50 mm apart,
- four rows of holes in the floor with holes 50 mm apart,
- a circulation wall\* to protect the evaporator,
- three air ducts\* depending on the refrigerator model.

## Load securing gear



AB.08-0037-01

## Load securing with vertical telescopic round locking bars

- 1 Perforated rail
- 2 Row of holes

The perforated rails (1) on the ceiling and the rows of holes (2) in the floor are 500 mm apart. The hole grid is 50 mm; the holes are suitable for telescopic round locking bars with a pin diameter of 24 mm.

Telescopic round locking bars prevent the load from sliding along the vehicle.



### ACCIDENT HAZARD!

Sliding loads may cause accidents with personal injury.

- ▶ Telescopic round locking bars will yield to excessive loads. Consider the forces that the load will place on the telescopic round locking bars during braking and acceleration.



### Minimum strength

A fitted load must be secured at the front with 80 % of its weight and 50 % of its weight at the rear.

## Telescopic round locking bar



### Resistance

The maximum resistance of the telescopic round locking bars varies according to the type and manufacturer.

### Positioning

- ▶ Insert telescopic round locking bar with the sliding section first into the row of holes (2).
- ▶ Press telescopic round locking bar together and insert the rigid side into the perforated rail (1).





AB.00-0027-02

## Reefer semitrailer in intermodal transport

Schmitz Cargobull reefer semitrailers for intermodal transport have the following equipment depending on the load and railway wagon type:

- axles with centring aid,
- grips for crane loading,
- air suspension for vertical adjustment,
- hinged or retractable underrun guard (depending on wagon type),
- folding mudflaps on rear axle.

Schmitz Cargobull semitrailers are suitable for the following wagons depending on equipment and height codes:

- Pocket wagon type 1A, DB 707
- Variable loading gauge (e. g. Mega II, T4, pocket wagon 2000, DB 739, DB 744)

- Mega wagon (e.g. T5, pocket wagon 3000, AAE twin)

## Height coding

### Height coding

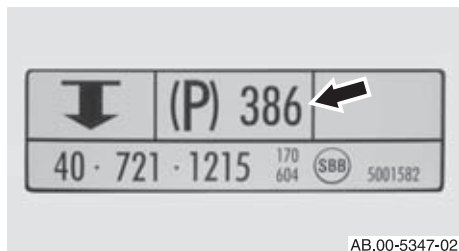
Contact your operator for the approved height coding on the route you are using.

The identification letters stand for:

- **P** for transport on non-height-optimised pocket wagons of type 1A, DB 707.
- **(P)** for transport on height-optimised pocket wagons of type 744 and type 2000.

See the sticker on the side at the front left for the height coding of your semitrailer. This shows the section information.

The number after the letters is the section number and shows the corner height in cm.



AB.00-5347-02

**"Height coding" sticker shows the section information**

For transport on non-height-optimised pocket wagons the semitrailer must be fitted with a hinged underrun guard.

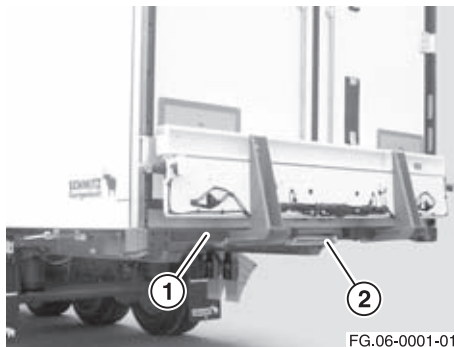
For transport on height-optimised pocket wagons the semitrailer must be fitted with a forward-set or retractable underrun guard (exceptions type 2000 and type SDGGMRSS).

Pocket wagon	Underrun guard
Type 2000	Standard
Type SDGGMRSS	Standard
Type 744.1	Retractable
	Set forward
Type 1A, DB 707	Guard
Type SDGMS	Guard

Semitrailers with the letter **(P)** cannot be loaded on pocket wagons of types 1A, DB 707.

Semitrailers with the letter **P** can be loaded on all listed pocket wagons.

## Hinged underrun guard FP 45/FP 60



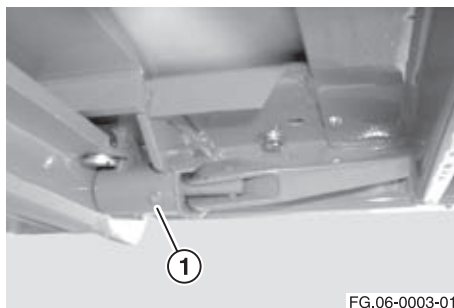
FG.06-0001-01

### Underrun guard in loading position

- 1 Lock
- 2 Retainer bracket

The underrun guard is locked on both sides. The lock (1) on the left side acts also as a lock when the guard is folded up.

### Raising (loading position)

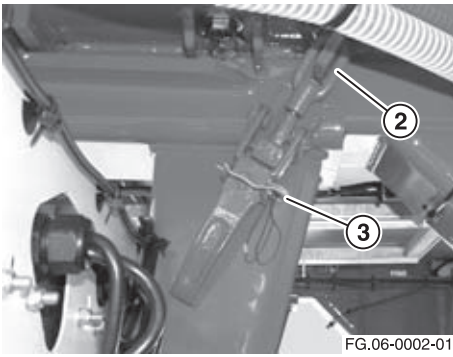


FG.06-0003-01

### Lock (shown released)

- 1 Lock

► On the left side of the chassis: release lock (1) by moving the lever.



FG.06-0002-01

- 2 Retainer bracket
- 3 Spring clip

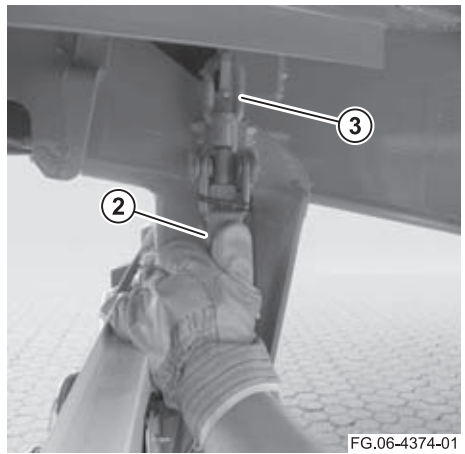
- ▶ On the right side of the chassis: Remove spring clip (3).
- ▶ Swing handle up and unhook the retainer bracket (2).



### INJURY HAZARD!

The underrun guard swings up suddenly and can injure you or other persons.

- ▶ Make sure that there are no persons in the swivel area.
  - ▶ Stand to the side when you raise the underrun guard.
- 
- ▶ Carefully raise the underrun guard. The underrun guard is raised and held up by a gas stud.
  - ▶ Always secure the underrun guard with the lock (1).
    - ▷ The underrun guard is in loading position.
- 
- ### Lowering (driving position)
- ▶ Release lock (1).
  - ▶ Push underrun guard down against the resistance of the gas stud.
  - ▶ Secure underrun guard with the lock (1).



FG.06-4374-01

### Secure lock

- 2 Retainer bracket
- 3 Spring clip

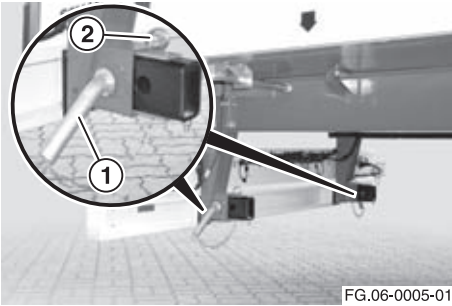
- ▶ Attach retaining bracket (2) and tighten handle.
- ▶ Lock handle with the spring clip (3).
  - ▷ The underrun guard is in driving position.



FG.06-0004-01

### Bumper in driving position

## Retractable underrun guard FP 45/FP 60



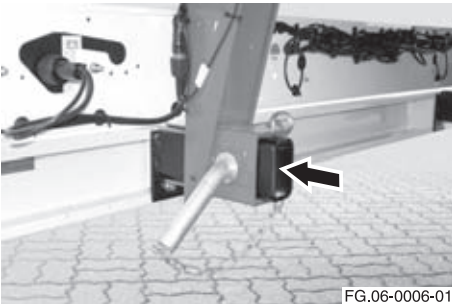
FG.06-0005-01

### Underrun guard in loading position

- 1 Pin
- 2 Spring clip

### Slide to loading position

- ▶ Pull out spring clip (2).
- ▶ Pull pin (1) and push underrun guard to the stop.
- ▶ Lock pin (1) with the spring clips (2).



FG.06-0006-01

### Bumper in driving position

### Pull to transport position

- ▶ Pull out spring clip (2).
- ▶ Pull pin (1) and pull underrun guard out to the stop.
- ▶ Lock pin (1) with the spring clips (2).

## Hinged underrun guard FP 25



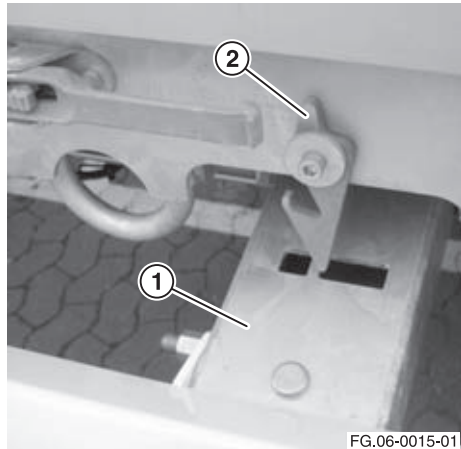
FG.06-0008-01

### Underrun guard in loading position

The bumper must be raised before loading the semitrailer on non-height-optimised wagons.

### Raising (loading position)

- ▶ Pull guard up strongly with both hands.

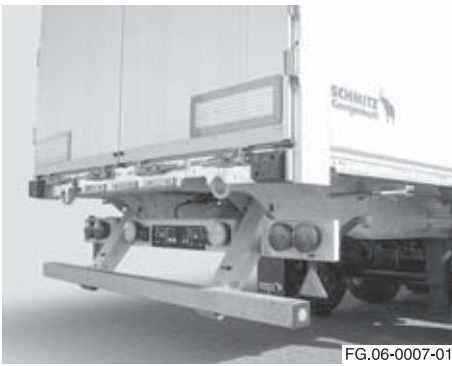


FG.06-0015-01

### Underrun guard locked in loading position

- 1 Bumper
- 2 Hook

- ▶ Attach guard (1) to the hook (2).



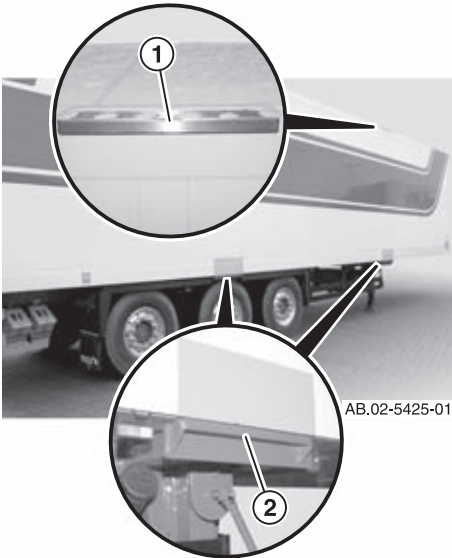
FG.06-0007-01

### Bumper in driving position

### Lowering (driving position)

- ▶ Lift underrun guard (1) slightly.
- ▶ Swing hook (2) to one side and slowly lower underrun guard.

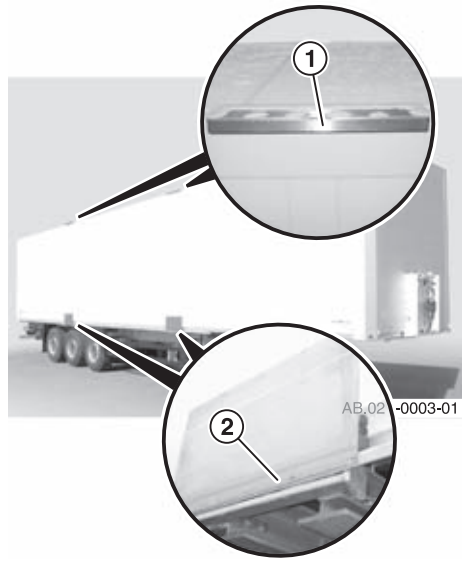
### Edges



AB.02-5425-01

### Edges for loading by craneFP 45/FP 60

- 1 Edge protection
- 2 Edge




AB.02-0003-01

### Edges for loading by craneFP 25

- 1 Edge protection
- 2 Edge

The semitrailer can be lifted by the edges (2). At the same time the grips protect the side wall against damage by the crane hooks.

### Preparing for loading

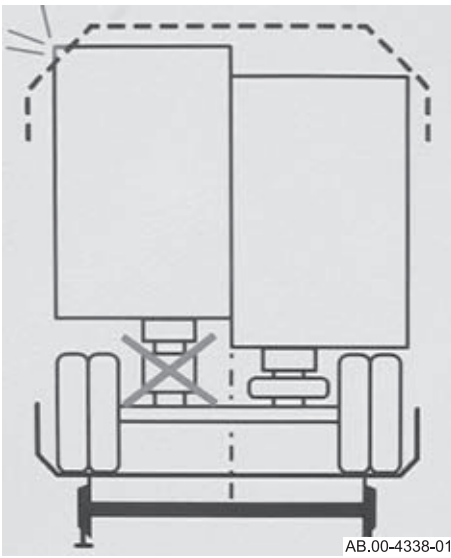
 **ACCIDENT HAZARD!**

The semitrailer may strike tunnel entrances and underpasses and cause injuries.

- ▶ Lower the semitrailer completely with the air suspension.

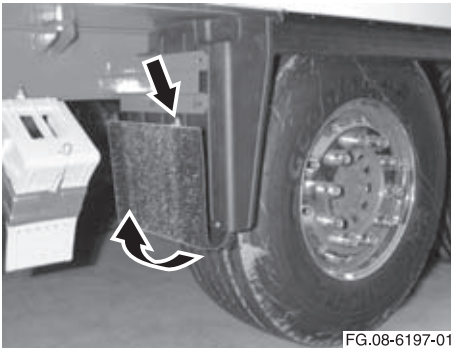
### Regulations

Before loading observe the regulations of the intermodal transport operator.



**"Intermodal Transport" warning sticker**

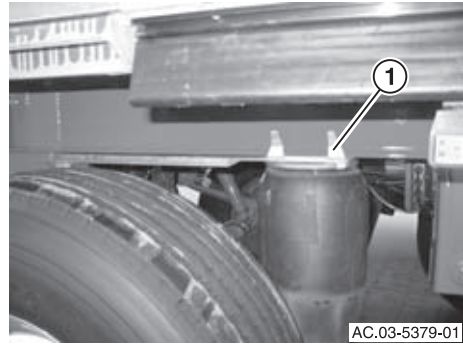
- ▶ Lower trailer completely with the air suspension.
- ▶ If required: raise or retract underrun guard and lock it.
- ▶ If required: Raise and lock the sideguards on both sides.



**Mudflaps**

- ▶ Fold mudflaps up and hook them in place.

**Preparing for road travel**



**Check axle seating**

- 1 Splitter

When the semitrailer is lifted the axle hangs down from the frame. The shock absorbers limit the maximum extension of the axle.

Check the following items after the semitrailer has been lowered from the pocket wagon to the road:

- ▶ Check all wheels to make sure that the splitter (1) are sitting properly on the frame.
- ▶ Bring air suspension to driving position. Follow directions in the chapter "Chassis" at "Lift/lower valve" on page 37 and "Auto-reset function" on page 39.
- ▶ Lower or extend underrun guard and lock it.
- ▶ Lower and lock the sideguards on both sides.
- ▶ Unfold mudflaps.

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## Stability



### ACCIDENT HAZARD!

The uncoupled semitrailer may tip if the load is not well distributed and cause personal injury.

- ▶ Make sure that the weight of the load and the forklift does not exceed the specified values.
- ▶ Never unhitch the semitrailer if the load exceeds the specified weights.

The uncoupled semitrailer may tip during loading or unloading if the weights exceed the specified values:

- The unloaded semitrailer may tip backwards if a forklift drives on to it from the rear.
- The unloaded or partially loaded semitrailer may tip forwards if the combined load on the forklift in the semitrailer moves toward the front wall.

Calculation of the stability according to the "Calculation formula for safety and information signs regarding forklift movements on trailers" according to DIN 70006-2 of May, 2003.

The most unfavourable case (depending on the equipment) is assumed taking into account a safety factor.

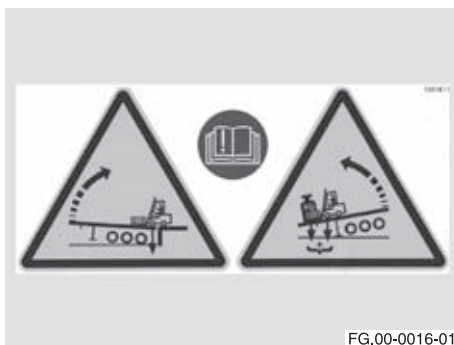
The semitrailer can tip:

Max. load on the rear	Max. load on the front wall side
2350 daN (kg)	3800 daN (kg)

### Stability FP 25 Express

Max. load on the rear	Max. load on the front wall side
3600 daN (kg)	3600 daN (kg)

### Stability FP 45/60 Cool



### Warning sticker "Stability with uncoupled semitrailer"

In the case of doubt place supports under the semitrailer in the area of the skid plate while loading or unloading.



## Opening reefer body

Opening the reefer body may be hazardous for you or other persons. If the load has moved or fallen it may fall from the loading area when the semitrailer is opened.

Open the semitrailer with great care and attention. Take particular care if you did not load the semitrailer yourself or it can be seen from the outside that the load has moved.



### INJURY HAZARD!

If the load has fallen or moved it may fall out when the rear door of the reefer body is opened and injure you or other persons.

- ▶ Before opening the reefer body make sure that no load can fall.



### INJURY HAZARD!

Doors may open suddenly by pressure from the load, parts of the load can fall out of the body and cause personal injury.

- ▶ Open the door wing cautiously and beware of load pressure.
- ▶ When opening the doors keep clear of the swing area of the door leaves.
- ▶ If the load is pressing against the door, leave the second revolving rod lock secured and locked.
- ▶ Clear the load pressure without endangering yourself or other persons.

## Load distribution plan



### ACCIDENT HAZARD!

If the semitrailer is loaded contrary to the specifications, the braking and steering characteristics of the semi-trailer truck may be adversely affected and cause accidents with personal injury.

- ▶ Load the semitrailer in such a way that all axles and drawbars are not overloaded or underloaded and the approved overall weight is not exceeded.

Commercial vehicles can only be loaded to their maximum approved payload when the overall centre of gravity of the load is a specific area.

However, loads that are under the maximum payload must also be positioned only in specific sections of the loading area. Otherwise axles may be overloaded or underloaded.

If the overall centre of gravity of the load is within this area, referred to as the load distribution curve (3), this guarantees that the axle loads will be within the approved range.

The load distribution plan in conjunction with the load distribution curve (3) will show you what load can be loaded on the semitrailer at what distance from the front wall.



### Example of load distribution plan

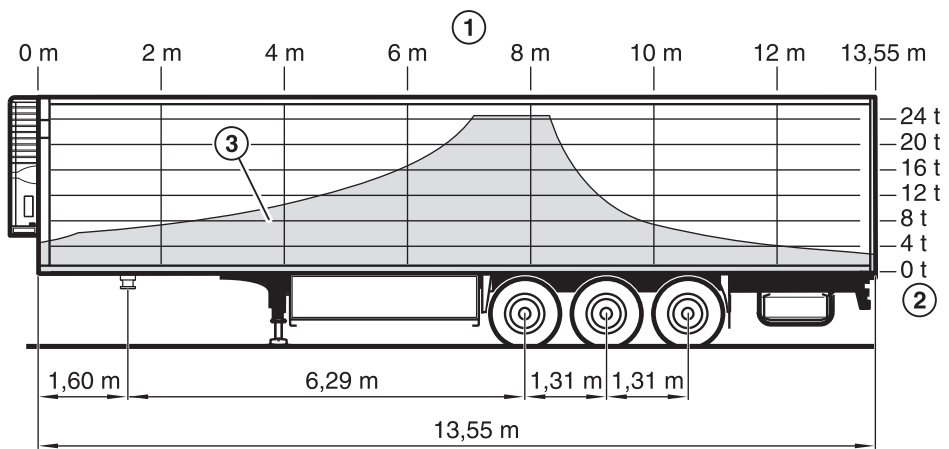
The load distribution plan shown below is intended as an example only.

It cannot be transferred to your semitrailer because it depends on the actual dimensions and the weight of the equipment mounted on your semi-trailer truck.

The load distribution plan must be calculated separately for every semi-trailer truck.

#### Example:

- A 12 t machine component must be loaded. According to the load distribution plan the centre of gravity of the machine component must be positioned be a minimum of 4.20 m and a maximum of 9.00 m from the front wall.
- Two machines weighing a total of 24 t must be loaded. According to the load distribution plan the overall centre of gravity (resulting centre of gravity) of the two machines must be in the range of 7.00 m to 8.10 m behind the front wall.



### Load distribution plan (example FP 45/FP 60)

- 1 Scale of distance from front wall in metres (m)
- 2 Scale of load in tonnes (t)
- 3 Load distribution curve

## Safe floor load



### Breakage hazard!

The floor of the semitrailer may break if it is overloaded.

- ▶ Do not exceed the maximum approved forklift axle load.
- ▶ Do not exceed the maximum approved load exerted by heavy single loads.

### Forklift axle load

Note the maximum approved axle load of forklifts when driving on the floor of the semitrailer:

Type	Axle load max. kg
S.KO FP 45/FP 60 barley grain aluminium floor	5500
S.KO FP 25 plywood floor	5500

### Maximum approved forklift axle load

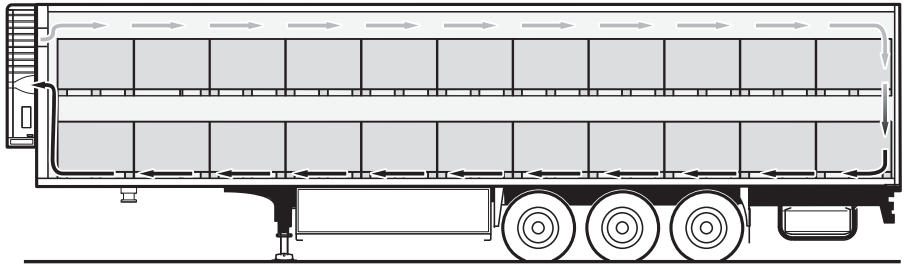
### Line load

When loading heavy single loads observe the maximum approved line load of the load bed.

Maximum approved line load: **2000 kg per linear metre.**

# Loading and cooling

## Air circulation



AB.09-0024-02

### Air circulation in load area



#### INJURY HAZARD!

Freezing air freezes goods.

- ▶ Switch off the refrigerator during loading and unloading.

Cold air flows from the evaporator to the rear under the ceiling. It heats up, sinks to the floor and circulates to the evaporator/refrigerator at the front where it is cooled again.

Free air circulation is essential for even cooling of the load.



#### Loading and cooling

Note the instructions for economical and correct cooling on the following pages.



#### Cool losses

Every time the doors are opened cold air is lost and moisture enters the load area.

- When cooling open the doors only when absolutely necessary and for as short a time as possible.
- If possible open one door wing only.

Frozen moisture may form ice on the evaporator, increasing energy consumption and loss of performance:

- Keep the load area dry. Defrost it manually to dry it before loading.
- Make sure that the refrigerator is regularly defrosted (see manufacturer's instructions).
- Repair any damage to the insulation immediately.



### Cool chain

Refrigerators operate most economically if they do not need to cool the load but only need to maintain the temperature. The cool chain must also not be interrupted during loading:

- Before loading cool the load area to the required temperature.
- Load precooled loads if possible.
- Set the thermostat of the refrigerator 3–5 °C cooler than required by the load.
- Do not load uncooled empty freight in the load area for frozen goods.



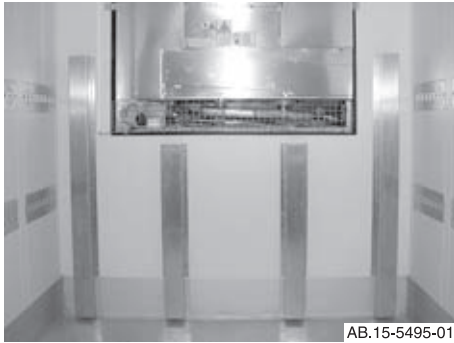
### Correct loading

Always position loads so cold air can flow around them on all sides.

Make sure that the air can circulate freely:

- Make sure that the load does not crush the air ducts or block the air outlets.
- Leave a distance of at least 20 cm between load and ceiling.
- Leave a smaller distance between load and wall because of the heat conducted through the wall.
- Place the goods on pallets to prevent heat transmission through the floor.

## Air circulation profiles\*/circulation wall\*



### Air circulation profiles



### Circulation wall\*

Air circulation profiles are bolted to the front wall to allow the air to circulate freely around loads packed against the front wall.

The circulation wall assists air circulation and also protects the evaporator from damage.

The aluminium profiles can be removed for servicing the evaporator (see "Circulation wall" on page 187).

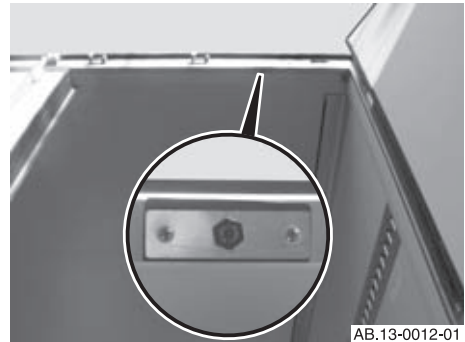
## Ventilation flaps



### Ventilation flap in the rear door

Open the ventilation flaps in the front wall and rear door to dry or air out the uncooled load area. Note that driving with ventilation flaps open will allow dirt and fine dust to enter the load area. A fly screen prevents entry of larger foreign bodies.

## Door contact switch



### Door contact switch

The door contact switch records how often and how long doors are opened. The temperature recorder saves the data.

## ATP approval

ATP approval is required under the following conditions:

- transport of highly perishable food intended for human consumption,
- transport across international borders,
- delivery of goods to countries that subscribe to the ATP convention,
- transport of goods over distances less than 150 km, and the semitrailer is loaded on a ship with contents (food).

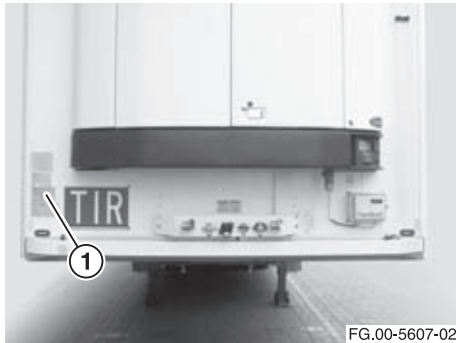


### Repeat inspection

Vehicles with ATP approval must be inspected again six years after initial approval. The repeat inspection is then required every three years.

Observe national regulations.

The ATP approval plate shows the ATP class and the period of the ATP approval.



FG.00-5607-02

### ATP approval plate on front wall

- 1 ATP plate

ATP	APPROVED FOR TRANSPORT OF PERISHABLE FOODSTUFFS
	APPROVAL NUMBER: <input type="text"/>
	EQUIPMENT NUMBER: <input type="text"/>
ATP MARK:	FRC
VALID UNTIL:	<input type="text"/>

AB.15-0003-01

### ATP approval plate (example)



AB.00-5596-01

### ATP identification

The ATP identification must be attached to the outside of the reefer body in a clearly visible position. It shows the ATP class and the due date of the first repeat inspection.

Example **FRC**:

- **F** transport equipment with integrated refrigeration
- **R** transport equipment with reinforced insulation
- **C** temperature class between +12 °C and -20 °C



# Load securing gear

## Legal requirements

Be very careful with load safety. Take sufficient time to make sure that your load is loaded and secured safely for operation in traffic.

Correctly secured loads prevent

- personal injury,
- property damage to the load,
- property damage to vehicles and the environment,
- and ensure security when checked by government inspectors and police.

Load safety is a legal requirement.

Detailed information on securing loads can be found in the German engineering association guidelines pp. 2700 ff. For practical information on securing loads see the brochures issued by the professional association for vehicle operators.

## Factory-installed equipment

You are responsible for securing loads properly and safely with appropriate equipment such as tension straps, antislip mats, locking rods etc. depending on the type of load.

The factory-installed lashing points for securing loads will help you with this (see "Equipment for load securing gear" on page 128).

## Load securing certificate

Schmitz Cargobull semitrailers are available with a load safety certificate for specific transport applications. If the conditions listed there are met, the factory-installed equipment for securing loads is sufficient.

Additional action for securing loads are not required in such cases.

## Basic physical information

While the semitrailer is being driven forces from acceleration and braking and also changes in direction all act on the load. These forces will affect the load as follows unless it is sufficiently secured,

- slippage,
- tipping,
- rolling and
- movement.

You can calculate the forces for the individual directions of movement against which you must secure the load with the aid of the "maximum mass forces" specified in the VDI 2700 and EN 12195-1 standards.

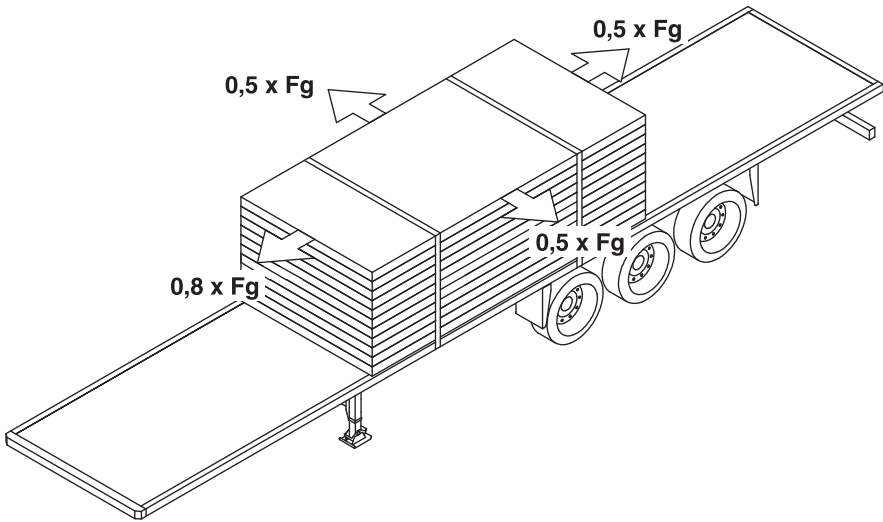
The load weight multiplied by the preceding number in the diagram will give the mass force with which the load can move: for example, in the forward direction with a 10 t load component this is  $0.8 \times 10 \text{ t} = 8 \text{ t}$ .



### Applicability

Note that the values in the diagram apply for road traffic. The values for intermodal transport, ferry travel etc. may vary.

The securing forces actually required depend on the friction between the load and the vehicle floor and also the dimensions (ratio of width to height) and the stability of the load.



AB.00-0011-02

**Maximum mass forces in road traffic in the individual directions of movement in standard driving**

$F_g$  Weight of load

**Flexible load securing gear**

The flexible load securing gear is used for securing loads on pallets to prevent them falling over or sliding to the rear or forward by placing cross beams.

Always secure the load with flexible load securing gear when the vehicle is partly loaded.



**ACCIDENT HAZARD!**

If the load has fallen it may fall out when the body is opened and cause personal injury.

- ▶ Secure the last row of the load from the rear with two cross beams or clamping bars.
- ▶ Always secure the load at the front with cross beams.
- ▶ Secure the load at the bottom and the top rigging board position.

- if there is more than 15 cm of space between the load and the front wall or other parts of the load,
- if there is more than 15 cm of space between the load and the rear door or other parts of the load.

Flexible load securing gear is only required with a full load if there is a space greater than 15 cm between the last row of the load and the rear door.



**Flexible load securing gear at the rear with telescopic clamping bars (example)**



**Cross beams for load securing (example)**



<b>Maintenance, care</b>	
<b>Requirements</b>	<b>172</b>
<b>Service schedules</b>	<b>173</b>
<b>Services</b>	<b>176</b>
<b>Wheels and tyres</b>	<b>189</b>
<b>Electrical system</b>	<b>191</b>
<b>Care of the commercial vehicle</b>	<b>199</b>

Keywords

Safety

Chassis

Driving

Superstructure

Transport  
solutions

Operation

**Maintenance**

Data

## Requirements

Operate the semitrailer only in perfect condition and with due regard to safety and hazards. This requires the semitrailer to be serviced and repaired as specified. Have any changes that occur with the semitrailer corrected immediately by a qualified workshop. This is particularly important with changes that affect the safety of persons and property.

The semitrailer with all its components must be serviced regularly and repaired when necessary to ensure safe and economical operation. If inspections, services and repairs are not carried out at the correct time components may fail and cause accidents.

Carry out functional inspections and services at the specified intervals and follow the directions.

Note the intervals and instructions for inspection and service of OEM parts, such as axles, king-pins, landing legs.

### Safety inspection

Have all inspections and services done at the specified intervals.

National legislation regulates the inspection intervals for safety-relevant components of the semitrailer. If there is no relevant legislation, you are responsible for ensuring that the semitrailer is inspected at least once a year by a government accredited expert for operational and traffic safety.

### Technical qualifications

Have services and repairs carried out by qualified specialist workshops only, who have all the tools and knowledge required to carry out this type of work.

Schmitz Cargobull recommends the Schmitz Cargobull service centres for this work.

Appropriately qualified technicians are required for maintenance and repairs to the semitrailer. Maintenance and repairs done by insufficiently qualified persons involves unforeseeable risks with negative consequences for people, the semitrailer and the environment.

- Maintenance and repair of the chassis requires training as a motor vehicle mechanic and experience in maintaining and repairing commercial vehicles, trailers and superstructures.
- Maintenance and repair of the electrical components of the superstructure requires training as a motor vehicle electrical technician.
- Maintenance and repair of the brakes requires training as a brake technician.

# Service schedules

## One-time services

Have the following service items carried out once after delivery of the semitrailer.

Service item	after 50 km	after 2000 km	after 5000 km	every 10000 km or two months	after 6 months	after 6 years	Information on page
Wheel nuts: tighten <sup>1</sup>	■						
Brake system: adjust all brakes		■					
Threaded connections of control arms, shock absorber fastenings and axle connections: visual inspection		■			■		181
King-pin: lubricate			■				177
King-pin: check bolts for tightness			■				177
Servicing steered axle				■			186
First Repeat inspection for ATP approval						■	

<sup>1</sup> This applies for every wheel change

## Services

Have the following service items carried out at the specified intervals.



## Daily

Carry out the required checks daily as listed in "Departure inspection" on page 23.

Service item	every 5000 km or every two weeks	every 10000 km or every month	every 30000 km or every 3 months	every 60000 km or every 6 months	every 120000 km or every 12 months	Information on page
Axle and wheel brakes: check state and wear	Follow directions of axle and brake manufacturer.					
Wheel nuts: check tightness. Note the torque.	■					189
King-pin: lubricate	■					177
Lighting system: check components for damage	■					
Tyres: check pressure	■					189
Compressed air system: check for leaks, drain compressed air reservoir		■				36
Shock absorber: visual check for oil leakage				■		178
King-pin: check bolts for tightness				■		177
King-pin: check for wear				■		177
Skid plate: check that knurled pins are tight (FP 25)				■		
Line filter in compressed air system: clean				■		
Front landing leg: lubricate and check fasteners (see manufacturer's operating manual)				■		
Servicing steered axle				■		186



Service item	every 5000 km or every two weeks	every 10000 km or every month	every 30000 km or every 3 months	every 60000 km or every 6 months	every 120000 km or every 12 months	Information on page
Lubricate rubber door seals with silicone oil				■		187

Legally required safety inspection					■	
Maintaining the load securing certificate (certification of the superstructure strength)					■	176

All mounted parts: check bolts for tightness					■	
Threaded connections of control arms, shock absorber fastenings and axle connections: visual inspection					■	181

Tail lift batteries					■	186
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Service item	annual	every 3 years	Information on page
Calibrate temperature recorder	■		
First Repeat inspection for ATP approval		■	166

Service item	as specified by the refrigerator manufacturer	Information on page
Refrigerator	■	166

**Load securing certificate\*  
(certification of the superstructure strength)**

**i Test work**

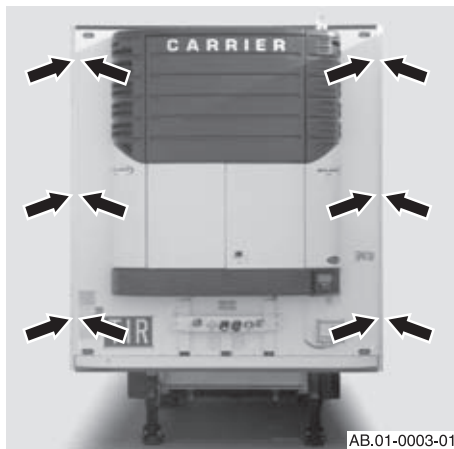
Check the following items on semitrailers with load securing certificate (certification of the superstructure strength) annually.

Register the annual test in the "Service and maintenance guide" starting on page 60.

Otherwise the load securing certificate (certification of the superstructure strength) will become invalid!

- ▶ Check that all equipment is present and in good technical condition:  
Load securing tracks installed in the side wall, load securing elements, etc.

- ▶ Check that all threaded fasteners and rivets are tight.
- ▶ If necessary, tighten or replace bolts and rivets.



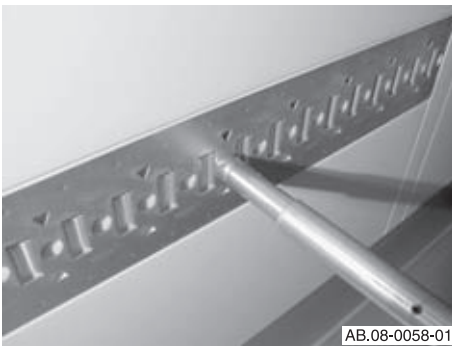
**Positions of the screws on the front wall:  
Screws in connecting profile between front wall and side wall**

The reefer body components – floor, side wall, front wall, rear door frame and roof – are connected inside and outside through connecting profiles.

- ▶ Check the glued joints of the connecting profiles for good condition (visual check).



**Positions of the screws on the rear door frame:  
Locking elements and hinges**

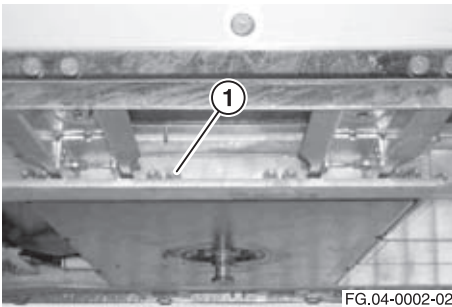


### Glued load securing tracks in the superstructure side wall

- ▶ Check the glued joints of the load securing track for good condition (visual check).

### Skid plate FP 25

- ▶ Check that all knurled pins are tight  
Note the torque: knurled pins on skid plate on chassis: 280 Nm.



### Knurled pins on skid plateFP 25

- 1 Knurled pins

## King-pin

### ACCIDENT HAZARD!

The use of a king-pin under the limit diameter (wear limit) can cause the semitrailer to become uncoupled while driving.

- ▶ Check the diameter regularly and have a worn king-pin replaced when required.

### Manufacturer's directions

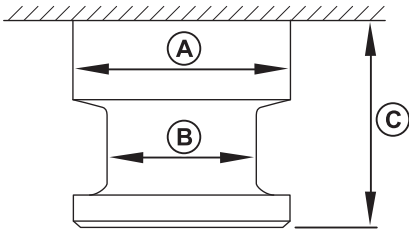
Contact the manufacturer or a qualified workshop if you have any questions or doubts about the king-pin. Follow the manufacturer's directions for service and replacement.

### Service instructions:

- Replace the king-pin when worn and when corrugations are detectable. Note the limit dimensions in the table on page 178.
- The type of king-pin specified in the operating permit and installed when the vehicle was first registered must be used as a replacement. Always replace the fastening bolts.
- When replacing king-pins with threaded fasteners use only approved components with an inspection stamp.
- Tighten the fastening bolts with a torque spanner and check the torque regularly. Note the specified torques on page 207.
- Follow the installation directions of the manufacturer.

**Services** Lubricate the king-pin at the intervals specified in the service tables. Regular lubrication is the most important factor for long life of the king-pin and fifth wheel. For recommended lubricants see page 209.

### Wear limits of king-pin



FG.04-0001-01

### King-pin dimensions

King-pin			
Size:	50 (2")	90 (3.5")	
<b>A</b> New	73 mm	114 mm	
Wear limit	71 mm	112 mm	
<b>B</b> New	50,8 mm	89 mm	
Wear limit	49 mm	86 mm	
<b>C</b> Minimum	82.5 mm	72 mm	
Maximum	84 mm	74 mm	

### New and wear dimensions of king-pin

### Landing legs



#### Manufacturer's directions

Follow the directions of the landing leg manufacturer.

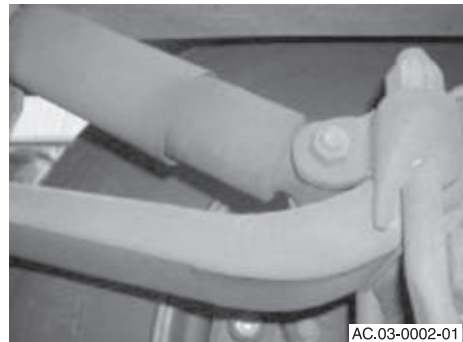
### Compressed air system

- ▶ Check all coupling heads, valves and lines for seals and air leaks. Seal leaks.
- ▶ Drain compressed air reservoir.

### Shock absorbers

Follow the instructions below for inspecting the shock absorbers:

- Check the shock absorbers in dry weather, not during rain.
- Have leaking shock absorbers replaced. They no longer function correctly and driving characteristics will deteriorate. Tyre wear may also increase.
- You can assess the wear of the rubber sockets by rotating the shock absorber. Have the shock absorbers replaced if the rubber sockets are worn.

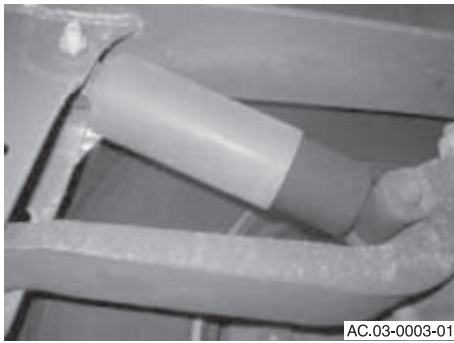


AC.03-0002-01

**Oil spray makes the shock absorber dirty, but shock absorbers do not absorb moisture and remain dry: Not a fault!**

- ▶ Visually inspect the shock absorbers:

The shock absorber can "sweat slightly" and this is actually desirable for lubrication.

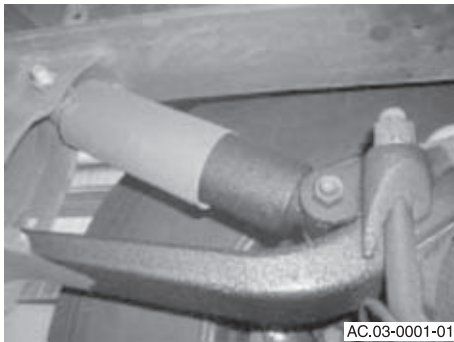


AC.03-0003-01

**The shock absorber is leaking. Moisture from leaking oil is visible: replace shock absorber**

Oil will drip out if the shock absorber leaks.

In case of doubt wipe the shock absorber clean. Drive the semitrailer for two days and check again.



AC.03-0001-01

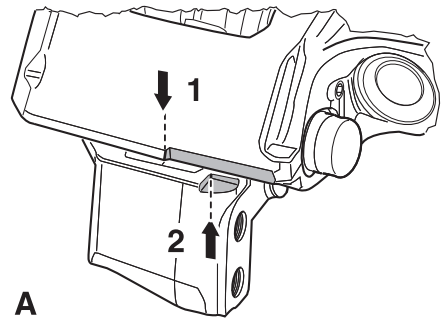
**The shock absorber is leaking copiously. Moisture from leaking oil is visible: replace shock absorber**

## Brake pad wear check



### Wear check

Always check both sides of an axle.



**A**

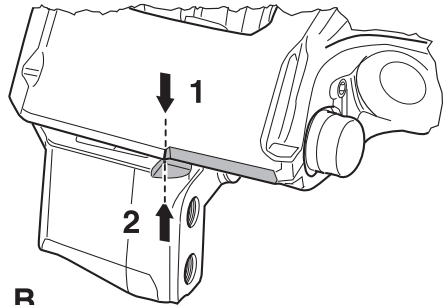
AC.02-0065-01

### New

- 1 Brake calliper marker
- 2 Brake calliper mounting bracket marker

The thickness of the brake pad can be checked with the wheels mounted based on the position of the brake calliper mark (1) compared to the fixed mark (2) on the brake calliper mounting bracket.

The new status of the brake pads is shown in Figure A.



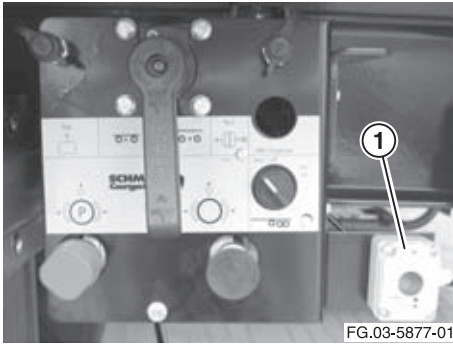
**B**

AC.02-0066-01

**The brake pads and brake discs must also be checked with the wheels installed**

If the status shown in Figure B is reached, the wheels must be removed to check the brake pad thickness and the brake disc.

## Brake pad wear indicator



FG.03-5877-01

### Operating console

#### 1 Brake pad wear indicator

The brake pad wear indicator (1) provides a convenient and safe option for detecting the wear limit of the brake pads on axles with disc brakes at an early stage. The wear indicator is on the operating console.

Check whether the disc brake pads have reached the wear limit every day.



FG.03-0001-01

### Brake pad wear indicator

#### 1 View window with wear indicator

The brake pad wear indicator also functions when the semitrailer is uncoupled, i.e. without power from the tractor.

If you see the red wear indicator in the view window (1) of the brake pad wear indicator, at least one brake pad has reached the wear limit of 2 mm; the pads must be replaced.

Depending on the installed system, the ABS warning light in the tractor will flash to indicate that the wear limit of 2 mm has been reached when the ignition is on and when stopped.

Depending on the system,

- the ABS warning light flashes 4 times, pauses briefly and flashed 4 times again
- or
- the ABS warning light flashes continuously.

The ABS warning light stops flashing as soon as you drive off.

After replacing the brake pads check that all wear sensor system wires, because at least one wire is worn and must be replaced. Insert the cable for the wear indicator into the new brake pads.

Then the wear indicator will revert to black after turning on the ignition.

Combined with the Trailer Information System (TIS), the brake pad wear is shown on the display near the operating console.

For further information on the operation please contact the manufacturer.

## Air suspension system

The following service instructions refer to the following Schmitz Cargobull air suspension systems:

- MRH3, make Weweler from 2007,
- MRH2, make Weweler from 2001 and
- MRH, make Weweler from 1999.

The inspections must be carried out at the specified intervals in accordance with the relevant service instructions to ensure operating and road safety of the vehicle.

A Schmitz or Weweler customer service workshop should be used to repair faults or replace worn parts, unless the vehicle operator has sufficient qualified technicians and technical equipment in house or an official permit. Connecting rods must always be replaced in pairs.

When installing spare parts we recommend using exclusively parts tested and approved by Schmitz Cargobull to ensure that the operating permit and the warranty remain valid under national and international regulations.

These service instructions are only applicable for the air suspension system. Please follow the separate service requirements of the axle manufacturer.

All Schmitz Cargobull air suspension systems are designed as low-maintenance systems. Therefore, all articulated connections are rubber-steel sockets that do not require lubrication.

## Visual inspection and test

### Check before every trip:

- ▶ Apply operating pressure to air reservoirs of brake and air suspension systems.
- ▶ Drain condensation.
- ▶ Check air spring bellows for folds or damage.

### Check after the first two weeks, six months and then at least once a year:

- ▶ Check threaded connections of control arms, shock absorber fastening and axle ties for rust and signs of settling.

If traces of rust or settling are found in the area of the threaded connections, this indicates internal movement in the connections.

The threaded connections should be unscrewed and then retightened in accordance with the following tables (see also relevant diagram). When tightening the shock absorber threaded connection the bolts must be secured to prevent them loosening.

## Services MRH2/MRH3 threaded connections

Item	Threaded connections		Rotation angle process		Torque
			Pretighten to torque +10 %/-0 %	Retighten to angle +10 %/-0 %	Tighten

### Connecting rod:

1	Spring pin	M27x2	250 Nm <sup>1</sup>	270° <sup>1</sup>	
---	------------	-------	---------------------	-------------------	--

### Shock absorber:

2, 3	Shock absorber bolt	M16x2	170 Nm <sup>1</sup>	90° <sup>1</sup>	
------	---------------------	-------	---------------------	------------------	--

### Axle ties:

4	Spring U-bolts MRH2	M22			620 +25/-0 Nm
---	---------------------	-----	--	--	---------------

	Spring U-bolts MRH3	M20x1.5			600 +25/-0 Nm
--	---------------------	---------	--	--	---------------

5	Bolt underneath bellows	M12x1.75			66 +0/-16 Nm
---	-------------------------	----------	--	--	--------------

6	Bolt on top of bellows	M8x1.25			25 ±3 Nm
---	------------------------	---------	--	--	----------

7	Nut on top of bellows	M12x1.75			66 +0/-16 Nm
---	-----------------------	----------	--	--	--------------

8	Bellows stop bolt	M12			66 +0/-16 Nm
---	-------------------	-----	--	--	--------------

### Axle lift:

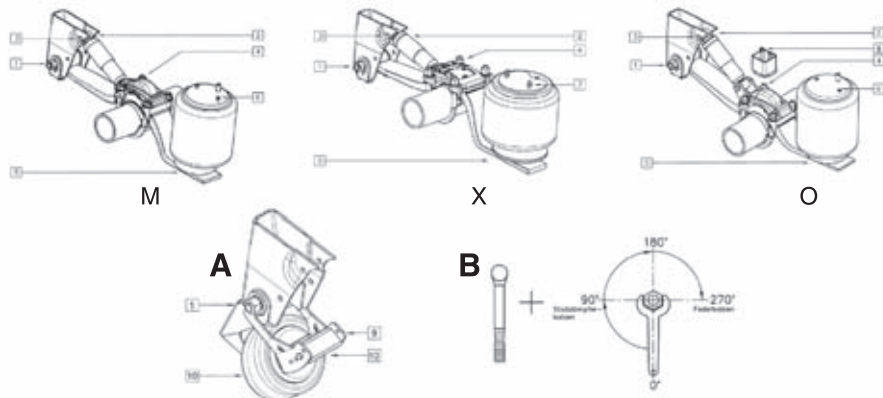
9	Rubber buffer bolt	M10			50 ±10 Nm
---	--------------------	-----	--	--	-----------

10	Bellows fastener bolt	M10			30 ±10 Nm
----	-----------------------	-----	--	--	-----------

### Torque values for MRH2/MRH3 threaded connections

<sup>1</sup> The air suspension system must be at driving height.





LF.01-0008-02

### MRH2/MRH3 threaded connections

**A** Axle lift

**B** Torsion angle process

**M, X, O** Connecting rod types

### MRH threaded connections

Item	Threaded connections	Rotation angle process		Torque
		Pretighten to torque +10 %/-0 %	Retighten to angle +10 %/-0 %	Tighten

#### Connecting rod:

1	Spring pin	M27		800 +50/-0 Nm <sup>1</sup>
---	------------	-----	--	----------------------------

#### Shock absorber:

2, 3	Shock absorber bolt <sup>2</sup>	M20	200 Nm	180°
------	----------------------------------	-----	--------	------

#### Axle ties:

4	Spring U-bolts	M24		800 +50/-0 Nm <sup>3</sup>
5	Bolt underneath bellows	M12		66 +0/-16 Nm
6	Bolt on top of bellows	M10/12		66 +0/-16 Nm

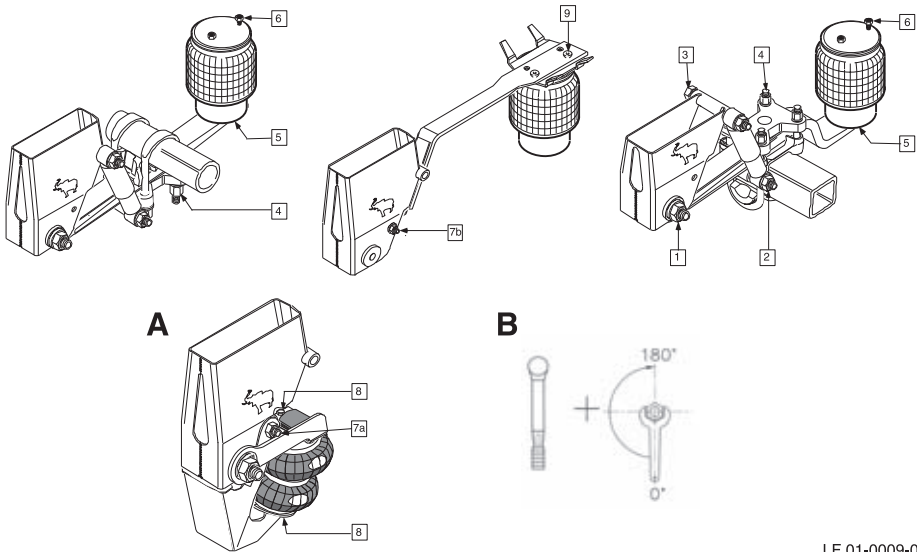
Item	Threaded connections	Rotation angle process		Torque
		Pretighten to torque +10 %/-0 %	Retighten to angle +10 %/-0 %	Tighten

**Splitter/axle lift:**

7	Splitter/axle lift bolt	M 6		180 +0/-20 Nm
8	Lift bellows bolt	M10		40 +0/-10 Nm
9	Splitter countersunk head bolt	M10		40 +0/-10 Nm

**Torque values of MRH threaded connections**

- 1 The air suspension system must be at driving height.
- 2 When replacing shock absorbers replace bolts as well.
- 3 When using a BPW axle follow the installation directions of the Bergische Achsenfabrik.



LF.01-0009-02

**MRH threaded connections**

- A Axle lift
- B Torsion angle process

## Rubber sockets of link points

The articulated connections are designed as rubber-steel sockets.

The corresponding torsion angle or the corresponding tightening torque guarantees that the inner steel socket cannot rotate and the torsion movement is taken by the rubber alone.

## Check rubber spring bushings

- Move the vehicle slightly forward and backwards with the brakes set or move the spring eye between the spring hanger and connecting rod.

There must be no significant play (max. 1 mm).

Replace damaged parts immediately.

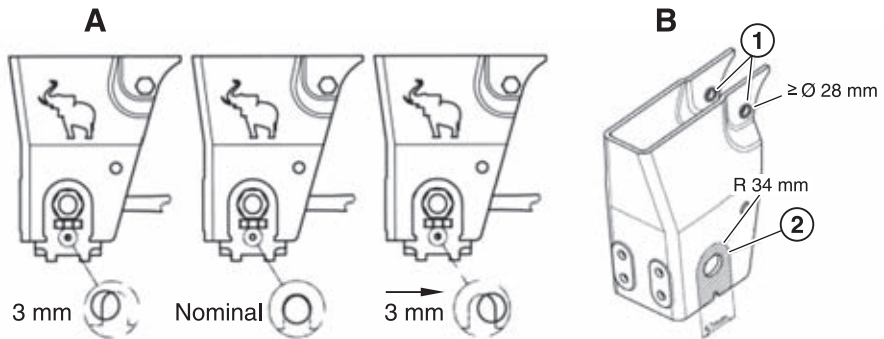
If the track plate (3) is bent or damaged near the clamp connection, the complete spring pin and the track plates must be replaced. The rubber socket and the spring bracket must also be checked.

- Check the specified torsion angle and tightening torque.

## Tracking (MRH2/MRH3)

If necessary (e.g. after repairs), the axle can be tracked on all MRH2/MRH3 suspension systems. See diagram (A).

The marked positions, diagram (B), item (1) and (2), must be primed, galvanised or KTL-coated only.



LF.01-0010-02

## Tracking axle

**A** Track adjustment

**B** Specified surfaces

**1** 4 surfaces, primed or galvanised on both sides only, no paint

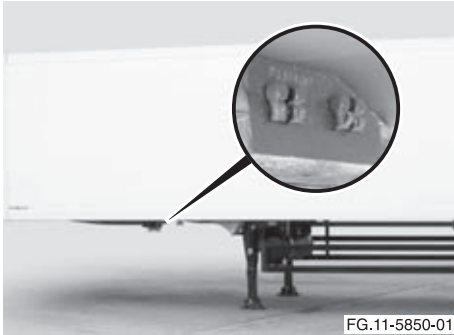
**2** on both sides, primed or galvanised inside and outside only, no paint

## Steered axle



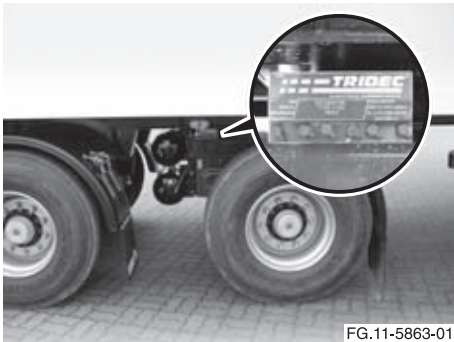
### Maintenance

See the manufacturer's operating manual for service instructions and recommended lubricants for the steered axle.



FG.11-5850-01

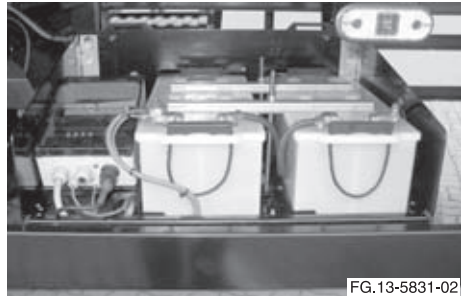
Lubrication points, coupling plate distributor



FG.11-5863-01

Lubrication points, turntable plate

## Tail lift batteries



FG.13-5831-02

### Tail lift batteries

The batteries for the tail lift have a rated voltage of 12 V. The capacity is stamped on the case.

Note the capacity when replacing the batteries. The capacity must be compatible to the generator output of the tractor.



### ACID HAZARD!

Battery acid causes burns to hands and eyes.

- ▶ Wear safety gloves and safety glasses when working on batteries.
- ▶ Clean battery acid immediately with clean water.



### EXPLOSION HAZARD!

Gases emitted by batteries may explode.

- ▶ Switch off the tractor engine while servicing batteries.
- ▶ Do not smoke, use open flames or cause sparks near batteries.

Check the acid level in the batteries by the acid level indicators.

Add distilled water as required to the maximum level indicator.

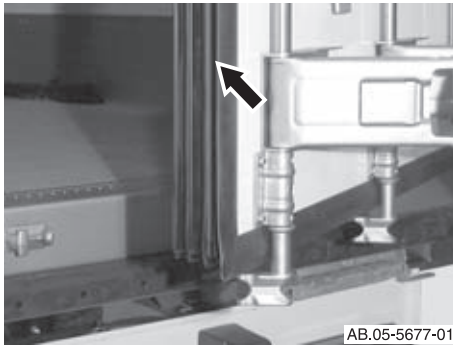
## Refrigerator



### Maintenance

See the manufacturer's operating manual for service instructions and recommended lubricants for the refrigerator.

## Rubber door seals

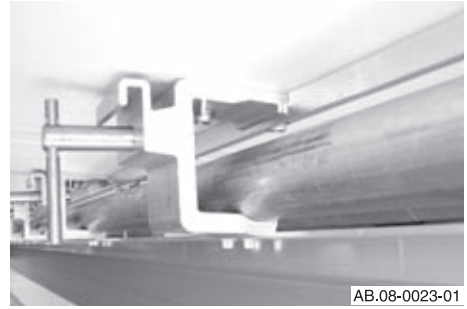


### Rubber door seals

Climatic conditions may require use of silicone oil.

Apply silicone oil to the rubber door seals. This will keep them flexible and protect them from freezing.

## Meat hanging system rails



### Grease rails

Grease the rails for the meat hanging system with suitable food-grade grease.

This reduces wear of the galvanised surface and makes it easier to move the meat hooks.

## Circulation wall



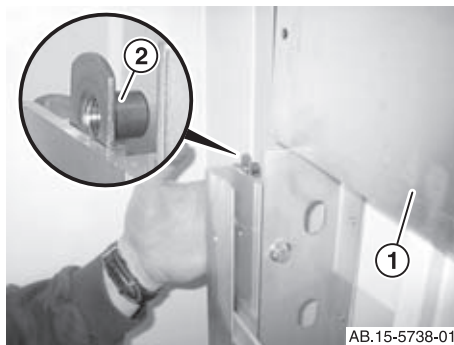
### Removing/installing circulation wall aluminium profiles

### Removing/installing aluminium profiles

- ▶ Loosen the screws on both sides of the circulation wall.  
Hold the nuts (2) with one hand.
- ▶ Pull aluminium profiles upwards out of the profile track.



**Pull aluminium profiles upwards**



**Position nut**

- 1 Aluminium profile
- 2 Groove

► During installation insert nut (2) in the groove.

# Wheels and tyres

## Checking condition

The condition of the wheels and tyres is very important for the operating safety of the semitrailer.

Inspect the wheels regularly for deformation, rust, cracks and breaks:

- Replace cracked, deformed or otherwise damaged wheels.
- Replace wheels with cracked or deformed wheel stud seats immediately.
- Never weld cracked rims or wheel discs. The weld would crack after a very short time because of the dynamic stresses occurring while driving.
- Rust can cause stress cracks in wheels and tyre damage. Check the contact surfaces to the tyres and the hub and remove any rust. Replace the surface protection of the contact areas as necessary.

Check the tyres regularly for wear, damage and foreign objects embedded in them:

- Replace damaged tyres immediately.

Check the tyre pressure with cold tyres as specified by the manufacturer every two weeks. In general, the tyre pressure should be 9 bar for tyres of 4.5 t carrying capacity.

## Attaching wheels

Because of settling processes the wheel nuts will loosen during the first few kilometres of driving the new semitrailer.

For this reason the wheel nuts must be tightened to the specified torque after 50 km of driving.

The wheel nuts of the changed wheel must also be tightened to the specified torque after every wheel change.

Follow the directions below when attaching tyres:

- Clean the contact area of the wheel on the hub before installation.
- Replace damaged, tight or rusted wheel nuts and wheel studs.
- Always use a torque spanner to tighten and retighten wheel nuts.
- Tighten wheel nuts in stages and crosswise.
- Follow the directions and torques specified by the axle manufacturer when attaching wheels.

## Tyre pressure monitoring system\* (TPMS)

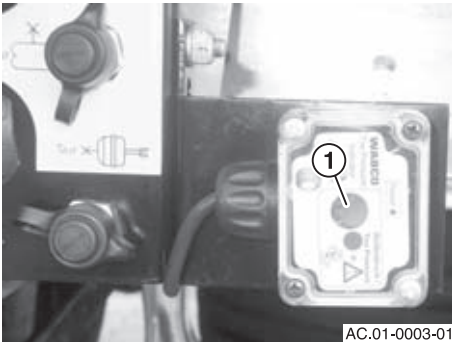


AC.01-0002-01

### TPMS sensor on each wheel

The tyre pressure monitoring system continuously monitors tyre pressure on all wheels.

During the semitrailer inspection tours, check the TPMS indicator.



AC.01-0003-01

### TPMS indicator

1 View window

If a tyre pressure falls over 20 % compared to the specified tyre pressure (corresponding to 1.8 bar with a specified tyre pressure of 9 bar), a red mark is displayed in the view window (1).

In this case, check tyre pressure on all wheels and adjust it.



ES.00-0010-01

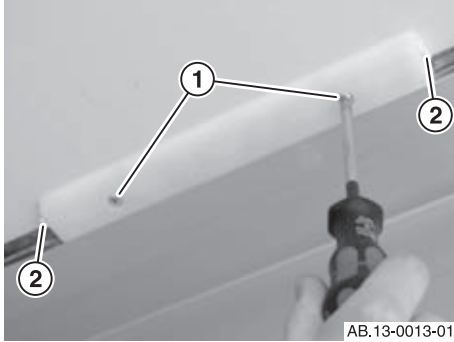
### TIS

Combined with Trailer Information System (TIS), the exact tyre pressure values are shown on the display near the operating console (up/down valve).



# Electrical system

## Load area lighting



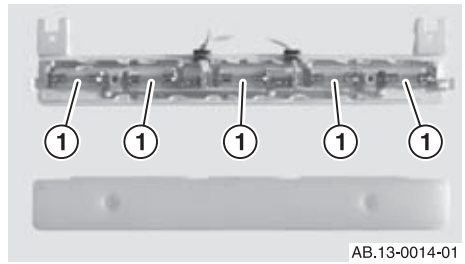
### Opening ceiling light

- 1 Screw, cross recess
- 2 Clip

### Replacing lights

- ▶ Switch off load area lighting.
- ▶ Unscrew the cover screws (1) with a screwdriver.
- ▶ Press both clips (2) outwards and raise the cover.

Remove the lamp housing from the rubber profile if necessary.



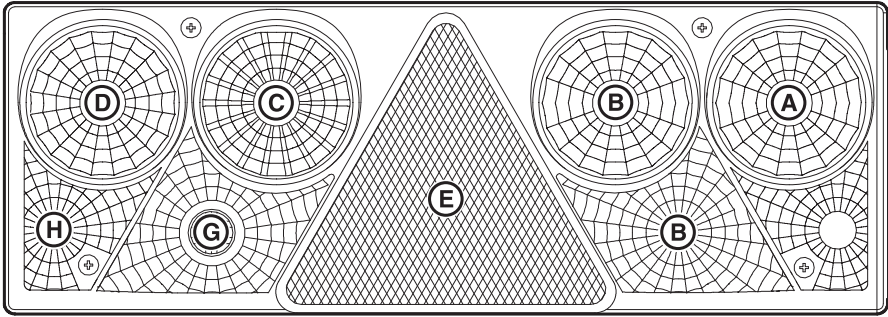
### Ceiling light opened

- 1 Light

- ▶ Replace faulty light (1).
- ▶ Install in reverse order.

Light	Type
1 Load area lighting	Soffitte, 24 V, 5 W, C-6 S7 T 8x31 mm. Schmitz part no. 102 5116

## Rear lights



FG.02-0016-02

## Rear light assignment (shown: right tail light)

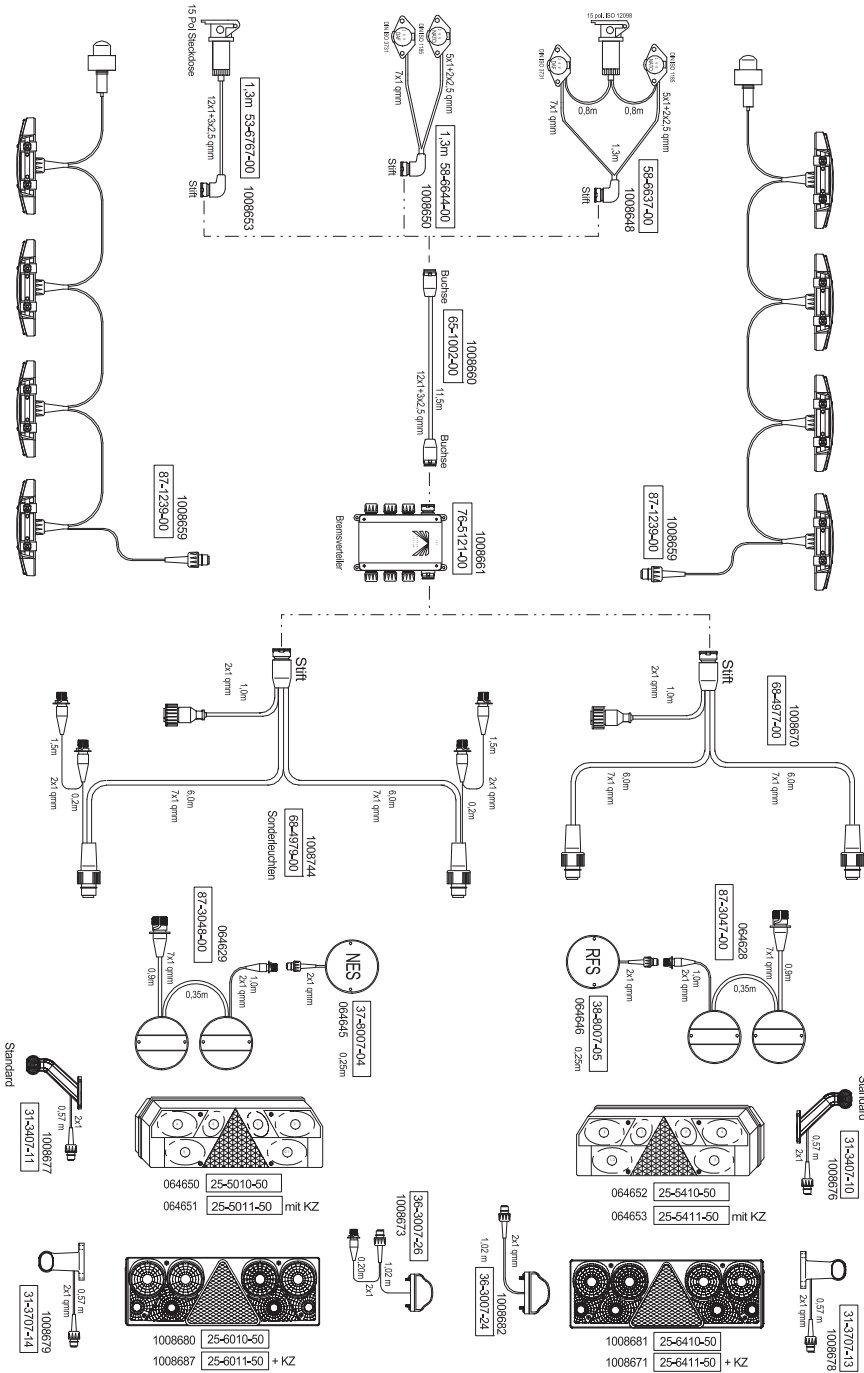
- A Flashing light (yellow globe)
- B Brake light
- C Tail fog light
- D Reversing light
- E Reflector
- G Tail light LED
- H Tail light

Connection	Function / light	Item
1/4 green	Indicator / 21W	A
6 red	Brake light / 21W	B
2 blue	Tail fog light / 21W	C
8 grey	Reversing light / 21W	D
4 brown	Rear light / LED, 1W	G
7 black	Rear light / 21W	H
3 white	Ground	not shown

The rear lights are connected by a 7-pin ASS2 connection. 24 volt power supply.

The yellow side marker lamps (to the side under the floor) are secured with a 3 Ampere flat fuse (purple) respectively in the left and right rear light.

# Light system circuit diagram



FG.02-0015-04

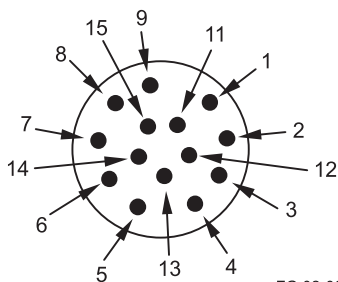
## Socket assignment charts

Pin	Colour	Consumers on 15-pin outlet (ISO 12098)
1	Yellow	Left indicator
2	Green	Right indicator
3	Blue	Tail fog light
4	White	Ground
5	Black	Left tail light
6	Brown	Right tail light
7	Red	Brake light
8	Grey	Reversing light
9	Brown/Blue	Permanent positive
10	Brown/Red	Optional load area lighting
11	Yellow/Black	Free
12	Pink	Optional steering axle
13	White/Black	Free
14	Violet	Optional axle lift / starting aid
15	Orange	Free



FG.02-0005-01

15-pin socket (ISO 12098)



FG.02-0006-01

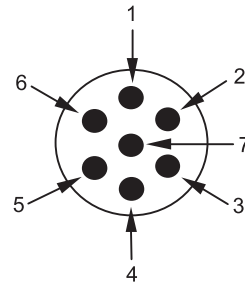
15-pin socket (ISO 12098)

Pin	Colour	Consumers on 7-pin outlet (ISO 1185)
1	White	Ground
2	Black	Left tail light
3	Yellow	Left indicator
4	Red	Brake light
5	Green	Right indicator
6	Brown	Right tail light
7	Yellow/Black	Free



FG.02-0007-01

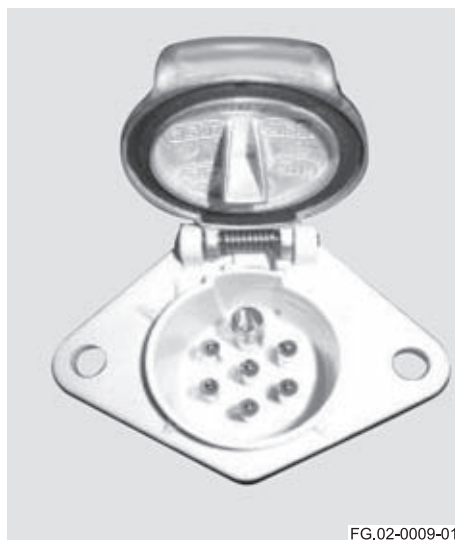
7-pin socket (ISO 1185)



FG.02-0008-01

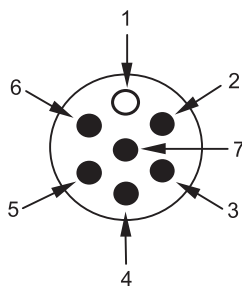
7-pin socket (ISO 1185)

Pin	Colour	Consumers on 7-pin outlet (ISO 3731)
1	White/Black	Ground
2	Violet	Optional axle lift / starting aid
3	Grey	Reversing lights
4	Brown/Blue	Permanent positive
5	Orange	Free
6	Pink	Optional steering axle
7	Blue	Tail fog light



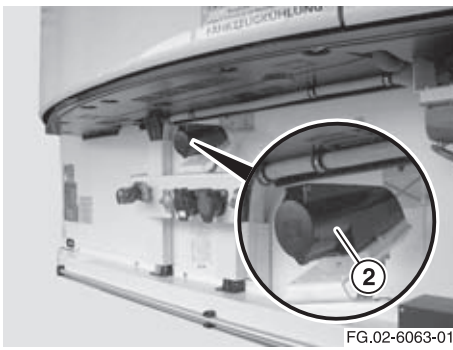
FG.02-0009-01

**7-pin socket (ISO 3731)**



FG.02-0010-01

**7-pin socket (ISO 3731)**

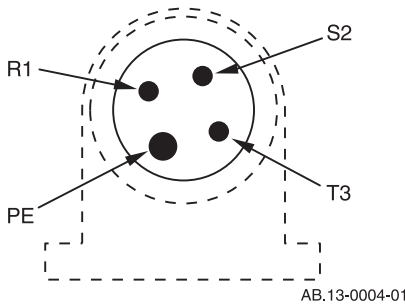


FG.02-6063-01

### CEE socket on the front wall

2 CEE socket 7h, 4-pin

Pin	Colour	Consumer
R1		Ground no. 1
S2		Charge Plus no.2
T3		Charge Plus no.3
PE	Green/Yellow	Ground

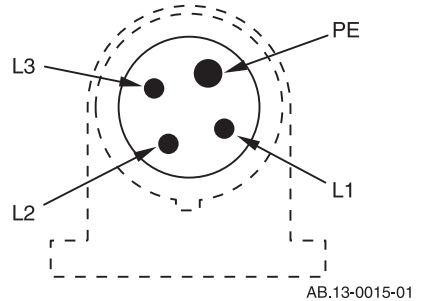


AB.13-0004-01

### Charging cable for electrical forklift

Charging cable for the electrical forklift with 4-pin CEE socket 7h (black) according to DIN 60309-2. Secured with two flat fuses, 25 Ampere.

Pin	Colour	Consumer
L1		Tail lift pilot lamp
L2		Charge Plus no.2
L3		Charge Plus no.3
PE	Green/Yellow	Ground

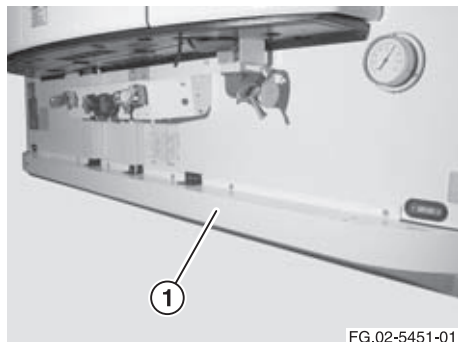


AB.13-0015-01

### Charging cable for tail lift

Charging cable for tail lift with 4-pin CEE socket 1h (white) according to DIN 60309-2 with feedback cable of the "Tail lift open" pilot lamp in the driver's cab. Secured with a 75 Ampere block fuse (insulating body C221).

**Distributor box, cable duct**



FG.02-5451-01

**Electrical distributor box at front**

- 1 Cover

The distributor box for the electrical system is under the cover on the front wall (1).



AB.13-5503-02

**"Cable Duct" warning sign**

Cable ducts for future wiring can be installed in the side wall as an option. This option is available for both left and right side wall.

The "Cable Duct" sign indicates where the duct is.

Drill at this point (black arrow) if you wish to install additional wiring.



# Care of the commercial vehicle

## General

The standard hot-galvanised surfaces of the chassis on Schmitz Cargobull semitrailers offer good protection against mechanical operating stresses and rust.

The semitrailer is subject to many external influences during operation. Special care is therefore required to maintain the value of the semitrailer.



### Patches

White patches on the hot-galvanised surface of new vehicles during winter are normal and do not affect the quality and longevity of the surface.

You can remove these patches as described below:



### Surface damage!

Surface damage caused by incorrect cleaning.

- ▶ Wash the hot-galvanised surface during the first three months with a cold-water spray only under 50 °C.
- ▶ Do not use any additives.
- ▶ Clean chassis thoroughly with clean water.  
Use a pressure washer for better cleaning.
- ▶ Allow chassis to dry.

The hot-galvanised surface can be cleaned with special cleaning agents after the first three months. Schmitz Cargobull recommends ph-neutral cleaning agents.



### POISON HAZARD!

Cleaning agents can be poisonous and may cause injury on skin contact or when ingested.

- ▶ Follow the directions for use of the cleaning agent.
- ▶ Keep cleaning agents closed and out of reach of children at all times.
- ▶ Never use drink containers for storing cleaning agents.

## During the first 3 months



### Paint damage

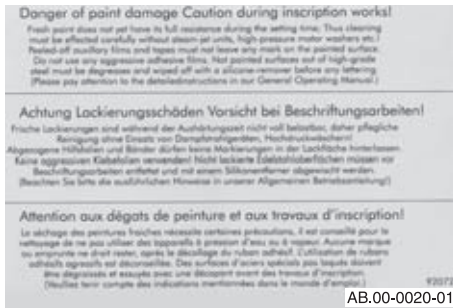
Newly painted surfaces are not yet fully hardened and may be damaged if pressure washers are used too early.

- ▶ Wash painted surfaces with cold water spray only without additives during the first three months. Do not use pressure washers or steam cleaners or hard brushes.
- ▶ Spray the painted surfaces with water when you have the vehicle washed in truck washes with rotating brushes.

"Paint Damage" warning sign

Fresh paint may be damaged while still hardening. Clean without using steam cleaners and pressure washers during this period!

When stickers and tapes are removed they must not leave marks on the surface of the paint. Do not use aggressive adhesive tapes! Unpainted stainless steel surfaces must be degreased before painting signs on them and treated with a silicone remover.



"Paint Damage" warning sign on the front wall

After 3 months

**Paint damage**

Paint damage caused by incorrect cleaning.

- ▶ Wash painted surfaces with water at temperatures below 60 °C only.
- ▶ Do not use aggressive cleaning agents; use standard commercial products labelled "pH-neutral".
- ▶ Keep the cleaning nozzle at the specified distance when using a pressure washer or steam cleaner.

When using a pressure washer note the following points:

- Distance between round jet nozzle and the surface to be cleaned: minimum 70 cm.
- Distance between flat spray nozzle or rotating nozzle and the surface to be cleaned: minimum 30 cm.
- Do not direct the water spray at electrical components, plug connectors, seals or hoses.

Care of the vehicle surface

Painted surfaces can be cleaned and cared for with suitable paint care agents, paint cleaners, tar removers, paint preservation agents etc.

Do not use these products under direct sunlight.

Damage to small areas of paint can be temporarily repaired with the appropriate shade of spray paint.

**POISON HAZARD!**

Cleaning agents can be poisonous and may cause injury on skin contact or when ingested.

- ▶ Always follow the directions for use.
- ▶ Keep cleaning agents closed and out of reach of children at all times.
- ▶ Do not store disinfectants and cleaning agents in drink containers.

**Environmental protection**

Dispose of empty containers properly.

Damage to the hot-galvanised surface is not serious when less than 2 mm wide. Larger damaged areas up to 5 cm<sup>2</sup> can be repaired with suitable zinc-dust paint.

If a transport container is accidentally damaged during transport of aggressive substances and some of the load escapes, the contaminated areas of the vehicle must be rinsed immediately with a large amount of water.

If all of these directions are followed the paintwork and hot-galvanised surfaces of the vehicle can be prevented from losing value prematurely.

## Interior cleaning

Clean the interior of the reefer body with the following recommended cleaning agents:

### Cleaning agents

Cleaning agents for Ferroplast surfaces inside the reefer:

- Standard cleaning agents and disinfectants with a pH value of  $> 4$  and  $< 11$

Cleaning agents for aluminium floors inside the reefer:

- Standard cleaning agents and disinfectants with a pH value of  $> 4$  and  $< 11$



# Specifications

<b>Sizes</b>	<b>204</b>
<b>Safe floor load</b>	<b>206</b>
<b>Torque values</b>	<b>207</b>
<b>Grease and oil</b>	<b>209</b>
<b>Warning sticker overview</b>	<b>210</b>

Keywords

Safety

Chassis

Driving

Superstructure

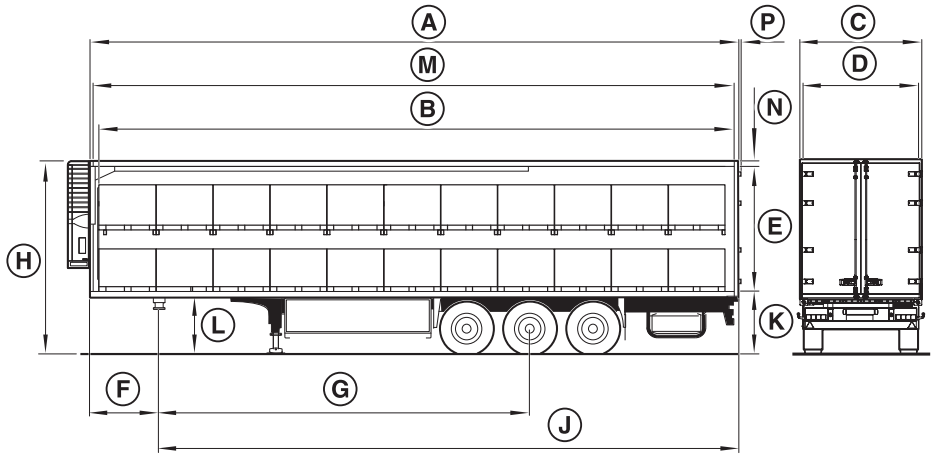
Transport solutions

Operation

Maintenance

Data

# Sizes



AB.00-0021-02

Dimensions of FP 25 and FP 45/FP 60

S.KO		S.KO 24-13.4 FP 60 ...	S.KO 24-13.4 FP 45 ...	S.KO 24-13.62 FP 25 ...
<b>Chassis model</b>		Short chassis	Short chassis	Modulos
<b>Track/spring centre</b>		2040/1300 mm	2040/1300 mm	2040/1300 mm
<b>Overall length</b>	A	13550 mm (+50 mm hinges) without refrigerator	13550 mm (+50 mm hinges) without refrigerator	13685 mm
<b>Overall width</b>	C	2600 mm	2600 mm	2550 mm
<b>Overall loaded height approx.</b>	H	4000 mm	4000 mm	4000 mm
<b>Superstructure length in interior</b>	M	13410	13410 mm	13625 mm
<b>Usable length</b>	B	13315 mm	13315 mm	13625 mm
<b>Superstructure width in interior</b>	D	2460 mm	2490 mm	2480 mm
<b>Interior superstructure height</b>	E	2650 mm	2650 mm	2700 mm
<b>Fifth-wheel height unloaded</b>	L	1140 mm <sup>1</sup>	1140 mm <sup>1</sup>	1140 mm <sup>1</sup>
<b>Rear load height unloaded</b>	K	1265 mm	1265 mm	1269 mm
<b>Front wall/king-pin</b>	F	1600 mm	1600 mm	1685 mm
<b>Wheel base</b>	G	7600 mm	7600 mm	7700 mm
<b>King-pin/tailboard</b>	J	12000 mm	12000 mm	12000 mm

<sup>1</sup> With different fifth wheel heights different superstructure heights are possible

## Safe floor load

### Approved loads



#### Breakage hazard!

The floor of the semitrailer may break if it is overloaded.

- ▶ Do not exceed the maximum approved forklift axle load.
- ▶ Do not exceed the maximum approved load exerted by heavy single loads.

### Forklift axle load

Note the maximum approved axle load of forklifts when driving on the floor of the semitrailer:

Type	Axle load max. kg
S.KO FP 45/FP 60 barley grain aluminium floor	5500
S.KO FP 25 plywood floor	5500

### Maximum approved forklift axle load

### Line load

When loading heavy single loads observe the maximum approved line load of the load bed.

Maximum approved line load: **2000 kg per linear metre.**



# Torque values

## Wheel nuts

Thread size	Torque
M22x1.5	630 Nm

## Chassis bolts

Thread size	Strength class	Torque
M10x35	10.9	40 Nm
M10x42	10.9	40 Nm
M10x65	10.9	40 Nm
M14x1.5	10.9	120 Nm
M18x1.5	10.9	280 Nm

## King-pin

Thread size	Torque
M14	190 Nm $\pm$ 10 Nm

Keywords

Safety

Chassis

Driving

Superstructure

Transport solutions

Operation

Maintenance

Data

## Torque values **Mounted parts**

Thread size	Strength class	Torque
Large tension claw for pallet boxes	M16	130 Nm
Retainer for toolbox and wing	M10	40 Nm
Toolbox on retainer	M8	6 Nm
Wing on retainer	M8	15 Nm
Small tension claw with flanged nut	M10	30 Nm
Small tension claw with hemisphere	M10	30 Nm
Retainer for brake shoe	M16	130 Nm
Threaded support fastener	M16	130 Nm

# Grease and oil

## Lubricants

High-pressure grease with MoS<sub>2</sub> or graphite additive for fifth wheel king-pins and friction plates, e.g.:

- BP L21 M
- BP HTEP 1
- Esso multipurpose grease M
- Shell Retinax AM

rails for meat hanging system:

- Suitable food-grade grease.

Rubber door seals:

- silicone oil

## Cleaning agents

Special cleaner for hot-galvanised surfaces:

- Standard cleaners labelled "pH-neutral"

Cleaner for painted surfaces, e.g.:

- Standard cleaners labelled "pH-neutral"

Cleaning agents for Ferroplast surfaces inside the reefer:

- Standard cleaning agents and disinfectants with a pH value of > 4 and < 11

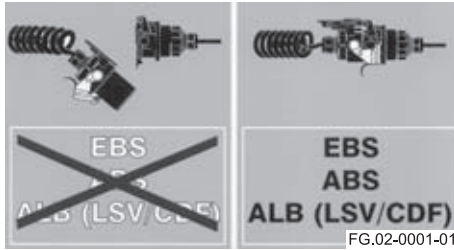
Cleaning agents for aluminium floors inside the reefer:

- Standard cleaning agents and disinfectants with a pH value of > 4 and < 11

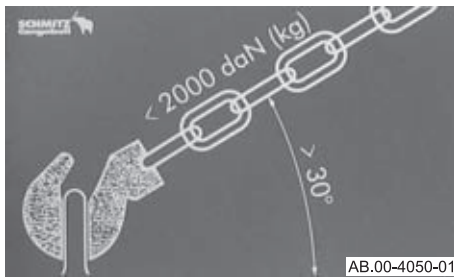
## Warning sticker overview

The warning stickers on the semitrailer are part of the operating manual. Observe the stickers in the same way as the operating manual. Keep the stickers readable and replace illegible or lost stickers immediately.

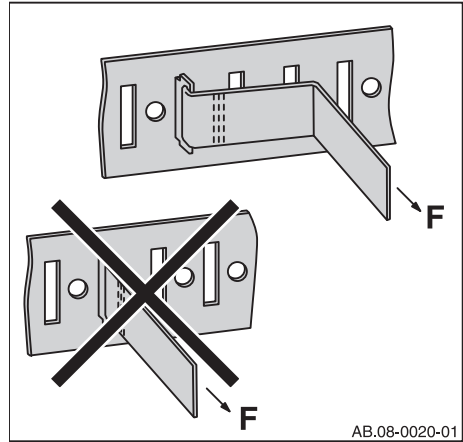
The various stickers can be ordered under the following part numbers.



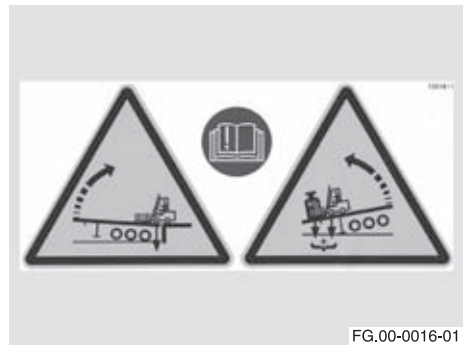
Warning sticker "EBS" part no. 920846



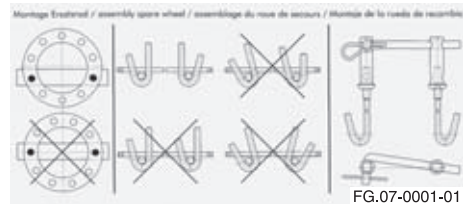
"Lashing point" warning sticker part no. 920027



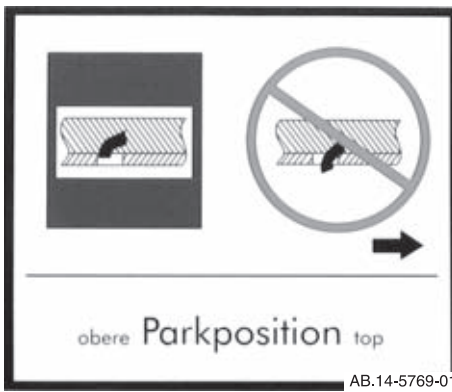
"Fastening to load securing tracks" warning sticker part no. 920461



Warning sticker "Stability with uncoupled semitrailer", part no. 1051811



"Mounting spare wheel" sticker part no. 920973



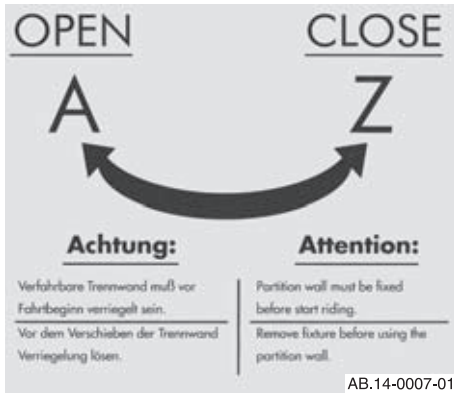
AB.14-5769-01

"Park position" warning sticker  
part no. 920899



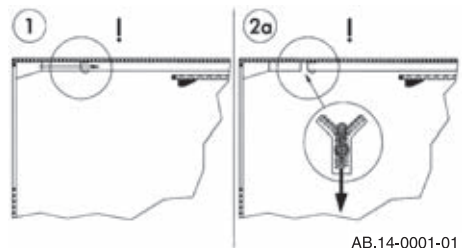
AB.05-6097-01

"Roller Door" warning sign

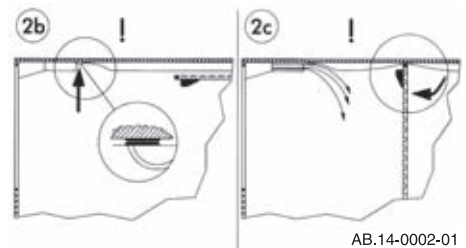


AB.14-0007-01

"Lock moveable bulkhead" warning sticker  
part no. 920734

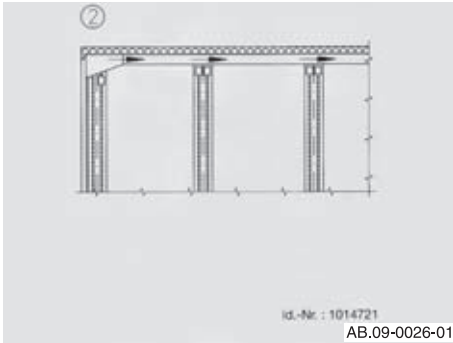
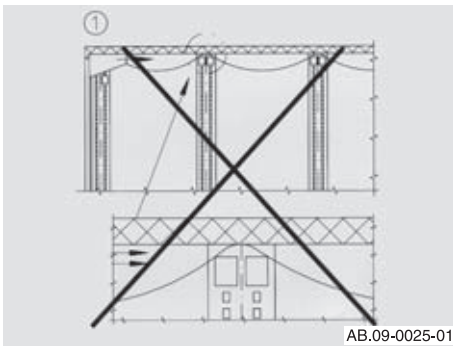


AB.14-0001-01



AB.14-0002-01

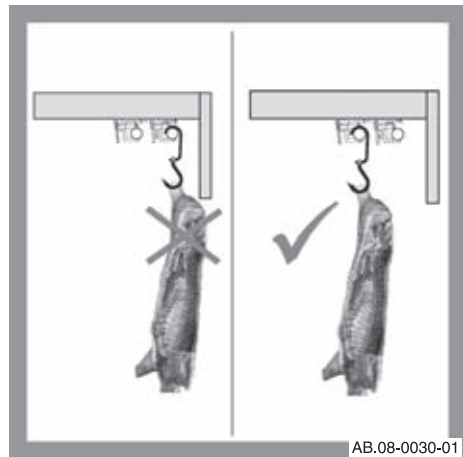
"Air duct" sticker part no. 920869



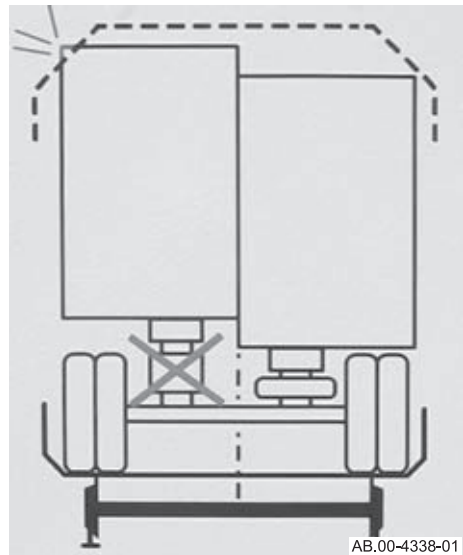
"Air duct" warning sticker part no. 1014721



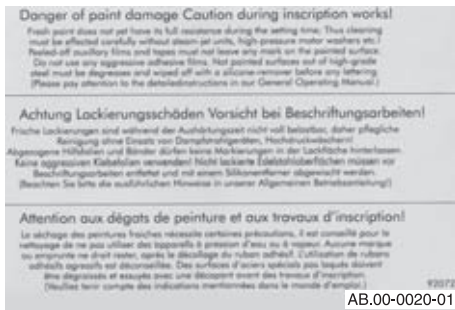
"Stopper" warning sticker part no. 920820



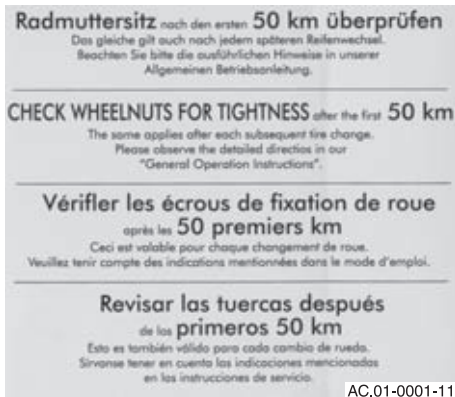
"Spare rail" warning sticker part no. 920977



"Intermodal Transport" warning sticker part no. 920643



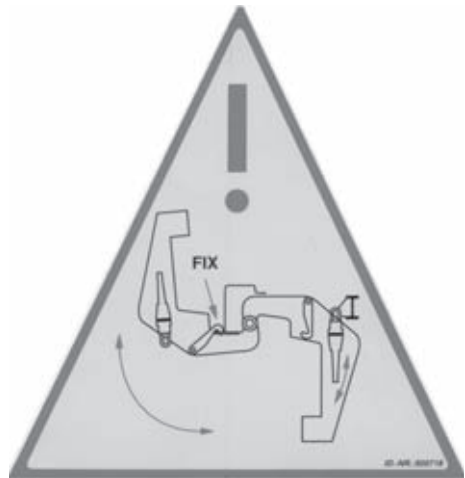
"Paint damage" warning sticker  
 part no. 920771



"Wheel nut seating" warning sticker  
 part no. 920975



"Landing legs" warning sticker  
 part no. 920974



"Bumper fastening" warning sticker  
 part no. 920718



"Roller door emergency opening" sticker  
part no. 920858







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**Commercial vehicle range:** Semitrailer container



Curtainsider



Semitrailer tipper



Combined transport



**Services:** Consulting  
Financing  
Full Service  
Spare parts  
Repairs  
Telematics  
Utility vehicles  
Service Partner network