

# ASS Schwergut & ASS Mega

Operating instructions

ASS push-off semitrailer



**We are Fliegl.**





**Read these operating instructions prior to first-time start-up and  
observe them at all times!  
Retain for future reference!**

# Foreword

Dear valued customer,

Thank you for purchasing the Fliegl ASS heavy-duty push-off semitrailer.

Fliegl machines and attachments are manufactured with care under continuous monitoring. The Fliegl ASS heavy-duty push-off semitrailer you have purchased is a product manufactured to the highest quality standards.

To avoid accidents, and therefore personal injuries and material damage, you must read and understand the corresponding cautionary and warning notices in these operating instructions and on the Fliegl ASS heavy-duty push-off semitrailer before beginning operation or maintenance of the Fliegl push-off semitrailer. These operating instructions must therefore also be passed on to the operating personnel.

Before putting the Fliegl ASS heavy-duty push-off semitrailer into operation, every operator must be familiar with how to handle the machine as described in these operating instructions. The safety requirements must be strictly followed. Compliance with safety regulations applicable to your country is also mandatory.

The Fliegl ASS heavy-duty push-off semitrailer can be attached to different vehicles, such as semitrailer tractors (4 x 2 or 6 x 4).

The limits of use are described in this manual.

Any types of operation or use other than those described in these operating instructions, or beyond the limits of use specified by the manufacturer, are strictly prohibited.



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## Legal notices

1. When the Fliegl ASS heavy-duty push-off semitrailer is delivered, check immediately to determine whether the machine is complete. State any complaints to the freight forwarder, have them certified on the delivery documents and inform the delivering plant within 14 days after you become aware of the problem (see "Scope of delivery").
2. The manufacturer is liable for technical defects. The owner is liable for defects that were caused by improper operation.  
The warranty period is 1 year from delivery.
3. At our discretion, the warranty will either cover the cost of repair of the faulty part or replacement of the part, or delivery of the part from the factory, carriage due. Any other claims for compensation (such as for losses due to business interruption) are expressly excluded.
4. The warranty will be invalidated if the attachment or device is modified by installing third-party parts without our knowledge or prior agreement, especially if improper modifications were made.
5. The warranty will also be invalidated if a defect is not rectified completely and correctly immediately after it is discovered. Repairs required for functional reasons need our prior approval if a claim is to be made for full or partial compensation of expenses.
6. Liability is excluded for damage to the ASS heavy-duty push-off semitrailer resulting from exceeding the allowable working capacity or transport speed. The warranty does not cover natural wear, damage resulting from negligent or improper handling of the machine, or storage and corrosion damage.
7. Parts not manufactured by us are covered by the warranty provided by the relevant manufacturer. Machine parts for which claims are made under the terms of the warranty must be sent without delay to our address in Mühldorf for the purpose of material examination to determine the damage. If a replacement is made, these parts become our property.
8. Legal warranty provisions also apply to the Fliegl ASS heavy-duty push-off semitrailer.

Identification

# Identification

## Machine identification data

**Manufacturer:** Fliegl Agrartechnik GmbH

**Product:** Heavy-duty push-off semitrailer

**Type:** ASS 272  
ASS 372  
ASS 377  
ASS 382  
ASS 477

**Serial number:** WGJXXXXXXXXXXXXXXXX

### Manufacturer data

### Sales

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## Formal details of operating instructions

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**Language of original operating instructions:** German  
(Translation of original operating instructions)

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We are constantly developing and enhancing our products and therefore reserve the right to make changes to them without prior notification.

This may result in differences in the illustrations and descriptions in these operating instructions.

## EC Declaration of Conformity

As stipulated in EC Machinery Directive 2006/42/EC, Annex II, 1.A (ORIGINAL)

Manufacturer:

Fliegl Agrartechnik GmbH  
Bürgermeister-Boch-Straße 1  
84453 Mühldorf am Inn, Germany

Person residing in the European Community authorised to compile the relevant technical documentation:

Kopold Gerald  
Fliegl Agrartechnik GmbH  
Bürgermeister-Boch-Straße 1  
84453 Mühldorf am Inn, Germany

Description and identification:

Product: Heavy-duty push-off semitrailer, Asphaltprofi ASS Mega semitrailer  
Type: ASS 272, ASS 272 Compact, ASS 372, ASS 372 Mega, ASS 377, ASS 377 extra long, ASS 377 extra long - telescopic, ASS 382, ASS 477 4-axle quad extra long - telescopic

Project designation: Fliegl ASS  
Trade name: Fliegl heavy-duty push-off semitrailer, Fliegl Asphaltprofi Thermo ASS Mega  
Function: Transport trailer with sliding unit

It is expressly stated that this machine complies with all relevant provisions of the following EC directives:

2006/42/EC:2006-05-17 EC Machinery Directive 2006/42/EC

Source of the harmonised standards applied in accordance with Article 7(2):

ISO 12100:2010 Safety of machinery – General principles for design – Risk assessment and risk reduction

Mühldorf am Inn  
Place

02/02/2021  
Date



**Fliegl**  
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# 1. User instructions

This manual provides information about the:

- Structure
- Function
- Operation
- Maintenance
- Accessory parts

of the ASS heavy-duty push-off semitrailer and ensures long, problem-free operation if it is carefully observed. In case of malfunctions, it can be used to troubleshoot and rectify errors. The purpose of the safety instructions is to prevent personal injury and damage to the ASS heavy-duty push-off semitrailer. All operators are required to read these safety instructions and comply with them at all times.

The regulations of the employers' liability insurance associations for the construction industry also apply. Fliegl assumes no liability and honours no warranty for damage and malfunctions resulting from failure to comply with the operating instructions.

## This information is required to ensure a smooth replacement parts ordering process:

Copy the relevant information from the type plate into the box below:

Vehicle ID no. (serial number)	.....
Project no.	.....
Order no.	.....
First-time start-up:	.....

## Contacts:

### Service, warranty, replacement part orders:

Fliegl Bau & Kommunaltechnik GmbH  
 Service Department  
 Bürgermeister-Boch-Straße 1  
 84453 Mühldorf am Inn, Germany

Telephone: +49 (0)8631 / 307 - 461  
 Telephone: +49 (0)8631 / 307 - 462  
 Fax: +49 (0)8631 / 307 - 550  
 E-mail: [service@fliegl.com](mailto:service@fliegl.com)



Replacement parts must satisfy the technical requirements stipulated by the vehicle manufacturer as a minimum.  
 This requirement is always met when using Fliegl original replacement parts.

## 1.1 Purpose of this document

These operating instructions:

- Describe the function, operation and maintenance of the machine
- Provide important advice for safe and efficient handling of the machine

## 1.2 Locations in the operating instructions

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All directions and locations in these instructions are based on the operator's workstation.

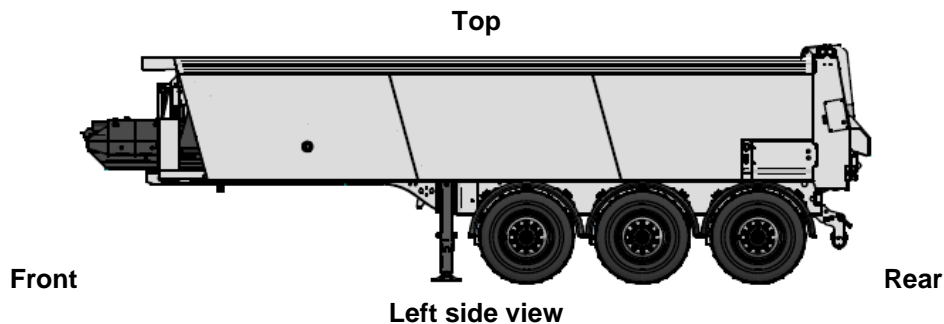


Fig. 1: Main view of the push-off semitrailer (model may vary)

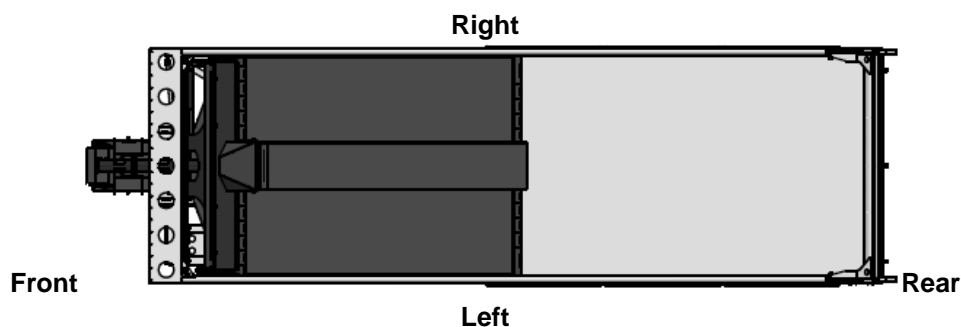


Fig. 2: Locations in the operating instructions

## 1.3 Illustrations used

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### Instructions and system responses

The steps to be taken by operating personnel are presented in the form of a (numbered) list. These steps must be followed in the correct order. The system response to each operator action is marked with an arrow. Example:

Operator action step 1

→ System response to operator action step 1

## 1.4 Cross references

---

Cross references to other points in the operating instructions appear in the text along with the relevant chapter and subchapter or section.

## 1.5 Terminology: "trailer", "machine", "vehicle"

---

Within this document, the heavy-duty push-off semitrailer is also referred to as the "trailer", "machine" or "vehicle".

## 1.6 Figures

---

The figures in this document do not always depict the exact machine type. The information relating to the figures always corresponds to the machine type described in this document.

## 1.7 Scope of the document

---

In addition to the standard models, B variants of the machine are also described in this document. Your machine may deviate from this.

## 1.8 Presentation of safety instructions

---



**Danger!** Imminent risk that will lead to serious bodily harm or death.



**Warning!** Potentially hazardous situation that could lead to serious bodily harm or death.

**Caution!** Potentially hazardous situation that could lead to minor bodily harm. Also warns against potential damage to property.



**Notice!** Potentially harmful situation in which the product or other property in its vicinity could be damaged.



**Important!** For usage instructions and other helpful information.

## 1.9 Liability and damages

---

The product must only be operated by persons who are familiar with the operating instructions, the product and national laws, directives and regulations relating to health and safety at work as well as accident prevention. We accept no liability for personal or material damage caused, or contributed to, by untrained persons due to non-compliance with regulations regarding health and safety at work as well as accident prevention.

Based on the specifications in these operating instructions, Fliegl Agrartechnik GmbH assumes no liability for direct or consequential damage attributable to improper operation or maintenance.

For your own safety, you should only use original replacement parts and accessory products.

Fliegl Agrartechnik GmbH assumes no liability for the use of other products and any resulting damage.

No claims for modification of delivered products can be made on the basis of the information, images and descriptions provided in this manual.

## 1.10 Duty to inform

---

These operating instructions are to be considered part of the heavy-duty push-off semitrailer.

If the machine is passed on to another party by the customer, the operating instructions must also be passed on and the party receiving the machine must be instructed regarding the regulations specified above.

Only the procedures described in these operating instructions are safe.

- Read and observe the contents of chapter 2 Basic safety instructions before first using the machine.
- Before performing any work with the machine, always read and observe the contents of the relevant sections of the operating instructions.
- The operating instructions must be stored such that they are always on hand for the machine user.



## 2. Basic safety instructions



Failure to observe the safety instructions and warnings can pose a risk to persons, property and the environment.  
Non-compliance can also result in the loss of any claims for damage compensation on the part of the customer.

### When driving on public roads, be aware of the following:

When driving on public roads, the provisions of the country-specific registration regulations must be observed.



The operator is personally responsible for the registration of the vehicle.

Lost permit documents can only be replaced by agreement with the administrative/regulatory authority specified below. A duplicate of the permit documents will be given to the customer by the administrative/regulatory authority.

A duplicate of the CoC document can be issued by the manufacturer.

### Before driving on public roads:

- Before travelling on public roads, ensure that the maximum permissible dimensions, weights as well as axle, drawbar and trailer loads dictated by EU or national law are not exceeded.
- The support gear must be completely raised.
- Lighting equipment must be connected.
- A functional check of the lighting equipment must be performed.
- For equipment with a connection for the hydraulics, the hydraulic lines between the towing vehicle and trailer must be disconnected or their actuation device locked.



- The controls of the on-board hydraulic system must be laid out so that visual contact with the trailer can be maintained during operation.
- Before the trailer is connected to the towing vehicle, its compatibility with tow connection(s), hydraulic connections, permitted drawbar loads, axle loads etc. must be adapted to the operating conditions and set accordingly.
- Entering or remaining in the trailer is only permitted when it is stopped and the towing vehicle is turned off.



- Check the trailer after use every day for obvious damage and defects.
- In the case of damage that affects safety, repair the trailer immediately.
- In the event of any faults that affect safety, the trailer must be stopped immediately.
- The trailer and the tractor must be secured against reactivation.



- Changes to the trailer must only be carried out following consultation and with express permission of the manufacturer.
- Use only original replacement parts.
- Follow the maintenance intervals stipulated in this manual.
- In addition to this manual, the operating instructions included for third-party components must be observed.
- Upon first-time start-up and when different wheel and tyre combinations are used, the spacing between the tyres and frame is to be checked on vehicles with a steering axle, and adjusted as necessary.
- Note the permitted axle load, drawbar load, total weight and maximum speed.



### Notes on driving with the push-off semitrailer

- The handling characteristics of a towing vehicle are influenced by the coupled trailer.
- Always adjust the vehicle speed to the local conditions.
- Avoid sudden cornering when driving uphill and downhill as well as when crossing a slope.
- When driving downhill, use a low gear. Never change or disengage gears on a gradient.
- Stop the towing vehicle immediately if a brake fault occurs. Rectify any faults immediately.
- There is a risk of tipping when driving on inclines. The driving style must be adapted to the terrain and ground conditions.
- The operator workstation is the driver's seat of the towing vehicle.



**Carrying persons on the trailer is prohibited.**



### Climbing on and off safely

Careless behaviour can result in falling when climbing on and off the machine. Persons climbing on to the machine without using the designated access points may slip, fall and suffer serious injuries.

The safety of access points can be impaired by dirt and debris.

- Always ensure that access points are clean and in working condition.
- Never climb on or off the machine while it is moving.
- Never jump off the machine.
- Only climb on and off the machine via the access points specified in the operating instructions.



### Notes on coupling and uncoupling the push-off semitrailer

- There is a risk of injury when coupling machines to the towing vehicle.
- When coupling, do not step between the trailer and the towing vehicle while the latter is moving backwards.
- Nobody must enter the area between the towing vehicle and the trailer unless the vehicles have been secured against rolling away with the parking brake and/or wheel chocks.
- Release the parking brake before driving off.  
(Turn the crank inward.)



### Parking the push-off semitrailer

**Attention! Only park the trailer on the supporting mechanism when it is empty and prevent it from rolling away.**

- Park the ASS on level, solid ground. On soft ground, the supporting mechanism's surface area must be increased by using a suitable aid (e.g. a wood plank).
- Secure the trailer to prevent it rolling away (with parking brake, wheel chocks).
- Extend the supporting feet using the manual winch drive.
- Ensure that the machine is positioned securely before performing any adjustments, repairs, maintenance or cleaning.

### 2.1 Designated use

---

The machine is constructed according to the EC Machinery Directive using the latest technology and in accordance with the recognised safety regulations.

However, during use there is a risk to life and limb for the user or third parties, or risk of damage to the machine or other property.



**The ASS must only be used as intended and when in good and safe working condition.  
Operational safety of the machine is guaranteed only if it is used as intended.**

An unequally distributed load can cause damage to the vehicle, for which *Fliegl Agrartechnik GmbH* shall assume no liability.

To be used exclusively for spreading and transporting excavated earth, construction rubble, gravel and, under certain conditions, hot asphalt and similar construction-related material.

The maximum grain size for all loaded goods is 500 x 500 x 500 mm.

Always use a signaller when reversing (as required by German road traffic regulations).

The machine is intended solely for use in the construction sector and must only be used if:

- All safety equipment specified in the operating instruction is present and in the safety position.
- All safety instructions in the operating instructions are observed and complied with, including the information in the chapter "Basic safety instructions" as well as the specific instructions in the individual chapters.

The operating instructions form part of the machine and must remain with the machine at all times.

The machine must only be operated following appropriate instruction and in strict compliance with these operating instructions.

Any use of the machine not described in the operating instructions can result in serious injury or death and may also lead to machine and property damage.

Unauthorised changes to the machine can have a negative impact on the machine properties or impair its correct function. Unauthorised changes will therefore release the manufacturer from any resulting liability.

Designated use also includes compliance with the operating, maintenance, cleaning and repair instructions prescribed by the manufacturer.

## 2.2 Reasonably foreseeable misuse

Any use other than the defined "designated use" or any use which exceeds this shall be defined as misuse. *The manufacturer/supplier accepts no liability for any resulting damage.*

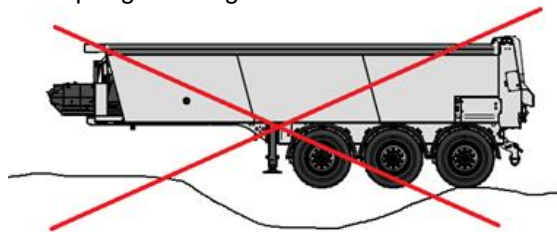


**Misuse can be dangerous.**

Examples of such misuse are:

- Transporting persons
- Exceeding the permissible total weight
- Exceeding the permissible speed
- Failure to observe safety stickers on the machine and safety information in the operating instructions
- Performing troubleshooting, adjustments, cleaning, repairs and maintenance contrary to the specifications in the operating instruction
- Unauthorised changes to the machine
- Attachment of additional equipment that has not been authorised or approved
- Use of non-original FLIEGL replacement parts
- Transportation of broken glass, scrap steel, sharp-edged goods, aggressive materials, artificial fertilizer, materials with a PH value higher than the neutral value

When driving off-road, adapt the route such that all wheels maintain contact with the ground. Overloading can result in axle or spring breakage.



**Prohibited, causes vehicle damage**

Fig. 3: Model may vary. The illustration serves as an example.

### Caution when reversing:

Because the area behind the trailer cannot be seen, or can only be partially seen from the operator workstation, a signaller is mandatory when reversing (as required by German road traffic regulations). An optional reversing camera can be installed to improve the all-round view.

### Modifications and changes

Any unauthorised modifications and changes to the machine (such as welding onto bearing parts) *will void all liabilities and the manufacturer's warranty.*

Additions or modifications of any kind can affect the electro-magnetic behaviour of the machine. Therefore, do not make any changes or add anything to the machine without consulting and receiving written agreement from the manufacturer.

### Replacement and wear parts and auxiliary materials

The use of replacement and wear parts or auxiliary materials from third parties can lead to dangers. The manufacturer accepts no liability for damage resulting from the use of these parts. Therefore, use only original parts or parts approved by the manufacturer.

## 2.3 Service life of the machine

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- The service life of this machine greatly depends on its correct use and maintenance as well as the specific applications and operating conditions.
- Following the instructions and information in these operating instructions will safeguard the operational readiness of the machine and maximise its service life.
- After each season of use, the machine must be checked thoroughly for signs of wear and other damage.
- Damaged or worn parts must be replaced before any subsequent use of the machine.
- Following a prescribed, type-specific period of use, the machine must be subjected to a comprehensive technical inspection. A decision as to the continued use of the machine must then be made based on the results of this inspection.
- The service life of the machine is theoretically unlimited since all worn or damaged parts can be replaced.

## 2.4 Risks when working with the machine

---

**Risks and impairments** can arise when using the machine. These may take the form of risks to life and limb of the operator or third parties as well as:

- Risks for the machine itself
- Risks for other material assets

Safe and fault-free operation of the machine requires knowledge of the safety and user instructions set out in this manual.



Always store the operating instructions at the usage location of the machine. The operating instructions must be available to operators and maintenance personnel at all times. Also be aware of the following:  
General and location-specific regulations regarding accident prevention and environmental protection.

## 2.5 Residual risks

---

The machine is built according to the state of the art and recognised safety rules.

However, during use there is a risk to life and limb for the user or third party, or risk of damage to the machine or other property.

In addition to the manufacturer's countermeasures against dangers caused by residual energy, the operator must also take appropriate countermeasures. Personnel must be briefed about these dangers and the measures to be taken to prevent them.

## 2.6 Obligations of the operator

---

The operating company is required to instruct its personnel regarding:

- Basic regulations regarding work safety and accident prevention
- Correct operation of the machine
- The operating instructions (ensure that personnel have read and understood them)

The operator is obligated to:

- Keep all hazard symbols on the vehicle in legible condition
- Replace any damaged or removed hazard symbols



The requirements of the EC Directive for the use of work equipment 89/655/EEC must be observed.

## 2.7 Obligations of personnel

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Before starting work, all personnel tasked with working on the machine undertake to:

- Comply with the basic regulations regarding work safety and accident prevention
- Read and comply with the safety section and warnings in these operating instructions
- Please contact the manufacturer with any questions; see page 10.

## 2.8 Qualification of operating personnel

---

To avoid accidents, any person working with the machine must meet the following minimum requirements:

- He or she must be physically capable of controlling the machine.
- He or she can perform their work with the machine safely and in compliance with these operating instructions.
- He or she understands the function of the machine within the context of their duties and can recognise and avert the dangers arising from their work.
- He or she is familiar with the safe operation of vehicles.
- For travel on public roads, he or she possesses sufficient knowledge of road traffic regulations as well as the required driver's license.

## 2.9 Qualification of specialist personnel

---

If the required work on the machine (assembly, alteration, conversion, extension, repairs, retrofits) is performed incorrectly, this can lead to serious injury or death. To avoid accidents, any person performing work in accordance with these operating instructions must meet the following minimum requirements:

- He or she is a qualified specialist with the requisite training.
- Based on their technical expertise, he or she is able to assemble the (partially) disassembled machine as described in the manufacturer's assembly instructions.
- Based on their technical expertise, he or she is able to expand, alter or restore the function of the machine as prescribed in the relevant instructions of the manufacturer.
- He or she can perform the work described in these operating instructions in a safe manner.
- He or she understands the function of the required work as well as the machine and can recognise and avert the dangers arising from this work.
- He or she has read these operating instructions and can apply the information contained therein in an appropriate manner.



Maintenance and repair work indicated by this symbol must only be performed by a specialist workshop. The personnel of the specialist workshop must have the requisite knowledge and appropriate equipment (tools, lifting and supporting devices) to maintain and/or repair the machine in a safe and professional manner.



## 2.10 Personal protective equipment

---

The operating company must provide the following personal protective equipment.

- Safety footwear with protective toe caps
- Define and provide personal protective equipment for the relevant application.
- Only use personal protective equipment that is in flawless condition and offers effective protection.
- Safety and protective devices



The machine must only be operated if all safety and protective devices are complete and fully functional.

## 2.11 Operational safety

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### 2.11.1 Operation without correct start-up

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Without a correct start-up in accordance with these operating instructions (section 5), the operational safety of the machine is not guaranteed. This can result in accidents involving personal injury.

### 2.11.2 Safeguarding perfect technical condition

---

Incorrect maintenance and adjustments can impair the operational safety of the machine and lead to accidents involving personal injury.

- All maintenance and adjustment work must be performed as described in the relevant sections.
- Shut down and secure the machine before performing any maintenance and adjustment work.

### 2.11.3 Danger due to machine damage

---

Damage to the machine can impair its operational safety and lead to accidents involving personal injury. The following machine components are particularly safety-relevant:

- Brakes
- Steering
- Safety devices
- Coupling mechanisms
- Lighting
- Hydraulics
- Tyres

In the case of doubts regarding the operational safety of the machine, e.g. due to leaking fluids, visible damage or unexpected changes in driving behaviour:

- Shut down and secure the machine.
- Eliminate potential causes of damage immediately, e.g. remove dirt and debris or tighten loose screws.
- Establish the cause of the damage as per these operating instructions.
- Repair the damage as per these operating instructions.
- In the case of damage that cannot be rectified independently based on these operating instructions:
  - Have the damage repaired by a qualified workshop.



### 2.11.4 Technical limits

If the technical limits of the machine are not maintained, this can lead to machine damage.

This can result in accidents involving personal injury.

Compliance with the following technical limits is particularly important from a safety perspective:

- Maximum permissible operating pressure of the hydraulic system
- Maximum permissible speed
- Maximum permissible axle load(s)
- Maximum permissible payloads
- Maximum permissible drawbar load

## 2.12 Safety and protective devices

The following safety and protective devices are installed in the machine:

### 2.12.1 Emergency stop device

The towing vehicle (semitrailer tractor) is used to shut down the machine in the event of an emergency. When the drive motor of the towing vehicle is turned off, all drives and the power supply of the trailer are switched off immediately.

### 2.12.2 Description of additional safety and protective devices

The following safety devices are installed on the machine:

- Service brake system
- Parking brake (PB)
- Hydraulic shut-off valve
- Wheel chocks (x2)



Fig. 4: Shut-off valve

### 2.12.3 Faulty protective devices

Defective safety equipment can lead to dangerous situations. Therefore:

- Turn off the engine immediately
- Protect it against being turned on again
- If necessary, disconnect the compressed air and electrical supply.

### 2.12.4 Inspecting safety and protective devices

All safety and protective devices must be checked regularly prior to start-up. Inspection intervals according to table:



Safety device	Inspection interval
Tightness of the hydraulic system; functional check of the lighting	Visual inspection before each use
General condition of the vehicle	Weekly
Brake system with PB	Before (during) every start-up

## 2.13 Workstation of operating personnel

The machine is designed to be used by one person only.  
The main workstations are:

*The driver's seat of the towing vehicle*

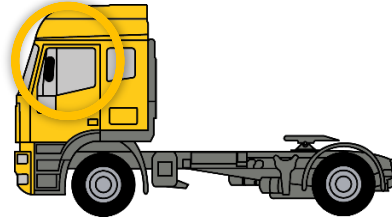


Fig. 5: Workstation on the machine

## 2.14 Danger areas



Within the danger area of the machine, danger points exist that pose either a permanent hazard or are a potential source of unexpected risks. These danger points are indicated by warning symbols, which highlight residual risks that cannot be eliminated by design. The specific safety guidelines of the relevant sections apply in this case.

A danger zone exists around the machine when in use. To ensure that no persons enter this danger zone, the minimum safety distance must be observed.

If this safety distance is not maintained, this can result in accidents involving personal injury.

- Only switch on the machine if there are no persons within the danger zone.
- Cease operation immediately if persons enter the danger zone.

The minimum safety distances are as follows:

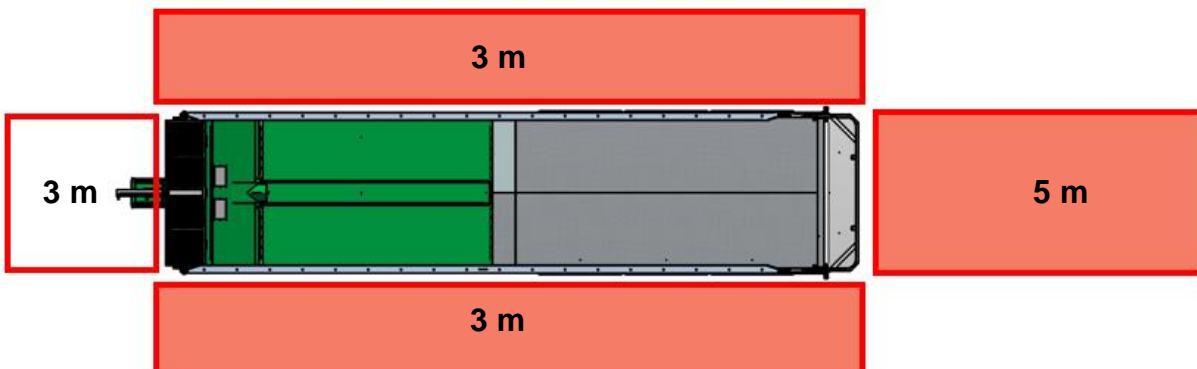


Fig. 6: Danger zone (model may vary)

The values specified above are minimum safety distances based on designated use of the machine. These values depend on the individual application and environmental conditions and must be increased where necessary. The machine must be shut down and secured for all work performed within the danger zone, including brief checks.

Other relevant specifications in all applicable operating instructions must be observed:

- The operating instructions of the towing vehicle
- The operating instructions of the machine

### 2.14.1 Safety distance from overhead lines













**RISK OF DEATH! Always maintain the safety distances.**



Overhead lines carrying voltage	Safety distance from the overhead line
Up to 1 kV	1 m on all sides
> 1 kV – 110 kV	3 m on all sides
> 110 kV – 220 kV	4 m on all sides
> 220 kV – 380 kV	5 m on all sides
Unknown voltage	> 5 m on all sides

### 2.15 Machine identification


There are warning signs on the machine to warn of the following residual dangers which cannot be eliminated:

<p><b>Notice regarding hazard symbols:</b></p> <ul style="list-style-type: none"> <li>- The hazard symbols must be kept clean and must not be concealed.</li> <li>- Damaged or missing hazard symbols must be replaced.</li> <li>- When attaching additional devices, add the corresponding hazard symbols if necessary.</li> <li>- Consult with the manufacturer where necessary.</li> </ul>		<p><b>Risk of crushing</b> Risk of hand injuries when reaching into the machine.</p>
		<p><b>Caution</b> Exercise special caution when handling or touching.</p>
		<p><b>Information in operating instructions</b> Read contents of operating instructions before handling.</p>
		<p><b>Final check</b> Information sign for completed final inspection of vehicle.</p>
		<p><b>Caution: lubricating point</b></p>
		<p><b>Information sign</b> Important information and control measures applicable before every start-up.</p>
		<p><b>Information sign for bolt and wheel nut check.</b></p>
		<p><b>Pictogram sticker for hose labelling</b> Identification symbols for hydraulic connectors (SVK plugs).</p>
		<p><b>Operation of the parking brake</b></p>
		<p><b>Company sticker on vehicle</b></p>

Observe all *warnings and safety instructions* on the machine as well as other labelling such as turning and transport directions.

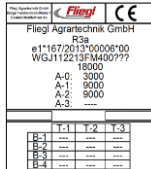
## Safety instructions

The following identifications are also located on the machine:



CE identification number  
Indicates conformity with applicable EU directives related to the product, which also require a CE marking.  
(Located on type plate.)



Type plate to specifically identify the machine.

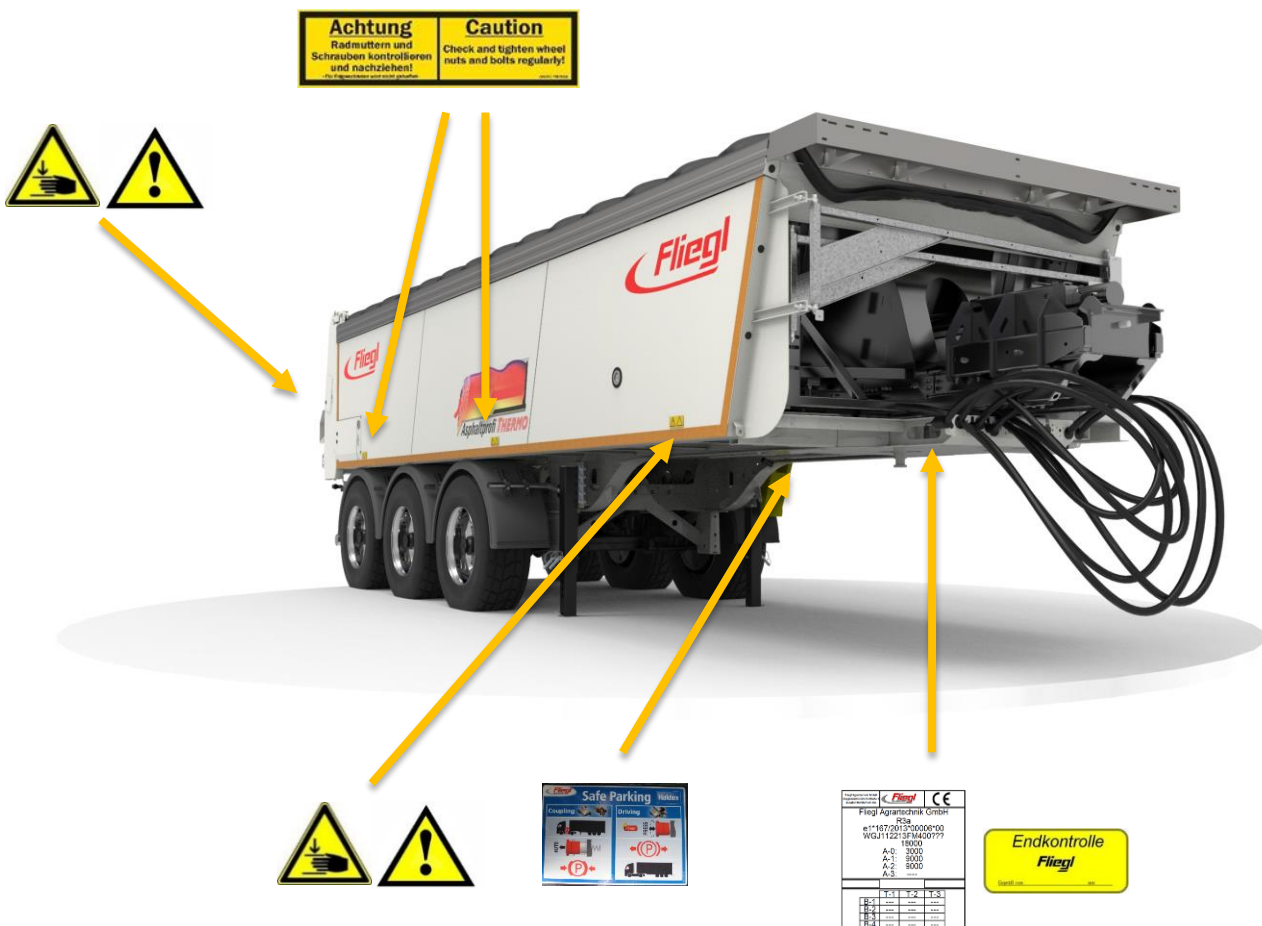


Fig. 7: Warnings and safety instructions affixed to the machine

## 3. Description of the machine

This section gives a complete overview of the layout and function of the machine.

If possible, read it at the machine. That is the best way for you to familiarise yourself with the machine.

### 3.1 Applications

The machine is used to *transport and spread goods as described in section 2.1 "Designated use"*.

### 3.2 Design variants – standard

Name		Total weight	
Asphaltprofi Thermo	ASS 372 Mega	Three-axle	40,000 kg <sup>1)</sup>
Heavy-duty push-off semitrailer	ASS 272	Two-axle	33,000 kg
	ASS 272 Compact	Two-axle	33,000 kg
	ASS 372	Three-axle	40,000 kg <sup>1)</sup>
	ASS 377	Three-axle	40,000 kg <sup>1)</sup>
	ASS 377 extra long	Three-axle	40,000 kg <sup>1)</sup>
	ASS 377 extra long - telescopic	Three-axle	42,000 kg
	ASS 382	Three-axle	40,000 kg <sup>1)</sup>
	ASS 477 Quad extra long - telescopic	Four-axle	54,000 kg / 56,000 kg

<sup>1)</sup> As per EU standardisation

## Description of the machine

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### 3.3 Functional description

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#### Loading the machine

The material must be loaded through the side panels into the trailer body from a suitable excavator, loader or similar vehicle.

- With the rear panel closed
- Sliding floor unit in front end position

#### Unloading the machine

After reaching the unloading point.

- Perform the unloading process from the operator workstation.
- Open the rear panel.
- Extend the sliding floor with the bulkhead to the rear end position.
- Move the sliding unit to the front end position.
- Close the rear panel and check it is locked securely.



**Retract the sliding unit before closing the rear panel.**



Caution: The rear panel must not be closed when the sliding unit is extended; potential overhang of the sliding unit.

### 3.4 Layout of the machine

The following figure provides an overview of the most important components and assemblies and shows where they are installed on the machine:



Fig. 8: Layout and components

### 3.5 Assemblies and components

Item no.	Title
1	Hydraulic cylinders
2	Sliding floor with bulkhead
3	Stabiliser
4	Hydraulic rear panel
5	Axle assembly
6	Side wall
7	Temperature display
8	Kingpin
9	Compressed air connections
10	Hydraulic connectors
11	Parking brake



The different variations of these components are described under "Equipment" (section 8).

#### Item 1 - hydraulic cylinder

The hydraulic cylinders move the sliding floor and the moving panel.

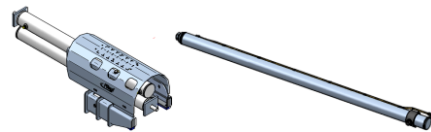


Fig. 9: Assembly – item 1

#### Item 2 – moving panel with bulkhead

Depending on the truck type, different moving panel units are used to empty the load.



Fig. 10: Assembly – item 2

#### Item 3 – stabiliser

The support winches are used to park and raise the push-off semitrailer.

##### Versions

Standard [1]: mechanical supporting feet

Optional [2]: mechanical (geared) support winches



Fig. 11: Assembly – item 3

#### Item 4 – hydraulic rear panel

The loaded goods are unloaded via the hydr. rear panel.  
The rear panel consists of two parts.



Fig. 12: Assembly – item 4



### Item 5 – axle assembly

Different axle assemblies are available for the ASS.

- Two-axle
- Three-axle
- Four-axle

For a detailed list of the different axle types, refer to the replacement parts list or section 13.

### Item 6 – body

The bridge is self-supporting and thus forms the main frame of the vehicle.

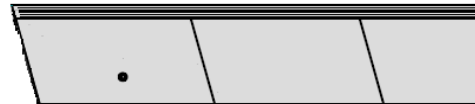


Fig. 14: Assembly – item 6

### Item 7 – temperature display

The temperature display indicates the temperature inside the ASS.



Fig. 15: Assembly – item 7

### Item 8 – kingpin

The 2" kingpin is used to connect the ASS to the fifth-wheel plate of the towing vehicle.



Fig. 16: Assembly – item 8

### Item 9 – compressed air connections

The compressed air supply for the compressed air brake is connected on the towing vehicle.



Fig. 17: Assembly – item 9

### Item 10 – hydraulic connectors

Individual hydraulic connections are provided for all hydraulic functions.



Fig. 18: Assembly – item 10

### Item 11 – parking brake

The parking brake system is an auxiliary function that switches the spring-type cylinders to brake position in the case of uncoupling or pressure loss.



Fig. 19: Assembly – item 11

### 3.6 Notes regarding equipment versions

- **High level of stability**, even on inclines
- **Quick and safe unloading** under bridges and power lines, in alleys and industrial buildings, etc.
- **Very low load centre of gravity** ensures significantly faster and better handling on country roads and off-road.
- **Enhanced transport performance** with reduced wear and diesel costs.
  - Less hard braking of vehicle before corners thanks to "lowered vehicle".
  - Less hard acceleration after corners reduces diesel consumption.
- **Extremely low loading height**
  - Easier loading with better overview even when using small wheel loaders and excavators.
- **Complete emptying**, even with highly viscous materials such as clay, loam, silt, "silent asphalt".
  - No manual cleaning or scraping of the tipper bridge required.
  - Enhanced safety due to lower risk.
- **Complete emptying** of body even with asphalt types such as stone mastic, OPA, PMA, rubber-modified bitumen.
  - Reduces standing times and costly disposal of purchased mixture.
- **Enhanced paving quality** due to continuous mixing throughout the unloading process.

#### 3.6.1 Asphalt Thermo ASS 372 Mega

- Total trailer weight 40,000 kg acc. to EU standardisation  
 Axle load 3 x 9,000 kg with 1,310 mm axle spacing  
 Assumed technical coupling load 13,000 kg



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.

#### 3.6.2 ASS 272 two-axle

- Total weight 33,000 kg, rear axle load (technically up to 18,000 kg) with 1,310 mm axle spacing  
 Assumed coupling load (technically up to 15,000 kg)
- Total weight 35,000 kg, rear axle load (technically up to 20,000 kg)  
 Assumed coupling load (technically up to 15,000 kg)  
 Axle load 2 x 10,000 kg with 1,310 mm axle spacing (*export only*)



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.

#### 3.6.3 ASS 272 Compact

- Total weight 33,000 kg, rear axle load (technically up to 20,000 kg)  
 Assumed coupling load (technically up to 15,000 kg)  
 Axle spacing 1,810 mm



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.

### 3.6.4 ASS 372 three-axle, ASS 377 three-axle and ASS 382 three-axle

- Total trailer weight 40,000 kg acc. to EU standardisation  
Axle load 3 x 9,000 kg with 1,310 mm axle spacing  
Assumed technical coupling load 13,000 kg
- Total trailer weight 42,000 kg acc. to EU standardisation  
Axle load 3 x 9,000 kg with 1,310 mm axle spacing  
Assumed technical coupling load 15,000 kg



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.



In the case of materials that are difficult to move or that are highly adherent, the permissible load volume can be reduced by up to 10 percent.

### 3.6.5 ASS 377 extra long

- Body with projection type Scandinavia / UK / Ireland
- Caution: Distance from kingpin to centre of last axle: approx. 8,260 mm
- Total trailer weight 40,000 kg acc. to EU standardisation  
Axle load 3 x 9,000 kg with 1,310 mm axle spacing  
Assumed technical coupling load 13,000 kg
- Total trailer weight 38,000 kg acc. to EU standardisation  
Axle load 3 x 9000 kg with 1,310 mm axle spacing  
Gross train weight 44,000 kg
- Assumed technical coupling load 11,000 kg



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.



In the case of materials that are difficult to move or that are highly adherent, the permissible load volume can be reduced by up to 10 percent.

### 3.6.6 ASS 377 extra long - telescopic

- Heavy-duty push-off semitrailer with projection and hydraulic axle adjustment
- Vehicle configuration for Sweden, Norway, Finland
- Caution: Distance from kingpin to centre of last axle: approx. 9,711 mm (extended = "transport position")
- Gross train weight for Sweden + Finland up to 50,000 kg  
Total weight up to 42,000 kg  
Assumed technical coupling load 15,000 kg  
Technical axle load for 3-axle bogie 3 x 9,000 kg  
Hydraulically adjustable axle assembly (approx. 1,500 mm)  
Axle spacing 1,310 / 1,370 mm  
Distance from kingpin to centre of last axle approx. 9,711 mm  
Steered trailing axle at rear
- Permitted total weight for Norway up to 50,000 kg  
Technical total weight up to 42,000 kg  
Assumed technical coupling load 15,000 kg  
Technical axle load for 3-axle bogie 3 x 9,000 kg  
Hydraulically adjustable axle assembly (approx. 1,500 mm)  
Axle spacing 1,310 / 1,370 mm  
Distance from kingpin to centre of first axle approx. 7,031 mm  
Distance from rearmost truck axle to 1st trailer axle greater than 5,700 mm  
Steered trailing axle at rear
- Permitted total weight for Norway up to 50,000 kg  
Technical total weight up to 42,000 kg  
Assumed technical coupling load 17,000 kg  
Technical axle load for 3-axle bogie 3 x 9,000 kg  
Hydraulically adjustable axle assembly (approx. 1,500 mm)  
Axle spacing 1,310 / 1,370 mm  
Distance from kingpin to centre of first axle approx. 7,031 mm  
Distance from rearmost truck axle to 1st trailer axle greater than 5,700 mm  
Steered trailing axle at rear



Fig. 20: Assembly – item 11



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.

Caution: Kingpin type ... for 17,000 kg coupling load



In the case of materials that are difficult to move or that are highly adherent, the permissible load volume can be reduced by up to 10 percent.

### 3.6.7 ASS 477 Quad extra long - telescopic

- Heavy-duty push-off semitrailer with projection and hydraulic axle adjustment
- Type for Denmark 54,000 kg / 56,000 kg gross train weight
- Caution: Distance from kingpin to centre of last axle: approx. 9,711 mm (extended = "transport position")
- Caution: Distance from kingpin to first axle: approx. 4,200 mm (retracted = "unloading position")
  
- Gross train weight for Denmark up to 54,000/56,000 kg  
Total trailer weight 45,000 kg  
Assumed technical coupling load 15,000 kg  
Technical axle load up to 4 x 9,000 kg  
Axle load for quad-axle 30,000 kg, axle spacing 1,310/1,310/1,370 mm  
Hydraulically adjustable axle assembly (approx. 1,500 mm)  
Rear trailing axle



Note: The specified total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.



In the case of materials that are difficult to move or that are highly adherent, the permissible load volume can be reduced by up to 10 percent.

## Description of the machine

### 3.7 Technical data

Type:	ASS 372 Mega	ASS 272	ASS 272 Compact	ASS 372	ASS 377	ASS 377 extra long	ASS 377 extra long telescopic	ASS 382	ASS 477 Quad extra long telescopic
Body									
Length	7,230	7,230	7,230	7,230	7,730	7,730	7,730	8,230	7,730
Width	2,370	2,370	2,370	2,370	2,370	2,370	2,370	2,370	2,370
Height	1,290	1,290	1,290	1,290	1,290	1,290	1,400	1,290	1,400
Height*		1,400		1,400	1,400	1,400		1,400	
Height*				1,600	1,600	1,600			
Material thickness									
Base plate	5	5	6	5	5	5	5	6	5
Side walls	4	4	4	4	4	4	4	4	4
Base plate*		6		6	6	6	6		6
Side walls*		4		4	4	4	4		4
Base plate*					8	8	8	8	8
Side walls*					6	6	6	6	6
Coupling height (approx.)	1,250 - 1,300	1,250 - 1,300	1,350	1,250 - 1,300	1,250 - 1,300	1,250 - 1,300	1,250 - 1,300	1,250 - 1,300	1,250 - 1,300
Coupling height (approx.)*		1,350		1,200	1,200				
Volume (m <sup>3</sup> ) Slightly heaped	24.0	24.0	24.0	24.0	25.5	25.5	27.5	27.0	27.5
Volume (m <sup>3</sup> ) Slightly heaped*		26.0		26.0	27.5	27.5	29.0		
Volume (m <sup>3</sup> ) Slightly heaped*				29.0	31.0	31.0			

\* Optional

All dimensions are provided in mm and may deviate depending on the version.  
The specified dimensions are based on the standard tyres.



In the case of materials that are difficult to move or that are highly adherent, the permissible load volume can be reduced by up to 10 percent.

Coupling load (approx. kg)		15,000	15,000	11,000	13,000	15,000	15,000	15,000	15,000	15,000
Total weight (approx. kg)		33,000	35,000	38,000	40,000	42,000	45,000	50,000	54,000	56,000
Type	Version									
ASS 272	Two-axle	x	x							
	Two-axle "Compact"	x								
ASS 372	Three-axle				x <sup>1)</sup>	x <sup>1)</sup>				
	Three-axle "Asphaltprofi Thermo ... Mega"				x <sup>1)</sup>					
ASS 377	Three-axle				x <sup>1)</sup>	x <sup>1)</sup>				
	Three-axle "extra long"			x <sup>1)</sup>	x <sup>1)</sup>					
	Three-axle "extra long - telescopic"					x		x <sup>2)</sup>		
ASS 382	Three-axle				x <sup>1)</sup>	x <sup>1)</sup>				
ASS 477	4-axle Quad extra long - telescopic						x		x <sup>3)</sup>	x <sup>3)</sup>

<sup>1)</sup> As per EU standardisation <sup>2)</sup> Gross vehicle weight in SWE / FIN / NOR <sup>3)</sup> Gross vehicle weight in DNK

All trailers are in basic condition.

The weight specifications comply with German traffic laws (StVZO).

It is possible that different vehicle class provisions exist in different countries.

The mass figures are version-specific and may deviate.

Details are provided on the type plate, for instance.

The weights and drawbar loads were partially determined by calculation and may differ in practical applications.

The centre of gravity and thus the drawbar load may shift depending on how the load is distributed.

If additional devices are used, the payloads, empty loads and axle loads will change.



The stated total weight is technically possible but, depending on the loaded material, may not be achievable when adhering to the permitted axle and coupling loads.



The load volume may be slightly reduced when using a tarpaulin.

## 4. Transport and installation

### 4.1 Basic requirements



The following means of transport are needed to transport the machine:  
Towing vehicle (e.g. semitrailer tractor) with fifth-wheel plate and suitable brake, hydraulic and lighting connections.

The supply connections are located at the front in the hose tray. This information includes:

- Connections for the power supply
- Compressed air connections (type-specific)
- Hydraulic connectors



- The machine must be fully and correctly coupled.
- The permitted maximum speed must not be exceeded.
- It is not permitted to transport persons on the machine.
- The roadworthiness of the machine – particularly the lighting, tyres, closed openings etc. – must be checked before travelling on public roads.
- Before moving off, ensure that perfect visibility exists on and around the towing vehicle and of the machine itself.

Before travelling on public roads, ensure that:

- The machine is fully and correctly coupled to a suitable towing vehicle
- All safety devices are locked and secured
- The tyres are free of cuts and cracks and have the correct tyre pressure
- The machine is free of dirt and debris
- The lighting system functions flawlessly
- The brakes function flawlessly
- The cables and lines are routed such that they do not stretch or come into contact with the wheels of the towing vehicle when cornering

### 4.2 Supply and installation

#### 4.2.1 Prerequisites for coupling the ASS

The towing vehicle must feature a suitable fifth-wheel plate for connecting the kingpin.

Fifth-wheel plate for coupling the push-off semitrailer.



Fig. 21: Fifth-wheel plate

2" kingpin on the push-off semitrailer frame.



Fig. 22: Kingpin



## 4.2.2 Establishing the electrical connection

All wiring and connections on the trailer are ready for operation and fully assembled. Do not tap in directly to the ignition switch (risk of fire or damage to the electrical system).

**If your towing vehicle does not feature a plug connection, it must be fitted.**



This preparation must only be carried out in a specialist workshop. Use only original fuses. If fuses with an excessively high rating are used, the electrical system will be destroyed. When electrical devices and/or components are installed on the machine at a later stage, and connected to the on-board power supply, it is the user's responsibility to verify whether this installation results in faults or malfunctions of the vehicle electronics or other components.

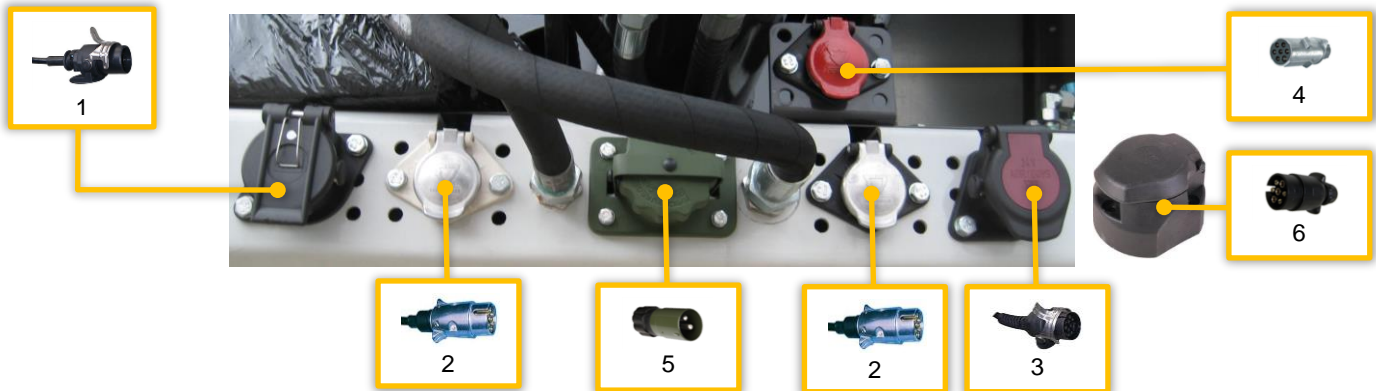


Fig. 23: Electrical connections

1. ABS/EBS 24 V socket for brake system, 5/7-pin ISO 7638-1
2. 2x 7-pin socket ISO 3731 S-type
  - o 1x lighting
  - o 1x additional equipment (see point 3)
3. 15-pin socket 24 V ISO 12098
  - o Lighting
  - o Hydraulic control
  - o Paver brake
  - o Rear light
  - o Lift axle
4. 7-pin socket ISO 1185
  - o Reversing camera



If reversing camera is fitted. Socket has red marking to avoid confusion with other 7-pin socket.

5. NATO socket for sliding tarpaulin power supply
6. 7-pin socket ISO 1724 / type 12N



If no remote control is used to control the ASS, this socket is required for control via the Fliegl control box.



Ensure that any electrical and electronic components installed at a later stage comply with the EMC Directive 2014/30/EU, as amended over time, and bear the CE mark.

### 4.2.3 Compressed air supply

#### Connection procedure:

Connect the coupling head of the **brake line (yellow①)** to the yellow port on the towing vehicle as prescribed.

Connect the coupling head of the **supply line (red②)** to the red port on the towing vehicle as prescribed.

When you connect the supply line (red), the supply pressure from the towing vehicle automatically pushes out the actuating button for the release valve on the trailer brake valve.



Fig. 24: Standard couplings ISO 1728

- When coupling the brake and supply line, ensure that:
  - The sealing rings on the coupling heads are clean.
  - The sealing rings on the coupling heads form a tight seal.
- Replace any damaged sealing rings immediately.
- Drain the air reservoir before your first journey of the day.
- Do not set off with the coupled machine until the pressure gauge on the towing vehicle shows a pressure of 5.0 bar.

#### Disconnection procedure:

Secure the machine to prevent it rolling away. You can do this using the parking brake and/or wheel chocks.

Undo the coupling head of the **supply line (red②)** as prescribed.

Undo the coupling head of the **brake line (yellow①)** as prescribed.

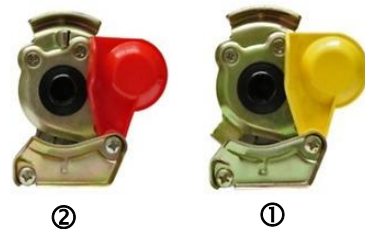


Fig. 25: Standard couplings ISO 1728

The service brake of the machine only engages when the red coupling head has been removed.

You must follow the above sequence as, otherwise, the service brake system will disengage, which in turn can set the unbraked machine in motion.



When coupling or uncoupling the trailer, the supply line to the trailer brake valve is vented. The trailer brake valve switches over automatically and actuates the service brake system on the basis of the ALB brake force regulation.

## 4.2.4 Establishing hydraulic connections

A hydraulic oil supply and control by the towing vehicle are required for all work functions. The number of connections is type- and design-specific.

### Coupling:

Set the lever on the control device to neutral position.  
Ensure that the screw couplings are clean.

#### Constant flow:

- (1) Screw connector on ASS
- (2) Screw socket on towing vehicle

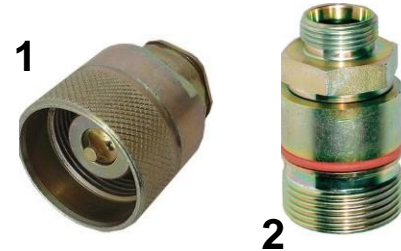


Fig. 26: Hydraulic connector



For more information, refer to section 6.6.



**Single-action control units required:**  
The return must not be valve-controlled.

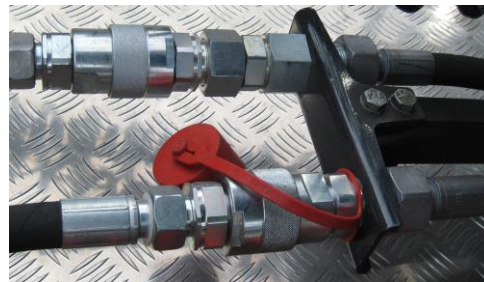


Fig. 27: Hydraulic hose connections

## 4.2.5 Towing vehicle parameters

### Hydraulic parameters

- Pressure inlet (P) with HDK screw connector 18L - NW20/6 (M48 x 3) (size 6)
- Return (T) with HDK screw socket 22L - NW 20/6 (M48 x 3) (size 6)



Fig. 28: Hydraulic connections



- Oil pressure from truck to hydraulic system: **min. 195 - max. 210 bar.**
- The oil pressure is set to approx. 190 bar at the switch cabinet.



**Maximum working pressure = 190 bar**

## Transport and installation



- Required oil flow rate: min. 100 l/min - max. 135 l/min
- Recommendation for active hydraulic system (during push-off process):
  - ➔ Raise speed on towing vehicle to approx. 800 rpm.
  - ➔ Recommendation of an approx. 110 litre pump, mounted on the engine/flywheel-side PTO.



If these components are not compatible with the connections on the towing vehicle, the customer must supply suitable screw couplings or adapters.



- **The dimensions of hydraulic couplings can vary slightly between different manufactures, as a result of which the connection may not form a tight seal.**
- **Common causes of faults:**
  - **One of the screw couplings is not fully tightened**  
➔ return blocked/reduced
  - **Return filter on semitrailer tractor closed**  
➔ back pressure builds up
  - **Check valve does not open**  
➔ back pressure builds up
  - **Working/operating pressure on towing vehicle not set correctly**  
e.g. 150 bar instead of 190 bar

## General safety instructions for the hydraulic system

1. The hydraulic system is under high pressure.
2. **Observe the maximum permissible operating pressure of 190 bar.**
3. Ensure that a correct connection is established between the connector and socket.
4. When connecting hydraulic hoses to the towing vehicle hydraulics, ensure that the hydraulics are depressurised on both the towing vehicle and trailer side.  
If the connections are swapped, the functionality will be reversed – risk of accidents!
5. Coupled hydraulic hose lines:
  - Must easily withstand all movements during cornering without excess tension, bending or friction
  - Must not rub against other parts
6. Check hydraulic hoses and couplings regularly and replace them if they are damaged or old (at least every 6 years).
7. The replacement hoses must meet the requirements of the machine manufacturer.
8. When locating leaks, use suitable aids due to the risk of injury.
9. Never try to close leaks with your finger.
10. Liquids (hydraulic oil) escaping under high pressure can penetrate the skin and cause serious injuries.
11. **In case of injuries, consult a physician immediately – risk of infection!**
12. Before working on the hydraulic system, depressurise it and switch off the tractor engine.
13. Only specialist workshops are permitted to perform repair work on the hydraulic system.
14. Ensure that the oil is of the required grade.
15. **Caution when draining hot oil – risk of burns!**
16. When coupling and uncoupling, make sure that no dirt enters the couplings of the hydraulic hoses.



## 5. Start-up

### 5.1 First-time start-up



- Without a correct start-up in accordance with these operating instructions, the operational safety of the machine is not guaranteed. This can lead to accidents resulting in serious injury or death.
- All setting and adjusting tasks must be performed for first-time start-up.
- Before starting work, the operator must familiarise himself with all actuating devices and their function.
- It is too late to do so once work has started.
- Before every start-up, check the trailer for operational and transport safety.
- Before start-up, instruct persons to leave the danger area, e.g. around hydraulic equipment, drives.
- There is a risk of injury at crushing and shearing points in the area of the: rear panel, moving panel unit and draw gear.
- The machine must only be coupled and transported with a towing vehicle that is suitable for this purpose.
- The towing vehicle and machine must comply with the national road traffic regulations.
- The vehicle owner (operating company) and the vehicle driver (operating personnel) are responsible for observing the legal provisions of national road traffic regulations.
- Observe the safety instructions that are affixed to the trailer. An explanation of the individual warning symbols is provided on page 25 of these operating instructions.
- Also comply with the instructions in the relevant sections and in the appendix of these operating instructions.

### 5.2 Check before start-up

The points below will facilitate trailer start-up.

For more detailed information, refer to the relevant sections in the operating instructions.

Check to ensure that all safety devices (covers, panels etc.) are in proper condition and are attached to the trailer in protective position.

- Check the cargo space for loose parts lying inside.
- Lubricate the trailer according to the lubrication schedule.
- Check the condition of the sealing strips on the moving panel.
- Check the hydraulic system for leaks.
- Connect all connecting lines (e.g. hydraulics, compressed air etc.) correctly and secure them.
- Check the tyres to ensure the air pressure is correct.
- Check the tightness of the wheel nuts.

### 5.3 Returning to service

After an extended storage period, the same steps as for first time start-up must be completed.

See section 5.1.

## 6. Preparation and setup



The following steps must be performed to set up and prepare the machine:

- Setting the coupling height
- Establish the hydraulic and brake connections
- Establish the electrical connections

### 6.1 Setting the coupling height

#### Objective

*Setting the trailer height for coupling.*

The trailer is designed for a coupling height between 1,250 and 1,300 mm (optional 1,350 mm). The exact coupling height can be set by adjusting the supports.

### 6.2 Pressurised air suspension



When the speed exceeds 15 km/h (manufacturer specification), the lever automatically moves from "Stop" to "Drive" position. There must be no persons in the danger area during raising and lowering.

#### Lever position of the air suspension system

##### Stop

→ Position the lever vertically and push it in.

##### Raise/lower

→ Move the lever to the right to raise.

→ Move the lever to the left to lower.

*(The lever must be pressed in in this case.)*

##### Travel

→ Position the lever vertically and pull it out.



Fig. 29: Raising and lowering with air suspension



## 6.3 Compressed air brake system with ALB, brake force regulator



Check the braking effect of the compressed air brake system before setting off.

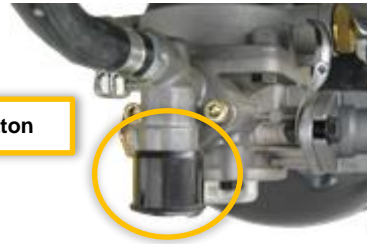


For every use (driving operation), the brake force must be set according to the trailer load. Conditions for operation:

- Compressed air brake connection (dual line brake system) on tractor

Selecting the operating mode, adjusting the trailer load status

Trailer release valve button



"Release" operating mode for moving the uncoupled trailer is triggered via the trailer release valve.

The button must be pushed in for this purpose.

When using the trailer brake valve in combination with a manually adjustable brake force regulator without release position, a trailer release valve is employed.

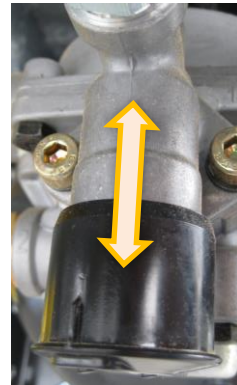


Fig. 30: Manual brake force adjustment



You must not alter the setting dimension of the automatic load-dependent brake force regulator. The setting dimension must match the value specified on the ALB plate.

## Preparation and setup

### 6.4 Brake system with combined service/parking brake (Tristop)

The parking brake system is an auxiliary function that switches the spring-type cylinders to brake position in the case of uncoupling or pressure loss. Before travel, the spring-type cylinders must be manually released via the park valve (red button).

#### Parking brake operation

Pulling the parking valve (**red button**) connects the spring-loaded brake system to the vent.

This depressurises the spring-loaded brake system and actuates the parking brake.

Pushing the park valve (**red button**) connects the spring-loaded brake system to the reservoir, which builds up the pressure in the spring-loaded brake system, resulting in the parking brake being released.

The spring-loaded brake system must always be released manually following an uncoupling operation.

However, a release can only take place when the pressure in the reservoir is at least 5 bar.

#### Manoeuvring

To manoeuvre the uncoupled vehicle, both buttons must be pressed – first *black* and then *red*. Only then is the parking brake released and the vehicle unbraked.

After manoeuvring, the park valve (**red button**) must be pulled out again (min. 5 bar supply pressure) to re-apply the parking brake.

#### Pressureless system

Release valve (**black button**) must be pressed (secure trailer vehicle); park valve (**red button**) is pushed out automatically.

#### Initial filling

Apply pressure from towing vehicle; release valve (**black button**) must move to operating position (springs out). Park valve (**red button**) remains pushed out.



Fig. 31: Tristop control unit



Fig. 32: Parking brake



Automatic emergency braking

Push in the **red button**. Reduce the pressure to 0 bar (disconnect towing vehicle supply); the red button must spring out and emergency braking must be initiated.

Parking brake valve

Apply pressure from towing vehicle. Push in the park valve (**red button**); at least 5 bar in reservoir; pull out the park valve (**red button**); parking brake must be depressurised (to 0 bar); vehicle is braked.



Fig. 33: Parking brake



**There must be no persons in the danger zone during coupling and uncoupling.**



This section provides brief instructions on using the compressed air brake system.



Comprehensive information is available from the brake manufacturer:  
[www.haldex.com](http://www.haldex.com)



## 6.5 Electronic brake system (EBS)

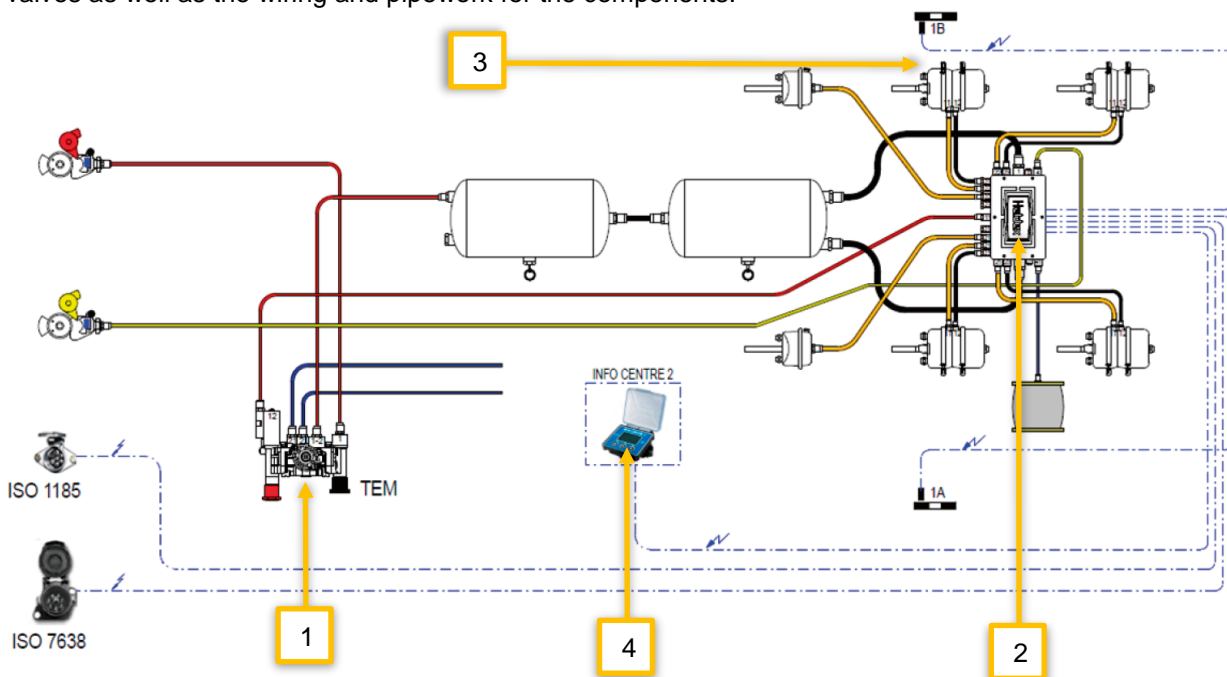


EBS is an electronic brake system with load-dependent brake force regulation and automatic anti-lock system.

Trailer vehicles with such brake systems can only be used with:

- Towing vehicles with enhanced ISO 7638-1996 plug connection (7-pin, 24 V, towing vehicles with CAN data line)
- Towing vehicles with ISO 7638-1985 plug connection (5-pin, 24 V, towing vehicles without CAN data line)

The trailer EBS consists of a park release safety valve, the EBS trailer modulator, an electro-pneumatic controller with integrated electronic control unit, integrated pressure sensors and integrated redundancy valves as well as the wiring and pipework for the components.



- 1) Park release safety valve
- 2) EBS trailer modulator
- 3) Speed sensors
- 4) Control unit

### 6.5.1 EBS modulator

The trailer modulator is used to control and monitor the electro-pneumatic brake system. It regulates the brake cylinder pressure on both sides of two or three axles.

The trailer modulator is installed in the electro-pneumatic brake system between the reservoir or EBS trailer brake valve / park release safety valve and the brake cylinder near the axles on the vehicle frame.



Fig. 34: EBS modulator

### 6.5.2 Park release safety valve

The park release safety valve performs the emergency brake function if the pneumatic supply line should become detached and is also responsible for the function of the double release valve.

Using the release button of the service brake system (**black**), the brake system can be manually released without a compressed air supply after automatic braking, provided that there is sufficient supply pressure in the reservoir.

Using the actuating button (**red**), the parking brake can be applied or released by venting the spring accumulators.

When the vehicle is uncoupled (supply line vented), automatic braking is performed via the service brake with simultaneous bypassing of the check valve integrated in the park release safety valve within the spring brake circuit.

In the case of a drop in the supply pressure of the parked trailer, the spring accumulators automatically apply the braking force, thereby preventing the vehicle from rolling away.



Fig. 35:  
Park release safety valve



All control functions remain active if the supply line should become detached.

### 6.5.3 Trailer brake valve

Version 1: The conventional trailer brake valve is used in conjunction with an external target pressure sensor.

Version 2: The conventional trailer brake valve is used without an external target pressure sensor since it is integrated in the modulator.



Fig. 36: Trailer brake valve



It is essential that a trailer brake valve without a supply line is used.

### 6.5.4 EBS relay valve

The EBS relay valve is used as an actuator for controlling the brake forces on the third axle for semitrailers.

The electrical actuation and monitoring is performed by the modulator.



Fig. 37: EBS relay valve

## Preparation and setup

### 6.5.5 ABS relay valve

The ABS relay valve familiar from conventional brake systems and a double check valve are used in the electro-pneumatic brake system as actuators for controlling the brake forces on a steering axle for semitrailers.

The electrical actuation and monitoring is performed by the trailer modulator.



Fig. 38: ABS relay valve

### 6.5.6 Lift axle valve

With the two-circuit lift axle valve, up to two lift axles can be controlled automatically by the EBS depending on the current axle load.

The electrical actuation and monitoring is performed by the trailer modulator.

With the single-circuit lift axle valve, one lift axle can be controlled automatically by the EBS depending on the current axle load.

The electrical actuation and monitoring is performed by the trailer modulator.



Fig. 39: Lift axle valve



After unscrewing the vent, an approach aid with residual pressure is possible. For this purpose, a line is rerouted from the vent to the 3/2-way solenoid valve for the residual pressure.

### 6.5.7 Double shut-off valve (select low valve)

In vehicles with 2S/"M+ select low control, the double shut-off valve is used to brake a single axle (e.g. steering axle). The input pressures are the pressures applied by the trailer modulator on either side. The lower pressure is then routed to the axle that is to be braked.



Fig. 40: Double shut-off valve

## 6.6 Hydraulic system

### Procedure:

Connect the pressure line (1) to the single-action control device. Connect the oil return hose (2) to the oil return line (T) of the towing vehicle.



### Double-action control unit

Connect the pressure line (1). (The pressure line leads to the pressure filter on the machine.) Connect the oil return hose (2) to the oil return line (T) of the towing vehicle, as in the case of the single-action control device.



Fig. 41: Hydraulic connection

### 6.6.1 Hydraulic control unit

The hydraulic control unit consists of the control valves, which are actuated electrically, and a pressure gauge indicating the pressure in the hydraulic system. The push-off and rear panel functions are operated via this control unit.

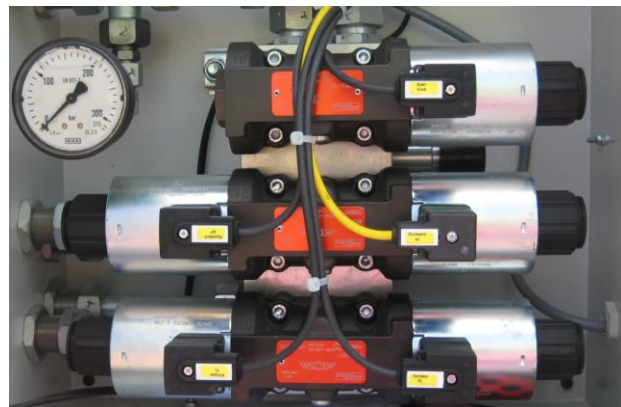
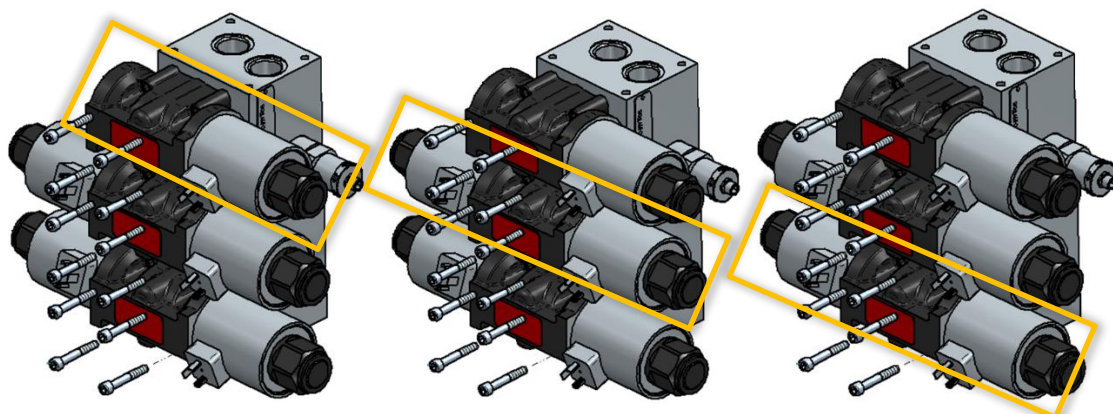


Fig. 42: Hydraulic control unit



Function: Check valve

Function: Rear panel

Function: Slider



## Preparation and setup

### 6.6.2 Control valve – check valve

The check valve prevents the "push-off" function starting before the "rear panel" function.

Otherwise the loaded material would be pressed against the rear panel.



Fig. 43: Check valve

### 6.6.3 Control valve – rear panel

The "rear panel" control valve is used to operate the movement of the rear panel.

1. Rear panel open
2. Rear panel closed



Fig. 44: Rear panel control valve

### 6.6.4 Control valve – slider

The "slider" control valve is used to operate the movement of the push-off unit.

1. Slider forward
2. Slider back



Fig. 45: Slider control valve

### 6.6.5 Emergency manual control

In the case of a power failure or a malfunction, the manual control feature can be used to depressurise the system and return the actuators to a safe state.

#### Procedure:

To use the manual control function, press a pin into the opening.

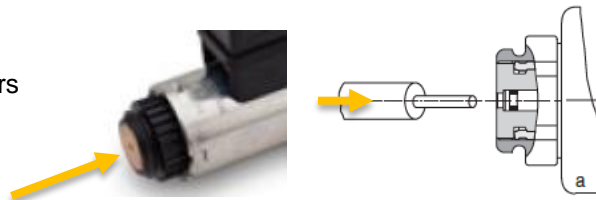


Fig. 46: Emergency manual control



The manual control can be used as long as the pressure in connection T is less than 25 bar.



- The dimensions of hydraulic couplings can vary slightly between different manufactures, as a result of which the connection may not form a tight seal.
- Common causes of faults:
  - One of the screw couplings is not fully tightened  
→ return blocked/reduced
  - Return filter on semitrailer tractor closed  
→ back pressure builds up
  - Working/operating pressure on towing vehicle not set correctly  
e.g. 150 bar instead of 200 bar

## 7. Use and operation



Read carefully. If there is anything you do not understand, contact the manufacturer to exclude the possibility of operating errors.

### 7.1 Trailer operation



- When coupling the trailer, there is a risk of crushing between the trailer and the towing vehicle.
- Before manoeuvring, ensure that there is nobody between the towing vehicle and the trailer.
- Always use a signaller for manoeuvring.
- Never walk between the towing vehicle and the trailer while the towing vehicle is moving.
- Before coupling, secure the towing vehicle and trailer to prevent rolling away, and apply the hand brake or wheel chocks under the wheels.

#### 7.1.1 Before operation



- Instruct unauthorised persons away from the machine.
- Carry out a visual inspection of the entire machine and the tools.
- Check the fill levels of lubricants and auxiliary materials.
- Unlock all devices used for stopping in an emergency.
- The hydraulic connections should always be connected to the same ports on the towing vehicle.

#### 7.1.2 Setting up the trailer coupling on the towing vehicle

Move the towing device of the towing vehicle to the correct position.

On the towing vehicle, the fifth-wheel plate can be moved hydraulically in longitudinal direction. This adjustment is made to control the behaviour of the trailer on the road or on the field.

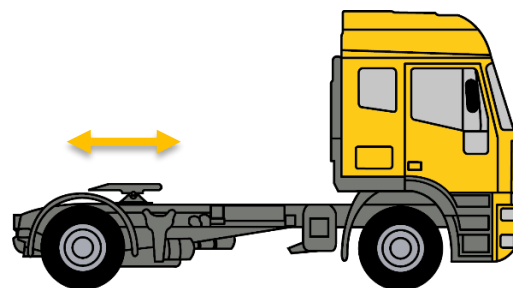


Fig. 47: Setting up the trailer coupling on the towing vehicle



For instructions on setting up the fifth-wheel plate, refer to the operating instructions of the towing vehicle.

### 7.1.3 Coupling the trailer



Always follow the instructions in section 4.2 for the coupling and uncoupling process and read through this section carefully before first-time start-up.

- Move the towing device of the towing vehicle or the kingpin of the trailer to the correct height. See section 7.1.2.
- Drive backwards to engage the suitable coupling plate with the kingpin; ensure that the coupling engages correctly; the mechanical lever returns to its initial position.
- Secure the towing vehicle against rolling away (parking brake) and turn off the engine.
- Check whether the towing device is engaged.
- Establish the electrical connections and connect the service brake.
- Establish the compressed air supply between the towing vehicle and trailer. (See section 4.2.3)
- Establish the hydraulic connections between the towing vehicle and trailer.
- Apply the cranks for the support winches and wind both supporting feet fully upwards; remove any wheel chocks; detach the crank and place it in the bracket.
- Fully release the mechanical parking brake of the trailer and place the wheel chocks in the holder; do not forget the retainer (if present).

### 7.1.4 Conducting a trial run

After the machine is set up and prepared and before work begins, a trial run must be conducted in *unloaded condition*.

#### Objective

Check to ensure the machine is set up correctly and functioning properly.

#### Prerequisites

- Machine is ready for operation
- Machine is fully set up



**Familiarise yourself with the basic safety instructions (see section 2) and the instructions for first-time start-up (see section 5.1) before the trial run and take all the safety precautions listed in these sections.**

#### Procedure

- Turn on the machine as specified.
- Perform all functions of the machine individually.
- Correct the settings if necessary.



Conduct a brake test with the machine in both empty and laden condition to establish the braking behaviour of the towing vehicle and coupled trailer. We recommend that brake matching be carried out between the towing vehicle and trailer by a specialist workshop to ensure optimum braking performance and to minimise wear of the brake linings.



### 7.1.5 Uncoupling the trailer

Follow the instructions in sections 7.1.1 to 7.1.3 in reverse order. You must also observe the safety information in section 7.1.



## 7.2 Working with the machine

### 7.2.1 General safety and operating instructions

The following section contains some general notes on safety and operation for working with the push-off semitrailer, repeated and summarised together for better clarity:

1. The weights and loads specified on the type plate must be observed.
2. Note the maximum permitted coupling load.
3. When parking the vehicle, make sure the support feet are correctly locked.
4. **Never** park the push-off semitrailer on the supporting mechanism **while it is loaded**.  
Park the push-off semitrailer so that it is stable. If the ground is soft, increase the size of the support plate of the supporting feet.
5. When parking the trailer, secure it against rolling away (parking brake, wheel chocks).
6. The push-off semitrailer must only be attached with the designated devices and in compliance with regulations.
7. Connect the brake system and check to ensure it is functioning properly.  
Follow the manufacturer's instructions.
8. There is a risk of injury when coupling and uncoupling the push-off semitrailer to and from the towing vehicle (danger due to crushing and shearing points when actuating the supporting mechanism).  
**Keep children away!**
9. When coupling, make sure that the kingpin is secured in the fifth-wheel plate.
10. Before coupling or uncoupling the vehicle, secure it against rolling away using the parking brake and/or wheel chocks.
11. Movable structural parts, such as the rear panel or underride guard, must be secured in their end positions.  
Special caution is required when opening and closing these parts.
12. Move all devices to the transport position before driving on public roads.
13. The tarpaulin must be closed when travelling on public roads.  
There must be no persons in the danger zone during spreading.
14. Always use a signaller when reversing.
15. All hydraulic hoses must be replaced after 6 years, regardless of their condition.
16. Only use the push-off body for its intended purpose.
17. The entire hydraulic system can reach high operating temperatures.  
Allow it to cool before touching and handling.
18. Speed restriction required with activated PTO / hydr. function.
19. Oil pressure from truck to hydraulic system: **min. 195 bar / max. 210 bar**.
20. The oil pressure is set to approx. 190 bar at the switch cabinet.
21. **Max. working pressure = 190 bar**
22. **Ensure that the rear panel is opened before you begin the push-off process.  
Otherwise the rear panel may be damaged.**

### 7.2.2 Loading the trailer

- When transporting bulk materials with a high volume weight, there is a risk of overloading and damaging the trailer.
- Observe the permitted total weight of the trailer.  
Exceeding the permitted total weight constitutes a violation of road traffic regulations.  
In addition, there is a risk of damage to the trailer.
- Before loading the trailer with bulk material, check the seals of the moving panel and sliding floor for damage.
- When travelling on public roads, ensure that the load is distributed evenly across the full length of the cargo space.  
Other load conditions could alter the driving characteristics.



Caution: Maximum working pressure: 190 bar.



In the case of materials that are difficult to move or that are highly adherent, the permissible load volume can be reduced by up to 10 percent.



**Standing on the loading area is prohibited.**

### 7.2.3 Emptying the trailer

- There must be no objects or persons within the 5 m danger area.
- During unloading, there is a risk of injury due to the rear panel swivelling out and the load being pushed out. Ensure that there are no persons in the danger area behind the trailer when unloading.
- Apply hydraulic pressure to the hydraulic circuit for the rear panel and push-off process.
- The rear panel swings out to the rear.
- Extend the moving panel and sliding floor hydraulically; the load is then pushed off.
- Retract the moving panel and sliding floor again.
- Close the rear panel.



- Ensure that the rear panel is opened before you begin the push-off process. Otherwise the rear panel may be damaged.
- First, move the sliding unit forwards. Then close the rear panel.
- Otherwise the sealing strip may be damaged.
- When closing the rear panel, operate the hydraulic circuit until the rear panel has fully lowered into its retainer.



**Particular care must be taken when reversing for emptying purposes.**



No valve control is possible when the power supply is switched off.

## 7.3 Push-off unit operation

### 7.3.1 Remote control operation of the push-off process

View of the remote control



Functions of the remote control

**Button 2:** Open rear panel

**Button 1:** Fully extend sliding carriage

**Button 3:** Fully retract sliding carriage

**Button 4:** Close rear panel



Functional sequence: A function can only be performed once the previous function has been completed.

**Button 3:** Retract sliding carriage

→ Press and hold for approx. 5 seconds; carriage moves back by approx. ½ metre

**Buttons 5 + 4:** Press buttons simultaneously

→ Rear panel closes without the sliding carriage being fully retracted.



This process bypasses the safety mechanism.  
Use at your own risk.

**Button 6:** *Unassigned*

**Button 7:** *Unassigned*

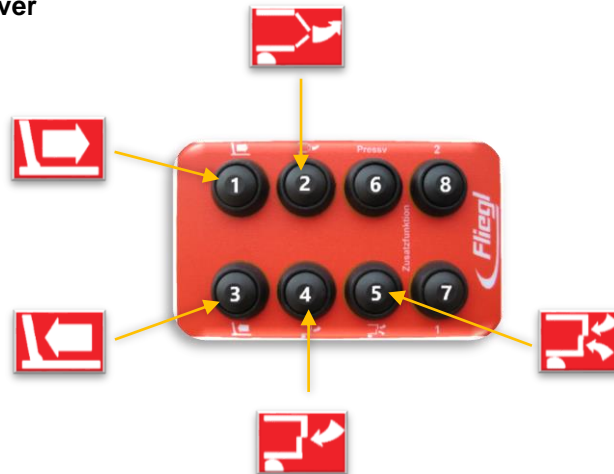
**Button 8:** *Unassigned*



The control box features a dead-man circuit.  
The functions are only performed when the relevant switch is pressed.

## Use and operation

### View of emergency cover



### Functions of the emergency cover

**Button 2:** Open rear panel

**Button 1:** Fully extend sliding carriage

**Button 3:** Fully retract sliding carriage

**Button 4:** Close rear panel



Functional sequence: A function can only be performed once the previous function has been completed.

**Button 3:** Retract sliding carriage

→ Press and hold for approx. 5 seconds; carriage moves back by approx. ½ metre

**Buttons 5 + 4:** Press buttons simultaneously

→ Rear panel closes without the sliding carriage being fully retracted.



This process bypasses the safety mechanism.  
Use at your own risk.

**Button 6:** *Unassigned*

**Button 7:** *Unassigned*

**Button 8:** *Unassigned*



The control box features a dead-man circuit.  
The functions are only performed when the relevant switch is pressed.

### 7.3.2 Operation of the electric sliding tarpaulin

#### Opening the sliding tarpaulin

1. Release the rubber holders of the sliding tarpaulin.
2. Open the electric sliding tarpaulin using the remote control.



Fig. 48: Remote control for sliding tarpaulin

#### Closing the sliding tarpaulin

1. Close the sliding tarpaulin using the remote control.
2. Secure the sliding tarpaulin to the rear panel using the rubber holders.



Fig. 49: Tarpaulin retainers



The tarpaulin must be closed when travelling on public roads.

### 7.3.3 Operation of the mechanical sliding tarpaulin (optional)

#### Opening the sliding tarpaulin

1. Release the rubber holders of the sliding tarpaulin.
2. Open the sliding tarpaulin using the hand crank.



Fig. 50: Hand crank (example)

#### Closing the sliding tarpaulin

1. Close the sliding tarpaulin using the hand crank.
2. Secure the sliding tarpaulin to the rear panel using the rubber holders.



Fig. 51: Tarpaulin retainers



The tarpaulin must be closed when travelling on public roads.

### 7.3.4 Operation of the sliding tarpaulin via the smartphone app (optional)

The MyCramaro app enables interaction with the tarpaulin system. As well as providing support directly on your smartphone, the app allows you to open and close the tarpaulin, access usage statistics, find an authorised service point, register maintenance work, receive error messages and download firmware updates from the control unit.

MyCramaro is the ultimate app for interacting with your Cramaro® tarpaulin system – directly from your smartphone!

**With MyCramaro you can:**

- Open and close the tarpaulin remotely
- Access usage statistics
- Locate a Cramaro® dealer
- Register a maintenance service
- Receive notifications if problems are detected during operation
- Switch from one tarpaulin to another
- Download firmware updates

**Cramaro system requirements:**

MyCramaro requires a system equipped with an electric controller with code 4WCE4C03044A or 4WCE4C03045A.

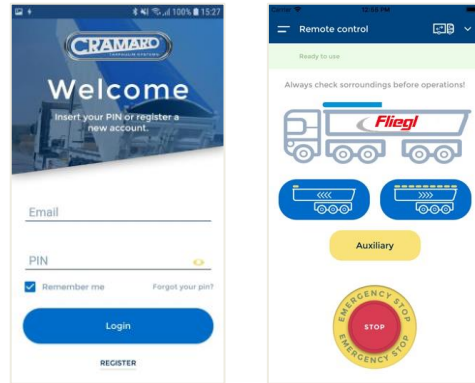


Fig. 52: App view



Fig. 53: Smartphone view

The corresponding apps can be found at:

**Play Store:** <https://play.google.com/store/apps/details?id=com.bss.Cramaro&hl=de&gl=US>



**Apple Store:** <https://apps.apple.com/de/app/mycramaro/id1370337303>



The tarpaulin must be closed when travelling on public roads.

### 7.3.5 Closing procedure for sliding tarpaulin

The sliding tarpaulin is not fully extended during closing.  
The tarpaulin stops in the predefined end position [1] (factory-set 30° opening angle).

Complete closure [2] requires manual intervention on the part of the operator.

This prevents accidental damage to the tarpaulin and its frame when opening the upper rear panel. Moreover, it is the operator's responsibility to ensure that the tarpaulin is always opened correctly.



Fig. 54: End position [1]



Fig. 55: Closed [2]



Fliegl Agrartechnik GmbH shall assume no liability whatsoever for such damage. The operating company itself bears all responsibility for this damage.

### 7.3.6 Preparation for approaching the paver

#### Folding up the mud flap

This ensures that:

- The lighting is not damaged.
- The plastic mudguard is not damaged.
- The mud flaps are not bent or destroyed.



#### Folding up the underride guard

This allows you to drive right up to the paver.



Bottom

Top

Fig. 56: Preparations



### 7.3.7 Approaching the paver correctly

**Procedure:**

- Reverse up to the paver.
- When at the paver, immediately open the rear panel and start the push-off process with increased speed (to overcome the slippage of the hydraulic pump and immediately achieve the required power).
- To enable unloading while driving, it is essential for the vehicle to approach the paver correctly – that is, *in a straight line and vertically* to the paver.
- The approach points are usually marked on the paver.

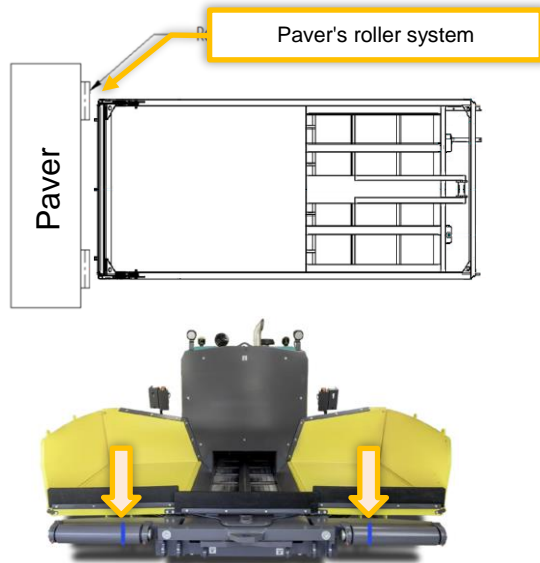


Fig. 57: Approaching the paver

### 7.3.8 Closing the rear panel

Immediate closing is not possible due to the overhang of the moving panel and the Hardox scrape rails.

The moving panel must be moved all the way back before loading.

Only spray those parts that can be reached from the ground with a separating agent.

→ It is not necessary to spray the inside of the body.



Fig. 58: Closing the rear panel

### 7.3.9 Driving away from the paver

- Retract the sliding floor (approx. 5 - 10 seconds)
- You must drive away from the paver while operating the "Flap" switch. Close the flap approx. half way.
  - This will prevent loose asphalt from falling onto unprocessed parts of the street.



Fig. 59: Driving away from the paver



### 7.3.10 Unloading process – partial unloading

Before closing the rear panel, move the slider back slightly (approx. 5 seconds or 0.5 metres) so that the material that has accumulated in the paver bunker has sufficient space.



Fig. 60: Partial unloading

### 7.3.11 Unloading process – push-off at intervals

**Function:**

Push-off at intervals means that the entire load cannot be pushed off in a single push-off process. (Approx. 30 - 50 cm per push-off process.)

The interval speed depends on the covering thickness of the asphalt layer as well as the bunker size and pave speed of the paver. This is especially important at the beginning (up to the halfway point), because otherwise too much material will collect in the paver causing the asphalt to overflow at the sides.

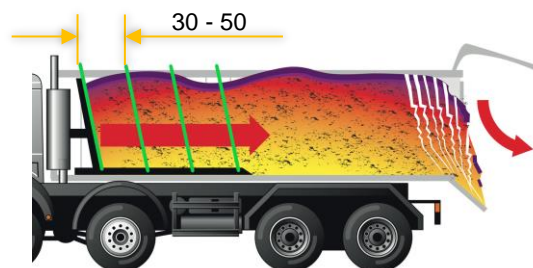


Fig. 61: Push-off at intervals (model may vary)

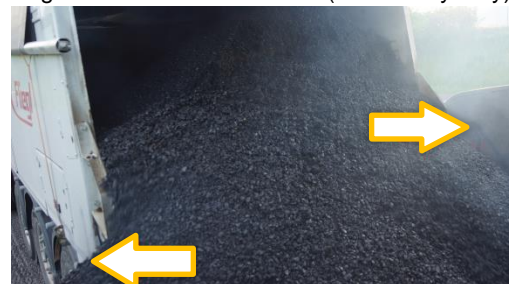


Fig. 62: Excessively fast push-off process



Can cause damage to mudguards, mud flaps, lighting etc.

### 7.3.12 Approach aid



The approach aid must be activated when approaching the paver.

When unloading the asphalt, the vertical load is reduced while the axle load is increased.

The approach aid can be used to achieve a higher vertical load when approaching after emptying, thereby reducing the load on the front axle.



Fig. 63: Approach aid

## 7.4 Discharge chute and centring plates – usage

The discharge chute (1) and centring plates (2) are used, for example, to pour asphalt into wheelbarrows or to fill road ruts.

Centring plates are required for use on asphalt pavers and are also used for road construction. For other applications, the centring plates must be removed.

**Important:** Before closing the rear panel, check whether any objects have become wedged on the centring plates.



Fig. 64: Discharge chute and centring plates



The discharge chute must be removed for earthworks.

## 7.5 Damage resulting from non-compliance with specifications



Fliegl Agrartechnik GmbH shall assume no liability whatsoever for such damage. The operating company itself bears all responsibility for this damage.

### 7.5.1 Consequences of improper loading

Due to unbalanced loading, the thermometer does not indicate the correct value.

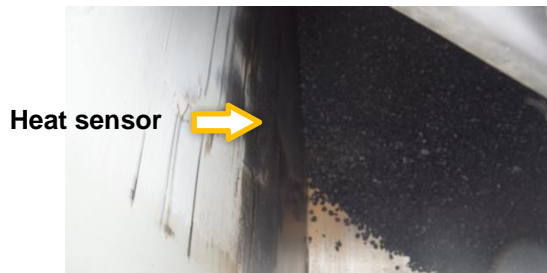


Fig. 65: Position of the heat sensors

Consequences of incorrect loading:

- Damage to cylinders, hydraulic lines and hydraulic screw couplings
- Damage to cable lines, hydraulic hoses and sockets
- Damage to any tarpaulin structure on the vehicle



Fig. 66: Asphalt deposits on the slide rail

## 7.5.2 Consequences of incorrect operation

### Not (fully) opened

Possible damage:

- Mud flaps bent due to heating
- Damage to mud flaps
- Damage to lighting
- Damage to mudguards

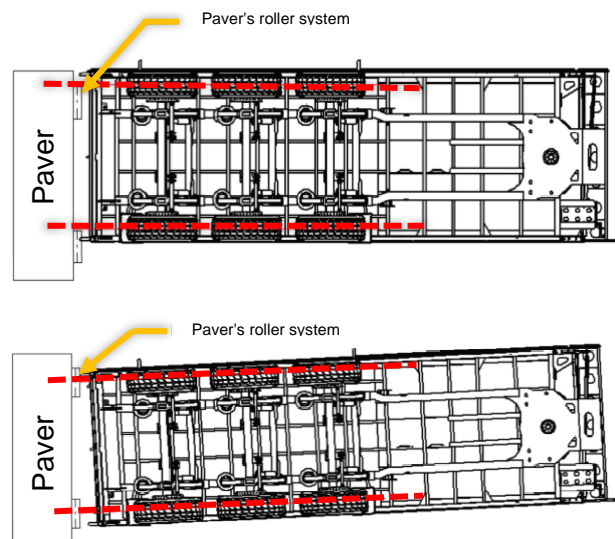


Fig. 67: Mud flaps

### Approaching the paver incorrectly

Possible damage:

- Damage to tyres
- Damage to air bellows
- Damage to lighting



The paver features (type-dependent) components that can cause damage. Therefore, depending on the paver in use, it must be ensured that these parts do not cause any damage.



Fig. 68: Incorrect approach

## 8. Basic equipment (standard, optional)

### 8.1 Draw gear

Fifth-wheel plate for coupling the push-off semitrailer  
(fitted to the towing vehicle)



Fig. 69: Fifth-wheel plate (example shown)

2" kingpin on the push-off semitrailer frame



Fig. 70: Kingpin (example shown)

### 8.2 Marker lights

Marker light types

- Side marker lights, right/left (yellow)
- Clearance lights, rear (white/red)
- Position lights, front (white)



Fig. 71: Marker lights

### 8.3 Underride guard [type-specific]

#### 8.3.1 Mechanically folding

An underride guard is fitted to the rear of the body.  
It can be folded up mechanically for emptying purposes.  
This process must be completed before working with the machine.

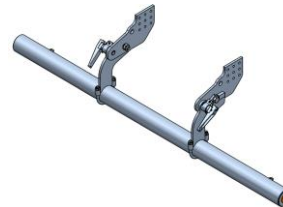


Fig. 72: Folding underride guard

See also section 7.3.6



The underride guard must be folded down when travelling on public roads.

#### 8.3.2 Pneumatically folding (optional)

An underride guard is fitted to the rear of the body.  
It can be folded up pneumatically for emptying purposes.  
This process must be completed before working with the machine.

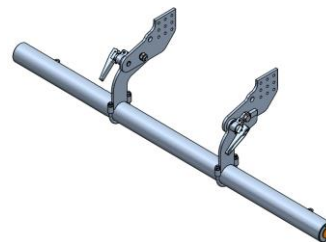


Fig. 73: Folding underride guard

See also section 7.3.6



The underride guard must be folded down when travelling on public roads.



## 8.4 Thermometer

2 thermometers are fitted to the side of the body.  
The temperature in the front and rear area can be measured.

See section 8.7



Fig. 74: Thermometer

## 8.5 Reversing camera [type-specific]

A reversing camera is recommended to improve visibility when reversing.



Fig. 75: Reversing camera

## 8.6 Air suspension

Raising (G1) and lowering (G2) of the air-sprung trailer.  
These positions should not be used for general applications.

Exceptions: Brief manoeuvring, cleaning work, parking the trailer.

Travel and working position of trailer = position "G".

This position is suitable for general applications.

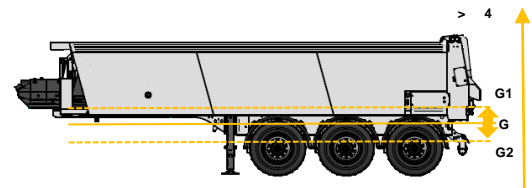


Fig. 76: Air suspension height (model may vary)

## 8.7 Thermal pack [type-specific]

- **Side walls, body floor, bulkhead and rear panel thermally insulated** – planked with aluminium plates and painted
- **Fliegl Isotherm** complete moisture resistance, NO water absorption, high-temperature resistance (continuously over 200°C), dimensionally stable side walls up to 70 mm thick, body floor with up 120 mm thick insulation
- "Asphaltprofi-Thermo" **sticker** with graphic
- **Manufacturer certificate for thermal vehicles**
- Bolted **centring plates** on rear panel for paver operation
- **4 mechanical temperature indicators** on side walls
- Acc. to ARS temperature-controlled vehicles 10/013

## 8.8 Thermal sliding tarpaulin

### 8.8.1 Mechanical drive

Type Cabriole-ADR, mechanically controllable from the ground.  
See sections 7.3.3 and 15.

### 8.8.2 Electric drive

Type Cabriole-ADR, 24 V electric drive with remote control.  
See sections 7.3.2, 7.3.4 and 15.

## 8.9 Contour marking according to ECE 104

Contour markings are highly reflective materials that are applied to vehicles to improve their visibility. In Member States of the European Union, these markings are legally required for certain new vehicles since 2013.

## 8.10 Automatic lift axle [type-specific]



The axle is only lifted in empty state.  
The lift axle is always lowered in park position.

The lifting and lowering of the lift axle is controlled automatically, depending on the loading condition. When the lift axle is raised, it remains in this position until a higher load state exists. When the ignition is switched off, the lift axle function is deactivated and the lift axle is lowered.



Fig. 77: Lift axle

### 8.10.1 Pneumatic approach aid



When using the approach aid, only the air from the front axle air bellows is let out.  
The axle is not lifted, however.

An optional approach aid is available for all ASS semitrailers. This helpful function for semitrailers can be used to temporarily raise the load on the drive axle of the towing vehicle. The driver is thus able to activate the approach aid in order to improve traction in the case of poor road conditions.

The air is drained from the air bellows of the first axle, thus increasing the traction of the towing vehicle.

Your towing vehicle must be suitably equipped to operate the approach aid.



Fig. 78: Approach aid



Fig. 79: Example of switch



Ensure that this function is available in your towing vehicle.  
This is an essential prerequisite for using the pneumatic approach aid.

## 9. Accessories

### 9.1 Reversing camera

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See section 8.5.

### 9.2 Working lights

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#### 9.2.1 Rear

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The working light can be used to illuminate the working area behind the ASS.



Fig. 80: Working light

#### 9.2.2 Light set

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4x working lights  
2x at rear  
1x on left in travel direction (close to supporting foot)  
1x on right in travel direction (close to supporting foot)



Fig. 81: Working light

### 9.3 Centring plate

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Centring plates are required for paver operation.  
The plates are fitted on the left/right at the rear of the vehicle.

See section 8.7

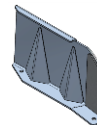


Fig. 82: Centring plate

### 9.4 Discharge chute

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The discharge chute is used, for example, to fill wheelbarrows with asphalt.

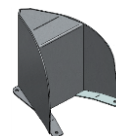


Fig. 83: Discharge chute

### 9.5 Automatic lift axle and approach aid

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See section 8.6.

### 9.6 Thermal pack

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See section 8.7.

### 9.7 Additional accessories

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- Air suspension valve for 2nd ride height
- Mechanical potentiometer / truck body
- Spiral connecting cable
- Paver brake

## Equipment

### 9.8 Temperature measurement with Fliegl Charge Temperature (FCT)

Complete temperature measurement for asphalt construction, from mixers to pavers

#### Function:

- 4 or 5 sensors continuously measure the temperature of the trailer load.



Fig. 84: Fliegl FCT

#### System requirements:

##### Open-system

- Compatible with all asphalt mixers
- Installation in any thermal dumper
- Compatible with all systems, such as:



Fig. 85: Mobile Bluetooth printer



Fig. 86: Fliegl app

#### Requirements:

- Uninterrupted temperature measurement

#### System configuration:

- Fliegl Charge Temperature (FCT)
- Fliegl app
- 4/5 sensors + wiring
- Connection to CAN bus + wiring
- Mobile Bluetooth printer
- Incl. fitting at authorised workshop



Fig. 87: Sensors, cables

The corresponding apps can be found at:

**Play Store:** <https://play.google.com/store/apps/dev?id=6061390712442652838>

**Apple Store:** <https://itunes.apple.com/de/developer/fliegl-agrartechnik-gmbh/id467959860>



With the Fliegl DFU app, which is available both for iOS and for Android, new features and enhancements can be loaded directly to the Fliegl Tracker from your mobile phone. This removes the need for on-site visits from our service technicians and you do not have to send in any hardware.



## 10. Service and maintenance

**Secure the parked tractor/trailer combination and keep the ignition key in a safe place  
Read the operating instructions.**

Below you will find information on troubleshooting and maintenance of the machine.

Regular maintenance in accordance with the maintenance plan is essential to the efficient use of the machine.

### 10.1 Back office & technical support

**Please contact:**

Fliegl Bau- & Kommunaltechnik GmbH  
Bürgermeister-Boch-Straße 1  
84453 Mühldorf am Inn, Germany



Telephone: +49 (0)8631 / 307 - 381  
Telephone: +49 (0)8631 / 307 - 382  
Fax: +49 (0)8631 / 307 - 553  
E-mail: [baukom@fliegl.com](mailto:baukom@fliegl.com)  
Internet: [www.fliegl.com](http://www.fliegl.com)

### 10.2 Replacement parts



For a detailed list of all relevant replacement parts, refer to the replacement parts list for the **ASS push-off semitrailer** (separate document).

**Contacts:**

**Service, warranty, replacement part orders:**

Fliegl Bau & Kommunaltechnik GmbH  
Service Department  
Bürgermeister-Boch-Straße 1  
84453 Mühldorf am Inn, Germany

Telephone: +49 (0)8631 / 307 - 461  
Telephone: +49 (0)8631 / 307 - 462  
Fax: +49 (0)8631 / 307 - 550  
E-mail: [service@fliegl.com](mailto:service@fliegl.com)



When ordering replacement parts, note also the instructions in section 1 and specify the relevant data from the type plate of your vehicle in the order.

### 10.3 Fliegl VIN (vehicle ID number) and type plate

- 1 Vehicle manufacturer
- 2 Vehicle class
- 3 EU type approval number
- 4 Vehicle ID number (VIN)
- 5 Total weight (axle load)
- 6 Drawbar load
- 7 Axle load of 1st axle
- 8 Axle load of 2nd axle
- 9 Axle load of 3rd axle
- 10 Vehicle type
- 11 Trade name
- 12 Trailer load based on tractor weight (T) and brake type (B)

Fliegl Agrartechnik GmbH Bürgermeister-Boch-Straße 1 D-84453 Mühlforf am Inn					
1 Fliegl Agrartechnik GmbH					
2 R3a					
3 e1*167/2013*00006*00					
4 WGJ112213FM400???					
5 18000					
6 A-0: 3000					
7 A-1: 9000					
8 A-2: 9000					
9 A-3: ----					
10			11		
12		T-1	T-2	T-3	
	B-1	---	---	---	
	B-2	---	---	---	
	B-3	---	---	---	
	B-4	---	---	---	






(example of sign)

Fig. 88: Breakdown of type plate

## 10.4 Operational maintenance

### 10.4.1 General instructions for maintenance

Operational maintenance helps to ensure trouble-free and efficient use of the machine.  
 Operating personnel can perform this work after receiving appropriate instruction.

Maintenance task	Interval						
	After first oper. hours	Daily	50 oper. hours	100 oper. hours	1000 oper. hours	2500 oper. hours	As needed
<b>Chassis</b>							
Check tyre pressures		X					
Check wheel nuts to ensure correct tightening torque	X			X			
Lateral play of wheel hub bearing 	X		X				
Drain the water from the compressed air reservoir		X					
Check the wear on brake linings				X	X		
Check the actuating travel of the brake cylinder and adjust as necessary* 			X				
Check the brake system and parking brake for correct function		X					
Check the ALB and tensioning chain to ensure they are securely fastened and undamaged			X				
Check the entire compressed air system for function, leaks and secure fastening				X			
Clean the line filters of the brake hoses 				X			
Check the freedom of movement of the wheel bearings 				X			
Lubricate all lubrication points on the trailer			X				
Check all screw connections on the chassis and body			X				
Clean the trailer							
<b>Body</b>							
Check the seals of the moving panel and sliding floor			X				
Check the slide rails of the moving panel and sliding floor.				X			
Check the hydraulic system for leaks <sup>6)</sup>		X					
Check the filter in the hydraulic system and replace if necessary 			X				X
Check the lighting equipment on the trailer		X					
Check the safety devices							
Check the display elements		X					
Check the monitoring equipment		X					

\*Every time the brake linings are replaced

**General instructions:**

- For commercial vehicles, check the screw connections after the first 10 operating hours
- Retighten all loose screw connections as necessary
- W = workshop task
- Or weekly
- Or quarterly
- Replace hydraulic hoses every 6 years



Some of the above tasks depend greatly on the type of use and the ambient conditions. The cycles specified above are the minimum requirement. Different maintenance cycles may be needed in individual cases.

**In this case:**



- Correct the values given in these operating instructions.
- Inform operating personnel about the applicable changes.

## Service and maintenance

---

### Frame:

Check the suspension, axle mountings and screw connections every day and retighten if necessary. If technical changes are found in the springs or too much play on the bearing bolts, rectify the problem immediately. Check the mounting bolts on the kingpin after the first 10 operating hours, then check every 50 operating hours to ensure they are firmly seated and retighten if necessary.

### Axles:

The following excess strain shortens the service life of the bearings and leads to axle damage:

- Driving over edges
- Excessively high driving speeds

### Adjusting the wheel hub bearings:

The ideal axial play for the wheel hub bearings is between 0.02 and 0.05 mm.



1. To adjust the wheel bearings, take off the wheel caps and remove the safety cotter pin or safety spring cotter.
2. Tighten the castle nut while simultaneously turning the wheel hub until you feel slight resistance.
3. Turn the axle nut back to the next cotter pin hole and retighten.
4. Check the running of the wheel bearing, and check for rocking. The wheel must not offer any resistance when turned and there should be no noticeable rocking at the wheel rim or brake drum.
5. Re-apply the wheel cap.
6. Never drive without wheel caps as penetrating water and dust will destroy the bearings.

## 10.4.2 Cleaning the vehicle

---



There is a risk of injuries on movable parts when cleaning work is performed with the trailer coupled. When performing cleaning tasks, turn off the towing vehicle engine, apply the parking brake and remove the ignition key. Empty the trailer completely before cleaning the inside.

During the first four weeks, clean the trailer only with clear water and do not use a high-pressure cleaner. If the trailer is delivered in winter, it must be washed immediately after it is received to remove any road salt that has collected on the trailer.

### Note the following rules for upkeep of the trailer:

- Wash the trailer only with clear water without any cleaning additives to prevent paint damage. Repair any paint damage immediately.
- When cleaning with a high-pressure cleaner, maintain a distance of at least 400 mm with the spray nozzle.
- The water temperature must not exceed 60° when cleaning.
- Clean the trailer after every use in winter to prevent damage from road salt.
- Clean impurities out of the dirt traps regularly. This can be done with a high-pressure cleaner.



When transporting aggressive substrates, the trailer must be thoroughly cleaned immediately after transport. This will prevent damage to the protective zinc layer.

### Note the following rules for cleaning and maintaining the electrical connections:

As a rule, electrical connections must not be cleaned with water or mechanical objects.

We recommend that you use compressed air at 6 to 8 bar in combination with an air blow gun.

### 10.4.3 Corrosion protection

Assemblies and components of the vehicle are supplied from the factory with comprehensive corrosion protection. This corrosion protection can be damaged by a wide range of external influences. It must therefore be checked on a regular basis and restored if necessary.



**Caution: risk of damage!**

**Road salt is highly aggressive and can damage the corrosion protection.**

**Therefore, observe the following during winter:**

- **Clean the vehicle more frequently**
- **Carefully remove any road salt residue**
- **Check the corrosion protection more frequently and, if necessary, have it restored**

To avoid corrosion:

- Check the corrosion protection more frequently when using the vehicle in winter.
- Check the vehicle, and the compressed air and hydraulic lines in particular, for corrosion on a regular basis.
- Have damaged corrosion protection restored by a specialist workshop.
- Have a specialist workshop remove any corrosion and apply corrosion protection to the affected areas.



### 10.4.4 Lubrication schedule

The lubrication schedule applies to all Fliegl push-off semitrailers.

Failure to ensure correct and sufficient lubrication carries a risk of costly repairs at a later stage. Dispose of old oil and grease in the correct manner.

**Lubricants to use:**

Lubricants	Type	Quality
Greases	Lithium grease	DIN 51 502, KP 2K
Oils	Hydraulic oil HLP 46	51524-2



**Notice!**

There is a risk of injury due to rotating and movable parts when lubricating. When lubricating the towing vehicle engine, apply the parking brake and remove the ignition key.

Every 8 oper. hrs.	Every 50 oper. hrs.	Every 100 oper. hrs.	Every 500 oper. hrs.
- Guide rails of sliding unit	- Kingpin and fifth-wheel plate	- Parking brake (on pneumatically operated trailers) - Brake linkage - Spring bolts - Centre bearings - Pivot point of steered trailing axle - Pivot point of hydraulic rear panel	- Wheel hub bearings

### 10.4.5 Lubricating points on vehicle



Fig. 89: Lubricating points

### 10.4.6 Tyres and wheels

Check and adjust the tyre pressure every 3 months on cold tyres based on the following table:

Dimension	Load index PR/LI	Tyre pressure [bar]	ASS 272 two-axle	ASS 272 Compact two-axle	ASS 372 Mega three-axle	ASS 372 three-axle	ASS 377 three-axle	ASS 377 three-axle extra long	ASS 377 three-axle extra long telescopic	ASS 382 three-axle	ASS 477 4-axle Quad extra long telescopic
385/65 R22.5	New	9.00	x		x	x	x	x	x	x	x
445/65 R22.5	New	7.90	x	x							



The numbers in the table may differ depending on the tyre manufacturer. Not all tyres are suitable for speeds > 40 km/h. Failure to follow these instructions can result in damage to or destruction of the attachment or its individual components. Only use approved tyres that are specified in the table or have been authorised by the vehicle manufacturer.

Use a torque wrench to tighten the wheel nuts crosswise according to the table below.

Thread	Tightening torque (max.)
M18 x 1.5	290 Nm
M20 x 1.5	380 Nm
M22 x 1.5	510 Nm



For more information, refer to section 13.2.

#### Typical hazards when working with tyres and wheels:

- Incorrect tyre filling pressure
- Road damage
- Lack of maintenance
- Excessive load or high speed



The service life of tyres depends on many different factors and therefore cannot be predicted with sufficient accuracy.

#### Physical effects:

- Age
- Wear
- Damage

## Service and maintenance

---

### Improper handling

- Tyres are not routinely examined for signs of wear or damage.
- Changes to handling characteristics are ignored.
- Tyre repairs are not performed professionally.
- The tread depth is not checked regularly and the tyre is not replaced before reaching the minimum legally permitted tread depth.
- The correct tyre pressure is not maintained.
- A tyre that was flat or had an excessively low tyre pressure is refilled.
- Tyres are not fitted or removed correctly.
- Tyres are not balanced after being fitted or changed.
- Different, unapproved tyre dimensions are used.
- Non-matching wheel and rim sizes are used and deformed or modified wheels are fitted.
- Tyres are fitted with a speed symbol and load capacity index that does not match the vehicle.
- Tyres are stored incorrectly.

### Environmental influences

- Temperature extremes
- Rain, ice, snow
- Oil and lubricants



Some of the above tasks depend greatly on the type of use and the ambient conditions. The cycles indicated above (see 10.4.1) are the minimum requirement. Different maintenance cycles may be needed in individual cases.

## 10.5 Maintenance of the brake system

---

- Adjustments and repairs to the brake system must only be performed by specialist workshops or professional brake repair services.
- Have the brake system checked thoroughly on a regular basis.
- Always stop the towing vehicle immediately in the case of any brake system malfunctions. Have any malfunctions rectified immediately.
- Park the machine securely and secure it against unintentional lowering and rolling away (wheel chocks) before performing any work on the brake system.
- Exercise particular caution when performing welding, burning and drilling work close to brake lines.
- Always conduct a brake test after adjusting or maintaining the brake system.





## 10.5.1 Maintenance of the compressed air brake system



Do not alter the defined settings of the brake valves.

### Draining the compressed air reservoir

Every day, the water must be drained from the compressed air reservoir by pulling on the ring on the underside.

(If your vehicle features an additional reservoir for the tyre pressure control system, it must also be drained.)

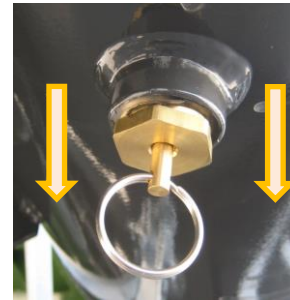


Fig. 90: Reservoir

### Line air filter

- Clean the line filter every 3 to 4 months, depending on the relevant operating conditions.
- To clean the line filter, remove the filter insert and blow it out with compressed air.
- Replace any damaged filter inserts.

The filter housing (1) contains a sieve insert (3). If the filter inserts in the line air filters are clogged, air flows around them without being filtered. As a result, there is no filter protection for downstream attachments, meaning that the filter inserts must be cleaned at regular intervals.

1. Before opening the filter housing, depressurise the pipes.
2. To clean the sieve filter (3), remove the locking tab (8).  
Be aware of the back-pressure from the cap (7).
3. If necessary, rinse the sieve filter with benzine and blow it out.  
Always replace damaged sieve inserts and O-rings.

### Individual parts of the line air filter

- 1) Filter housing
- 2) Compression spring
- 3) Sieve insert
- 4) Spring plate
- 5) Compression spring
- 6) O-ring
- 7) Cap
- 8) Locking tab

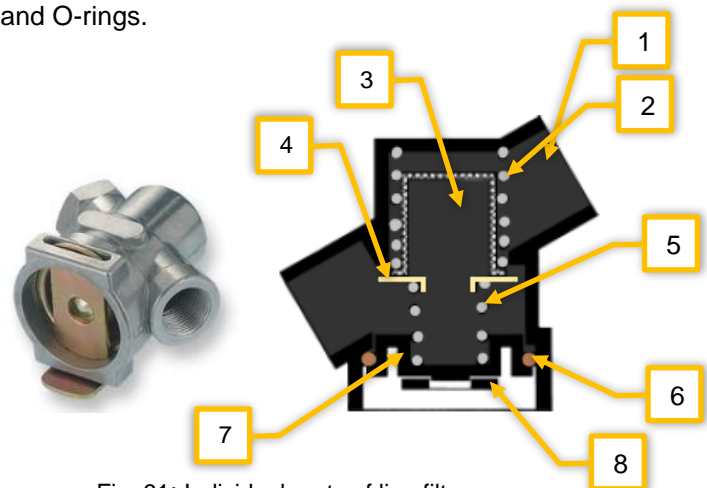


Fig. 91: Individual parts of line filter

**Brake cylinder**

Check the brake cylinder. Only up to 2/3 of the brake cylinder stroke should be used. If this is exceeded, the brake system must be re-adjusted or repaired by a specialist brake workshop.



**Mechanical ALB control**

ALB = automatic load-dependent brake force regulation. The setting length is specified on the ALB plate.



**This setting must not be changed.**

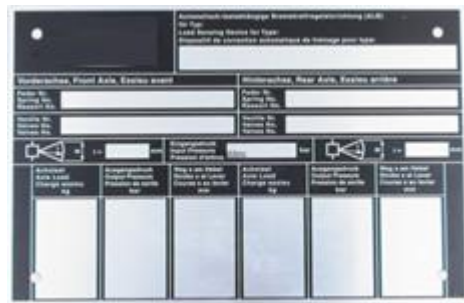


Fig. 92: Setting length on ALB regulator and ALB plate on the vehicle

**10.5.2 Maintenance of the air suspension**

Check all components for damage and wear every 200 operating hours.

Check air bellows for external damage (cracks, abrasion, creasing, trapped foreign bodies etc.).

Replace any damaged air bellows.

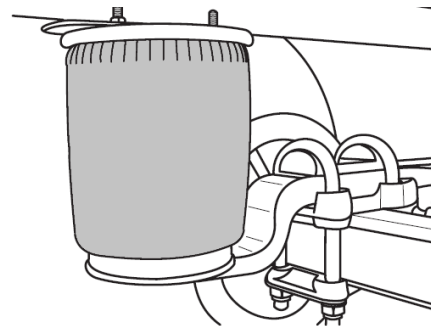


Fig. 93: Air suspension



The air spring must only be filled with compressed air when installed or with the designated mechanical height restriction. Risk of injury!



Some of the above tasks depend greatly on the type of use and the ambient conditions. The cycles indicated above are the minimum requirement. Different maintenance cycles may be needed in individual cases. See section 13.2

## 10.6 Checking the seals on the moving panel and sliding floor

- Check the moving panel strips on the moving panel and on the sliding floor for damage.
- If the integrity of the moving panel strips has been impaired due to damage and/or wear, they must be replaced.
- Undo and remove the fixtures of the moving panel strip.
- Apply the moving panel strip to the moving panel using the fixtures.
- Check the guide rails of the moving panel and sliding floor.

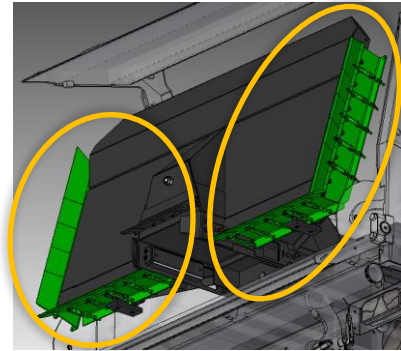


Fig. 94: Checking the moving panel strips on the moving panel and sliding floor



Should it become necessary to replace the moving panel strips, please contact the manufacturer (see section 10), who will provide you with the necessary instructions.

## 10.7 Checking the scrapers

The movement of the scrapers can reduce the spacing between the contact surfaces.

This restricts the mobility of the individual scrapers. To improve their function, the scrapers can be relief-ground using an angle grinder, for example. The resulting shape should resemble that of a V.

To process the contact surfaces, insert a lever (e.g. screwdriver) under the relevant scraper to lift it up.



Fig. 95: Checking the scrapers

## 10.8 Cleaning the rear panel

Before closing the rear panel, it must be cleaned with a trowel.

If the asphalt is not removed immediately, cleaning becomes much more difficult.

To facilitate the cleaning process, move the sliding carriage approx. 200 mm forward. Then move it back again so that the last residue is removed.



Fig. 96: Cleaning

## 10.9 Guide rail maintenance



- Before climbing into the body, secure the vehicle against accidental activation.
- Do not enter the body without a safety guard positioned outside the vehicle.



In the case of questions or problems, please contact the manufacturer.  
(See section 10)

### 10.9.1 Adjusting the guide bars

The guide bars must be checked and readjusted every 40 operating hours.

#### Procedure

Have sensor strips with a thickness of 1 mm on-hand. Loosen the lock nuts ① and insert the 1 mm distance sensors before tightening the adjusting screw until the sensor plate is clamped in place. Do this along the entire length of the bulkhead guide on both sides.

2 lubricating points ② are provided for lubrication in each case. This process must only be carried out with dry loads that do not impair the lubrication. Asphalt is self-lubricating.

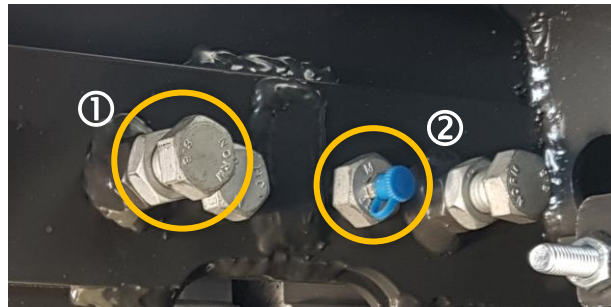


Fig. 97: Adjusting the guide bars



When working with filling materials or cement/lime-containing materials, the guide bars should be cleaned/rinsed at regular intervals using a high-pressure cleaner to avoid any hardening. This is particularly important in the case of extended downtimes such as holidays.

### 10.9.2 Adjusting the scrapers

The scrapers on either side must be checked for wear on a regular basis (at least weekly) or re-adjusted by tightening the spring-loaded screws.

Gently tighten the screws so that the scraper has some spring in it. Then secure the screws with Loctite (threadlocker).



Fig. 98: Adjusting the scrapers



The spacing must be no more than 1 mm.

## 10.10 Important information on the hydraulic system



- The dimensions of hydraulic couplings can vary slightly between different manufacturers, as a result of which the connection may not form a tight seal.
- Common causes of faults:
  - One of the screw couplings is not fully tightened  
→ return blocked/reduced
  - Return filter on semitrailer tractor closed  
→ back pressure builds up
  - Working/operating pressure on towing vehicle not set correctly  
e.g. 150 bar instead of 200 bar

## 10.11 Tightening torques for screws

	Dimension	Pre-tension force (kN)					Tightening torque (Nm)				
	Strength class	4.6	5.6	8.8	10.9	12.9	4.6	5.6	8.8	10.9	12.9
Coarse thread	M 4 x 0.70	1.29	1.71	3.9	5.7	6.7	1.02	1.37	3.0	4.4	5.1
	M 5 x 0.80	2.1	2.79	6.4	9.3	10.9	2.0	2.7	5.9	8.7	10
	M 6 x 1.00	2.96	3.94	9.0	13.2	15.4	3.5	4.6	10.0	15.0	18.0
	M 8 x 1.25	5.42	7.23	16.5	24.2	28.5	8.4	11.0	25.0	36.0	43.0
	M 10 x 1.50	8.64	11.5	26.0	38.5	45.0	17.0	22.0	49.0	72.0	84.0
	M 12 x 1.75	12.6	16.8	38.5	56.0	66.0	29.0	39.0	85.0	125.0	145.0
	M 14 x 2.00	17.3	23.1	53.0	77.0	90.0	46.0	62.0	135.0	200.0	235.0
	M 16 x 2.50	23.8	31.7	72.0	106.0	124.0	71.0	95.0	210.0	310.0	365.0
	M 18 x 2.50	28.9	38.6	91.0	129.0	151.0	97.0	130.0	300.0	430.0	500.0
	M 20 x 2.50	37.2	49.6	117.0	166.0	19.0	138.0	184.0	425.0	610.0	710.0
	M 22 x 2.50	46.5	62.0	146.0	208.0	243.0	186.0	250.0	580.0	830.0	970.0
	M 24 x 3.00	53.6	71.4	168.0	239.0	280.0	235.0	315.0	730.0	1050.0	1220.0
	M 27 x 3.00	70.6	94.1	221.0	315.0	370.0	350.0	470.0	1100.0	1550.0	1800.0
	M 30 x 3.50	85.7	114.5	270.0	385.0	450.0	475.0	635.0	1450.0	2100.0	2450.0
	M 33 x 3.50	107.0	142.5	335.0	480.0	56.0	645.0	865.0	2000.0	2800.0	3400.0
	M 36 x 4.00	125.5	167.5	395.0	560.0	680.0	1080.0	1440.0	2600.0	3700.0	4300.0
M 39 x 4.00	151.0	201.0	475.0	670.0	790.0	1330.0	1780.0	3400.0	4800.0	5600.0	

	Dimension	Pre-tension force (kN)			Tightening torque (Nm)		
	Strength class	8.8	10.9	12.9	8.8	10.9	12.9
Fine thread	M 8 x 1.00	18.1	26.5	31.0	27.0	40.0	47.0
	M 10 x 1.25	28.5	41.5	48.5	54.0	79.0	93.0
	M 12 x 1.25	43.0	64.0	74.0	96.0	140.0	165.0
	M 12 x 1.50	40.5	60.0	70.0	92.0	135.0	155.0
	M 14 x 1.50	58.0	86.0	100.0	150.0	220.0	260.0
	M 16 x 1.50	79.0	116.0	136.0	230.0	340.0	390.0
	M 18 x 1.50	106.0	152.0	177.0	350.0	490.0	580.0
	M 20 x 1.50	134.0	191.0	224.0	480.0	690.0	800.0
	M 22 x 1.50	166.0	236.0	275.0	640.0	920.0	1070.0
	M 24 x 2.00	189.0	270.0	315.0	810.0	1160.0	1350.0
	M 27 x 2.00	245.0	350.0	410.0	1190.0	1700.0	2000.0
	M 30 x 2.00	309.0	440.0	515.0	1610.0	2300.0	2690.0

## 10.12 Sliding tarpaulin

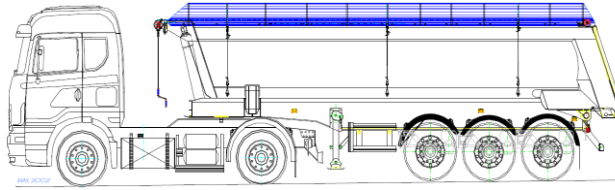


Fig. 99: Sliding tarpaulin (model may vary)

### Connection diagram:

Clamp the FASTON eyelets onto the cable from which the insulation was previously removed.

Insert the FASTON eyelets as shown and tighten the nuts.

Fasten the plastic support using the 4 supplied screws and tighten the CABLE CLAMP.

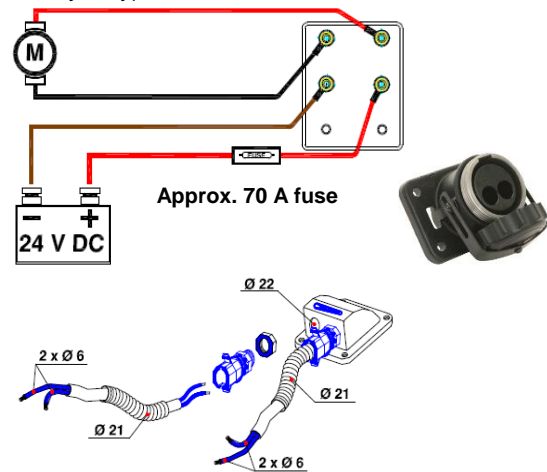


Fig. 100: Connection diagram



There must be no faults between the contacts and the frame or cabinet.



Power is supplied from the towing vehicle to the trailer via the NATO socket on the trailer.



**RISK OF SHORT CIRCUIT!**


## 10.13 Troubleshooting and fault elimination



**Special caution when rectifying faults.**

- Consult trained service personnel or
- visit a specialist workshop.
- If necessary, contact the manufacturer's customer service department.

### 10.13.1 List of warning and fault signals

Fault / error message	Possible cause(s)	Remedy
Compressed air brake with ALB valve	Braking effect too low	Identify the cause of lacking brake force
	Brake force too high	Visit a specialist workshop 
Push-off not possible	Hydraulics not connected	Check the hydraulic connection and connect if necessary
	Fill level of loaded material too high	Check fill quantity and reduce if necessary
Lighting faulty	No lighting	Check and establish the power supply
	Fuse tripped	Identify the cause of the tripped fuse
	Defective cable	Rectify the error and replace the fuse
	Bulb failure	Open the bulb housing  Replace the faulty bulb with a bulb of the same rating; perform a function check  Close the bulb housing
Cylinder moves too slowly or not at all	Insufficient oil in the hydraulic system	Check the oil level and top up if necessary
	Hydraulic coupling connected incorrectly	Check the connections
	Hydraulic coupling faulty	Check the coupling and replace if necessary
	Insufficient oil flow	Check the tractor hydraulics



## Service and maintenance

Fault / error message	Possible cause(s)	Remedy
Hydraulic cylinders extend but then do not retract	The piston seal in the cylinder is faulty, meaning that the piston and ring face are in direct contact	Check the cylinders individually for leaks and replace the faulty cylinder if necessary
Rear panel does not open fully	Load in trailer too tightly compacted  Working pressure	Loosen material  If necessary, contact customer service to have working pressure increased
Low lift and break-out forces	Insufficient oil pressure	Check the tractor hydraulics
<b>No oil return flow possible, resulting in back-up and significant reduction in thrust</b>	<b>Working pressure set to low pressure</b>  <b>Screw couplings faulty due to wear, play, loosening, insufficient tightening</b>  <b>Hydraulic shut-off valve blocked due to solid particles in oil</b>	<b>Increase working pressure</b>  <b>Check couplings and replace if necessary</b>  <b>Check shut-off valve and replace if necessary</b>



Maintenance, repairs and conversion work on the trailer must be performed only when hydraulic operation is switched off and the hydraulic connections are decoupled. Secure the towing vehicle to prevent accidental start-up and rolling away.



- The dimensions of hydraulic couplings can vary slightly between different manufactures, as a result of which the connection may not form a tight seal.
- Common causes of faults:
  - One of the screw couplings is not fully tightened  
→ return blocked/reduced
  - Return filter on semitrailer tractor closed  
→ back pressure builds up
  - Working/operating pressure on towing vehicle not set correctly e.g. 150 bar instead of 200 bar

### 10.13.2 Control unit activation not possible

The control unit cannot be switched on.

Possible cause	Remedy
No supply voltage	Determine the cause of the lack of supply voltage Apply power supply voltage
Engine protection circuit breaker or fuse tripped	Identify the cause of the tripped fuse
Engine faulty	Rectify the fault
Defective cable	Switch on the engine protection circuit breaker or fuse
Control unit fault	Consult an electronic control systems specialist

### 10.13.3 Start activation not possible

The start enable cannot be switched on.

Possible cause	Remedy
Emergency stop device operated	Identify the cause for tripping of the emergency stop device Eliminate the risk Unlock the emergency stop device
Open the safety door or maintenance door	Close doors Check safety switch
Control unit fault	Consult an electronic control systems specialist

## 10.14 Decommissioning

### 10.14.1 Temporary shutdown

Switch off the machine and all attached assemblies, disconnect the machine; see section 7.1.  
Clean and maintain the machine (see section 10.4).



After a temporary shutdown, a new start-up must take place.  
See also section 5.3.

### 10.14.2 Storage conditions

For short and medium periods (up to 2 years), the machine can be stored without special measures in the ambient conditions specified in the technical data.

For long-term storage, measures must be taken to prevent corrosion:

1. Clean the entire trailer thoroughly inside and out, then leave the trailer to dry.
2. Spray the entire trailer inside and out with a film of oil.
3. Store the Fliegl trailer in a dry, clean and rust-free place.  
We recommend covering the trailer with a tarpaulin to protect it against dust etc.
4. Deactivate the pneumatic, hydraulic and electrical supplies to the machine.  
Protect connections.
5. Lubricate the Fliegl push-off trailer (see lubrication schedule).

### 10.14.3 Disassembly and final shutdown

1. Switch off the machine.
2. Disconnect the power line from the switch cabinet or disconnect the plugs,  
roll up the supply line cable and secure it on the machine.
3. Turn off the compressed air supply and disconnect the supply line.
4. Drain the auxiliary materials.
5. Disassembly of the machine is performed in the reverse order to assembly,  
or as described in the disassembly instructions.

### 10.14.4 Scrapping and recycling

Separate machine parts and electrical parts and dispose of them in the correct manner.



Separate all parts, auxiliary materials and working materials of the machine and dispose of them according to local regulations and directives.



If you have any questions about scrapping/recycling, please contact the manufacturer.

## 11. Brake system

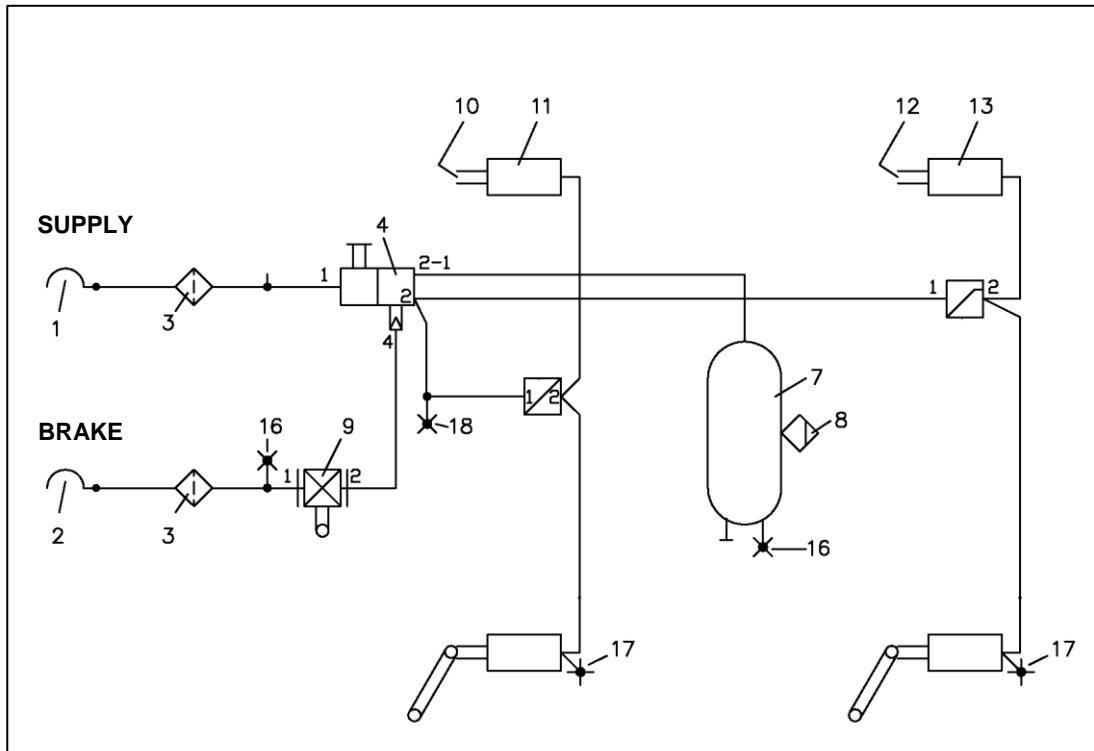


Fig. 101: Compressed air diagram with mech. ALB

(Please request other compressed air diagrams separately. Hydr. brake (export only))

HALDEX BRAKE PRODUCTS

Dual line brake system according

380 090 300

GmbH

to StVZO/lof

Customer:

11/07/2003

Veh. type:

Page 1

Item	Qty	Designation	Order no.
1	1	Coupling head "supply"	334 055 ...
2	1	Coupling head "brake"	334 054 ...
3	2	Pipe filter	310 005 011
4	1	Trailer brake valve with release valve	350 026 ...
7	1	Compressed air tank (EN)	030 ... 09
8	1	Drain valve, manual	315 019 001
9	1	ALB regulator, mech. controlled	601 013 011
10	2	Fork joint, round hole	003 6164 09
11	2	MB cylinder, type	120 351 101
12	2	Fork joint, long hole	003 0336 09
13	2	MB cylinder, type	120 351 101
16	2	Test port (ISO 3583), M22*1.5	318 040 001
17	2	Test port (ISO 3583), M16*1.5	318 078 001
18	1	Test port (ISO 3583), M12*1.5	318 036 001

## 12. Electrics

### 12.1 Rear light model



Fig. 102: Rear light

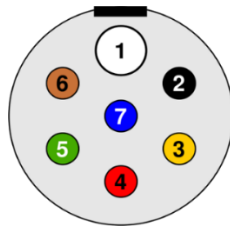
### 12.2 Contact assignment plan

#### 12.2.1 7-pin socket



Contact assignment plan – 7-pin (24 V)

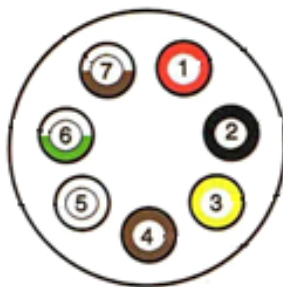
Assignment plan							
Contact assignment plan	Mass	Left tail light, clearance light, side marker light and number plate lighting	Left indicator	Brake light	Right indicator	Right tail light, clearance light, side marker light and number plate lighting	Pressure sensor for spring-loaded brake
	1	2	3	4	5	6	7
7-pin connector DIN ISO 1185	White	Black	Yellow	Red	Green	Brown	Blue



Contact assignment plan – 7-pin (24 V)

Assignment plan							
Contact assignment plan	Mass	Working lights	Reversing light, reversing lock	Continuous current for hydraulics	Paver brake (POSITIVE CURRENT)	Approach aid (POSITIVE CURRENT)	Rear fog light
	1	2	3	4	5	6	7
7-pin connector ISO 3731	White	Black	Yellow	Red	Green	Brown	Blue

### 12.2.2 EBS socket



Contact assignment plan – EBS 24 V

Assignment plan							
Contact assignment plan	Positive solenoid valve	Positive electronics	Negative electronics	Negative solenoid valve	Warning device	Data communication	Data communication
	1	2	3	4	5	6	7
5/7-pin connector ISO 7638-1	Red	Black	Yellow	Brown	White	White/green	White/brown

### 12.2.3 NATO socket

The NATO socket is used for the electrically powered sliding tarpaulin.

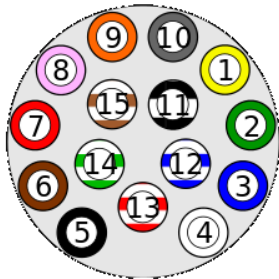


Fig. 103: NATO socket



Must be protected with approx. 70 - 80 A.

### 12.2.4 15-pin socket



Contact assignment plan – 15-pin (24 V)

Assignment plan								
Contact assignment plan	Left indicator	Right indicator	Rear fog light	Mass	Left tail, clearance, side marker, number plate lights	Right tail, clearance, side marker, number plate lights	Brake light	
	1	2	3	4	5	6	7	
15-pin connector ISO 12098	Yellow	Green	Blue	White	Black	Brown	Red	
Contact assignment plan	Reversing light, reversing lock	Continuous current for hydraulics (7.5 A fuse) / terminal 15 via ignition	Unassigned	Pressure sensor for spring-loaded brake	Approach aid (POSITIVE CURRENT) (7.5 A fuse) Operation via push switch	Earth (for power circuit contact no. 14/15)	Working light (7.5 A fuse)	Paver brake (POSITIVE CURRENT) Operation via latching switch
	8	9	10	11	12	13	14	15
15-pin connector ISO 12098	Pink	Orange	Grey	White / black	White / blue	White / red	White / green	White / brown



## 13. Axles

### 13.1 Axle assemblies

#### 13.1.1 2-axle air suspension

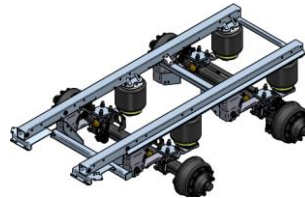


Fig. 104: Two-axle air suspension

#### 13.1.2 3-axle air suspension

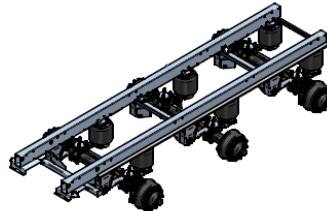


Fig. 105: Three-axle air suspension

#### 13.1.3 4-axle air suspension



Fig. 106: Four-axle air suspension

### 13.2 Axle maintenance work

For information on the required maintenance work for the relevant axles, please contact the manufacturer of the installed axles. The necessary data is provided on the type plate of the installed axles.

Links to maintenance manuals:

BPW: [www.bpw.de](http://www.bpw.de)

SAF: [www.safholland.com](http://www.safholland.com)



Up-to-date maintenance manuals are available from the axle manufacturer.

## 14. Corrosion protection in winter

Regular maintenance is required to increase the service life of vehicles and their bodies as well as to save costs, and this is particularly important in the winter months.

The situation is further exacerbated by the transported road salt and the salt/snow mixture that the vehicle combination is subjected to during winter service. Vehicles used in winter are particularly susceptible to edge rusting as the corrosion protection struggles to adhere to the very thin surface. The vehicles therefore require highly effective corrosion protection, particularly during the winter season.

The list of products used for this purpose is extensive, with

- Preserving wax
- Corrosion protection oil

being just two examples.



The lye-based spreading materials used today have a much more aggressive effect, especially in the case of calcium chloride, which causes a much stronger reaction than sodium chloride.



Vehicle surfaces that are subjected to non-stop salt-containing spray water are particularly susceptible to rust, as are the points at which different metals come together.



We recommend that vehicles used specifically for winter applications are thoroughly cleaned and subsequently coated with corrosion protection before storage. Not only does this prevent the formation of rust during the warmer months, but it also means that the vehicle is immediately ready for use next winter.

## 14.1 List of manufacturers of corrosion inhibitors



The list below merely provides examples, and it is up to you to decide which agents you employ. (The list is not exhaustive.)

Manufacturer	Description
Ambratec	Nass-Sprühöl (wet spray oil) / Clean & Protect / Allwetterschutz T (all-weather protection) / Rostex S 2 Plus
Bantleon/Avia	AVILUB METACORIN 822 / 808 / 850
DKS	Dinitrol 3431 /3850A / 4941 / 4010
Elaskon	K 60 ML / 2000 ML / Agro / KSW-60 / UBS black (underbody protection) / UBS light (underbody protection) / AERO 46 Special
Förch	HV L266 protection wax / L256 protection wax / L250 UBS black (underbody protection) / L252 wax UBS black (underbody protection) / L259 wax UBS transparent (underbody protection)
Fuchs	Anticorit BW 366
Hodt	Fluid Film corrosion protection oils Liquid A / AS-R / NAS / Fluid Film corrosion protection grease Liquid AR / Fluid Film corrosion protection gel BN / BEW / WRN-EP
Innotec	Hi-Temp Wax
Oellers	Gerätelack Typ-K (protective paint) / Truks Dichtschicht (sealing layer) / Kontra-Rost Plus (rust protection) / 1+1 zinc phosphate / 1+1 paint
Sonax	Spray wax / SX90 multi-function oil

## 14.2 Corrosion protection – wax – application

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### 14.2.1 General information

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To ensure long-term rust protection for your vehicle, you must invest in effective corrosion-inhibiting products.

Quality and correct application are particularly important when it comes to selecting a suitable product. Since many greases wash off too quickly, the use of more durable waxes is recommended.

Due to their special composition, these waxes are able to penetrate dirt and rust layers and fend off moisture. They also form a touch-proof, tack-free and durably elastic protective layer.

Moreover, anti-corrosion waxes are resistant to stone-chipping and can withstand significant temperature fluctuations.

Rusty surfaces, overlaps and seams must be treated with a thin penetrating wax. Not only does this fill the relevant areas but it also eliminates moisture and thus prevents further rusting.



Wax is the preferred product since soft oils and greasing agents do not effectively remove the salt from the surface.

### 14.2.2 Applying corrosion protection

---

We recommend that corrosion protection be applied before the onset of the winter season.



- The worst thing you can do is to apply the corrosion protection on top of any salt that has already adhered to the vehicle.
- In this case, the surfaces will continue to rust underneath the protective layer.
- The robust surface can also be damaged by stone chips, allowing further salt to penetrate.

### **Procedure**

Before winter use:

- Thoroughly clean the vehicle before the winter season.
- Then allow the vehicle to dry for 2 days so that the protective layer can effectively adhere to the surfaces.
- Where possible, use a spray gun to apply the heated wax evenly to the surface. This will ensure that the wax gets into all nooks and crevices.

Between winter services:

We recommend that you regularly clean the vehicle with cold or lukewarm water during the winter months.

- Thoroughly rinse the vehicle after daily use.
- The protective layer will generally withstand cleaning with a cold-water high-pressure cleaner.
- Mechanical or steam cleaning (with hot water) is not recommended as this can damage the corrosion protection. The dissolved salt may also settle in the corners.
- If the vehicle has been steam-cleaned, you will need to check the protective layer and, if necessary, repair or replace it after thorough cleaning.
- Park the vehicle in a well-ventilated area after cleaning.



- If the vehicle is used frequently, the corrosion protection will also need to be replaced at regular intervals.
- In this case, the vehicle must be clean and the old protection removed before the new layer is applied (unless the old layer is undamaged).

After winter use:

- Thoroughly clean the vehicle after winter service.  
To do so, clean the vehicle from top to bottom with hot water.  
This will ensure that all wax is removed.
- Then allow the vehicle to dry for 2 days so that the protective layer can effectively adhere to the surfaces.
- Repair any damaged areas.
- Where possible, use a spray gun to apply the heated wax evenly to the surface.  
This will ensure that the wax gets into all nooks and crevices.



- After the winter season, we recommend that you clean the vehicle with hot water to remove all dirt and salt from the surfaces.
- This is because the aggressive salt can penetrate even the tiniest damaged areas, which are invisible to the naked eye.



The vehicle should also be coated with a protective layer for the remaining period of use. This will ensure that no rust can form.

## 14.3 Corrosion protection – Fluid Film products – application

### 14.3.1 General information

Lanolin-based Fluid Film products are easy to apply and form a non-drying barrier that is quick and simple to remove when no longer required.

### 14.3.2 Applying corrosion protection

We recommend that corrosion protection be applied before the onset of the winter season.



- The worst thing you can do is to apply the corrosion protection on top of any salt that has already adhered to the vehicle.
- In this case, the surfaces will continue to rust underneath the protective layer.
- The robust surface can also be damaged by stone chips, allowing further salt to penetrate.

### Procedure

Before winter use:

- Thoroughly clean the vehicle before the winter season.
- Apply the Fluid Film product evenly to the vehicle.
- Allow it to dry briefly.

## Corrosion protection

---

Between winter services:

We recommend that you regularly clean the vehicle with cold or lukewarm water during the winter months.

- Thoroughly rinse the vehicle after daily use.
- The protective layer will generally withstand cleaning with a cold-water high-pressure cleaner.
- Mechanical or steam cleaning (with hot water) is not recommended as this can damage the corrosion protection. The dissolved salt may also settle in the corners.
- If the vehicle has been steam-cleaned, the protective layer will need to be checked before the new barrier is applied over the old layer.



- If the vehicle is used frequently, the corrosion protection will also need to be replaced at regular intervals.
- In this case, the vehicle must be clean.

After winter use:

- Thoroughly clean the vehicle after winter service.  
To do so, clean the vehicle from top to bottom with hot water.  
This will ensure that the complete protective layer is removed.
- Then allow the vehicle to dry for 2 days so that the protective layer can effectively adhere to the surfaces.
- Repair any damaged areas.
- Apply the Fluid Film product evenly to the vehicle.
- Allow it to dry briefly.



The vehicle should also be coated with a protective layer for the remaining period of use. This will ensure that no rust can form.

## 15. Cramaro tarpaulin



This section provides brief instructions on using the tarpaulin.



Detailed instructions are available from the vehicle manufacturer (see section 10) or the tarpaulin manufacturer at [www.cramaro.com](http://www.cramaro.com).



### 15.1 Overview

#### 15.1.1 Fully extended tarpaulin: closed

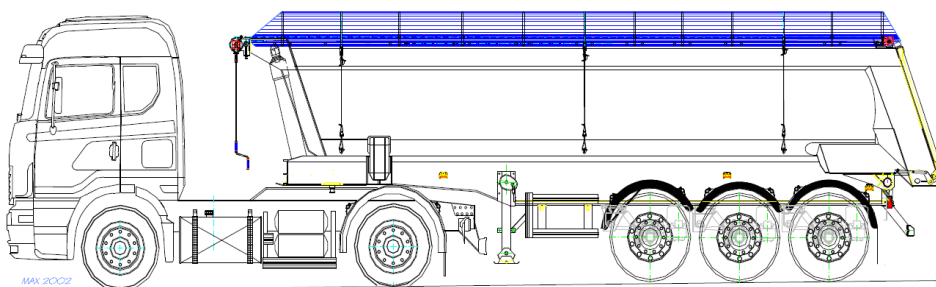


Fig. 107: Box body covered

#### 15.1.2 Fully retracted tarpaulin: open

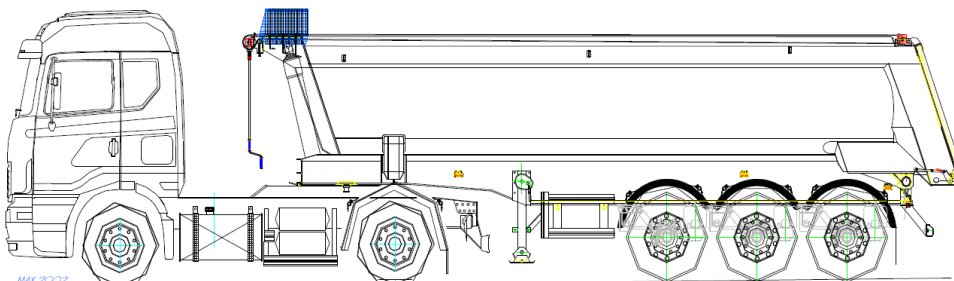


Fig. 108: Box body uncovered

#### 15.1.3 Electric drive with electric controller

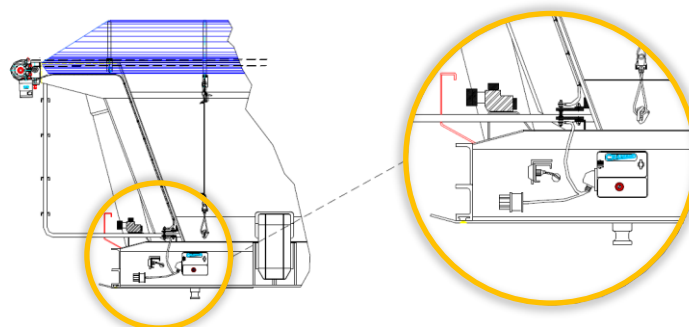


Fig. 109: Electric drive



## 15.2 Tarpaulin operation



- All activities described below must be performed by a single person, who must only operate the system from the ground.
- Ensure that there are no other persons working within the vicinity of the tarpaulin.



If the tarpaulin is fully open, the following steps are required to ensure correct use: It must be verified that the movements of the tarpaulin are not obstructed (e.g. by loaded material protruding over the edges of the box body).

- Insert the key into the centre of the emergency stop button on the control housing.
- If the movement of the tarpaulin is obstructed (during opening or closing), the current protection device cuts in and blocks the control housing.
- Before performing any manual intervention, we recommend that you repeat the opening and closing operation after switching the control housing off and on again via the power supply.



**Under no circumstances must you:**

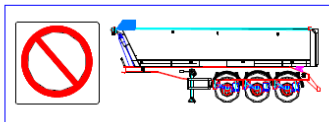
- Operate the tarpaulin system during maintenance work.
- Clean the electrical parts (electric controller, transmission, motor, electrical contacts) with a direct water jet (high-pressure cleaner).
- Leave the key in the emergency stop button of the electric controller when the tarpaulin system is not in use.
- Tip, unload or load the trailer with the tarpaulin system closed.  
The tarpaulin system must always be fully opened when loading and unloading.
- Use the tarpaulin system to level the load.
- Grease or lubricate the drive pulleys or metal pull cables of the tarpaulin.
- Climb or walk on the tarpaulin.
- Drive during strong winds.  
Uncover or break open the electric controller.  
This will automatically invalidate the warranty.



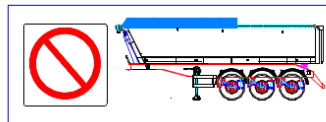
The following mandatory requirements apply:

- Periodic inspection of the tension in the metal pull cables of the tarpaulin (the tension must not be too high) to prevent slipping of the front drive pulleys, and checking for any surface wear to identify potential breakage of the wires that make up the cables.
- Periodic verification that the upper profiles of the box body (on which the tarpaulin runs) are not broken or bent. This could obstruct the normal movement of the tarpaulin and result in premature wear of the tarpaulin, the plastic band for raising the tarpaulin and the slide blocks.
- Periodic verification that all side-mounted, automatic fastening hooks for the tarpaulin are present and correct.
- Periodic inspection of the level of wear on the tarpaulin, particularly at the most wear-prone areas such as the front anchoring points and the lateral fixtures on the bows.
- Regular verification of the integrity of the plastic band that is attached to the side of the tarpaulin in order to raise it. If this band should become worn, the tarpaulin could be damaged, which in turn could impair the function of the tarpaulin during retraction.
- Periodic inspection to ensure completeness of all slide blocks at the end of the bows and to establish their level of wear. The slide blocks ensure easy movement of the tarpaulin.
- Regular inspection of the cleanliness and correct function of the electrical contacts located between the chassis and the box body.  
Periodic verification that the electrical connecting cables are not damaged.
- Regular washing of the tarpaulin to remove any dirt deposits, which could damage the tarpaulin over time.
- If the tarpaulin is used in cold weather, any snow or ice must be removed from the tarpaulin before use to prevent system malfunctions.
- Regular inspection to ensure that the cable clamps that hold the drive cable are secure.

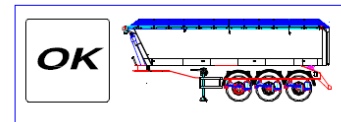
**NO**



**NO**



**YES**



**The sliding tarpaulin must be fully closed during travel.**

### 15.2.1 During restart or in case of restart malfunction

- Check the mechanism and electrical connections and rectify any problems: friction, obstructions, excess tension of the metal pull cables, loose electrical connections or oxidised contacts.
- Perform another restart attempt before checking the control housing as described in the operating and maintenance instructions.
- After completing the opening and closing operations, remove the key from the control housing (to prevent unauthorised operation of the tarpaulin).

### 15.3 Attachment of the rear elastic straps

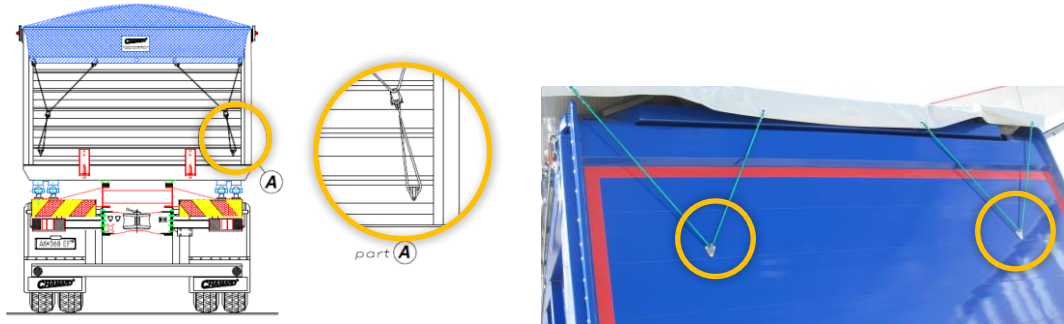


Fig. 110: Attachment of rear straps

### 15.4 Setting the tension of the metal pull cables

The tension of the metal pull cables for the tarpaulin can be set using suitable adjusting screws. The tension must be checked once a week.



Note that the tension must be the same on both sides of the tarpaulin and of a sufficient level to prevent the cables from slipping on the front drive pulleys.

#### 15.4.1 Detail view of front tensioners

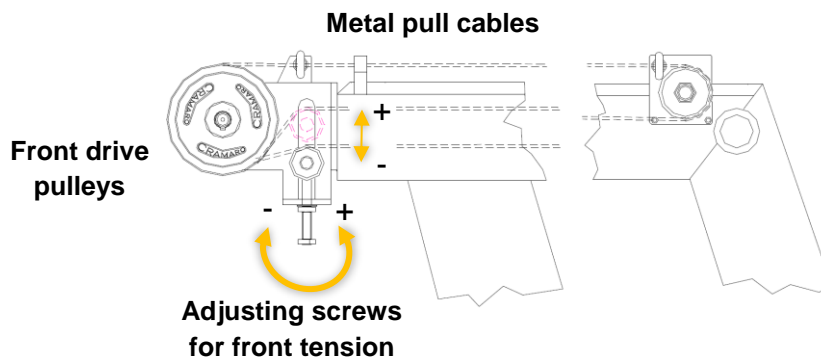


Fig. 111: Front tensioner

#### 15.4.2 Detail view of rear tensioners

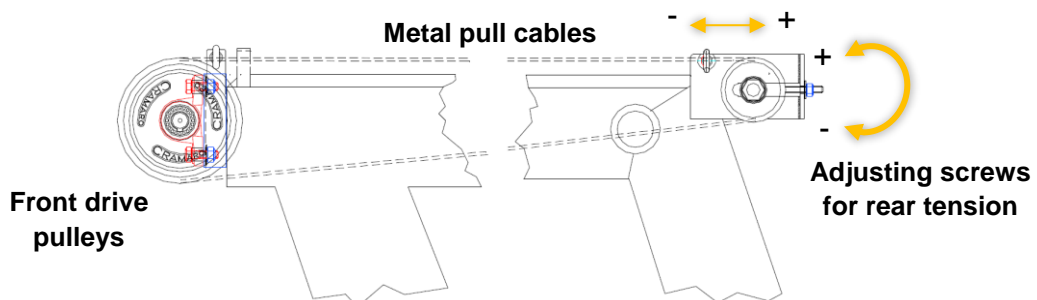


Fig. 112: Rear tensioner

## 15.5 Description of the control housing

The following are located on the front of the control housing:

- ① A red emergency stop button with key switch (removable key) for activation
- ② Lever for opening the door
- ③ Plastic housing to protect the electrical connections
- ④ Red indicator lamp. This lamp is illuminated when the tarpaulin is in motion.

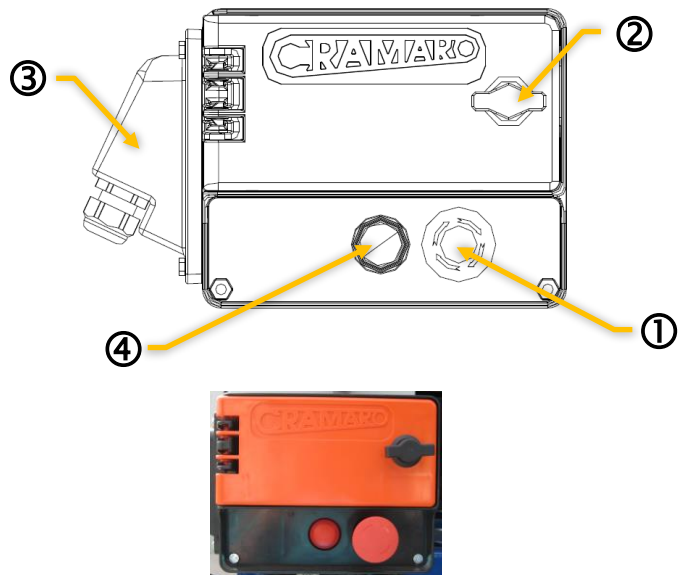


Fig. 113: View of control housing

With the door open, the following can be seen:

- ⑤ Control switch with return spring
  - OPENING
  - CLOSING
- ⑥ Lock with key
  - 0 = control unit switched off
  - I = control unit switched on
  - (0 - I) on standard electric controller
- ⑦ Type plate for the electric controller

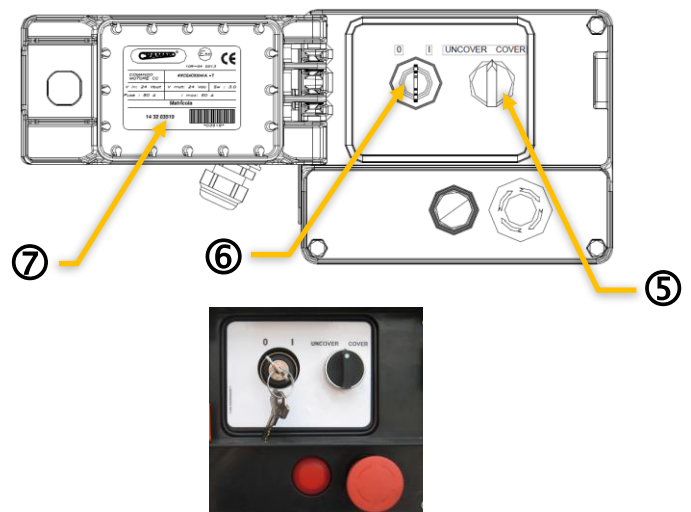


Fig. 114: View of control housing interior

### 15.5.1 Remote control (optional)

To be able to use a remote control, it must be registered with the electric controller. The process for registering one or more remote controls with the electric controller is described below.

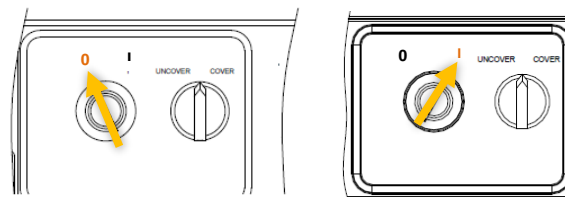
The electric controller can detect a **maximum of 5 remote controls** simultaneously.



If you register a new remote control, the first remote control is automatically overwritten and deleted.

To register a new remote control with the electric controller, proceed as follows:

1. Turn the key to position **(0)**. Then wait for **5 seconds**.
2. Turn the key to position **(I)**.
3. **Within 3 seconds of activation, press buttons A and D on the remote control simultaneously** until the indicator lamp on the control unit flashes for approx. 100 ms. (Wait approx. 10 seconds for this to happen.)
4. Release buttons **A** and **D** on the remote control and wait for at least 1 second. **Within 10 seconds**, activate the **memory function of the control unit in configuration mode**.
5. **Save the remote control code:** **Press and hold button A on the remote control** until the **indicator lamp of the control unit** flashes **twice** in quick succession, in each case for approx. 100 ms. (Wait approx. 10 seconds for this to happen.) This indicates that the control unit has executed the function correctly and exited configuration mode.



- A Tarpaulin activation  
Function: **OPENING**
- D Tarpaulin activation  
Function: **CLOSING**

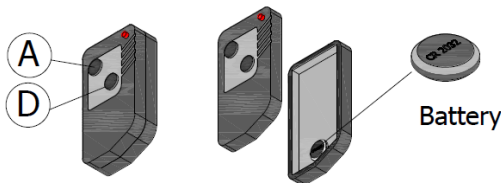


Fig. 115: Views of remote control



To register additional remote controls, simply repeat the above process.



The relevant remote controls must be registered individually and one after the other.

## 15.5.2 Erasing the memory of the electric controller

The memory of the electric controller can be erased at any time.

To erase the memory of the electric controller, proceed as follows:

1. Turn the key to position **(0)**. Then wait for **5 seconds**.
2. Turn the key to position **(I)**.
3. **Within 3 seconds of activation, press buttons A and D on the remote control simultaneously** until the indicator lamp on the control unit flashes for approx. **100 ms**. (Wait approx. **10 seconds** for this to happen.) This indicates that the control unit has **switched to configuration mode**.
4. Release buttons A and D on the remote control and wait for at least 1 second.  
**Within 10 seconds**, activate the **memory function of the control unit in configuration mode**.
5. **Press and hold buttons A and D on the remote control** until the **indicator lamp of the control unit** flashes **twice** in quick succession, in each case for approx. 100 ms. (Wait approx. **10 seconds** for this to happen.) This indicates that the control unit has executed the function correctly and exited configuration mode.

## 15.6 Troubleshooting – tarpaulin operation

Problem	Cause	Solution
When operating the control switch, the indicator lamp does not light up and the tarpaulin does not move.	<p>The emergency stop button has been pressed. Control unit is not switched on.</p> <p>The 80 A safety fuse may have blown.</p> <p>Interrupted electrical connection</p> <p>Electrical contacts are not positioned correctly or the motor is not connected.</p>	<p>Release the emergency stop button.</p> <p>Remove and check the potentially blown fuse and replace if necessary.</p> <p>Check the complete electrical installation. Rectify the interruption.</p> <p>Check that the electrical contacts below the chassis and the body are positioned correctly and check the connection to the motor.</p>
When operating the control switch, the tarpaulin moves in the opposite direction to the symbols on the cover.	Incorrect motor connection	Swap the cable connection on the motor or reverse the polarity under the cap on the control unit.
The tarpaulin does not cover the entire length of the body but instead stops before opening or closing fully.	Significant mechanical friction or obstructions that hinder correct function.	Check that the tarpaulin runs smoothly and remove any obstructions (protruding load, deformed upper chord of the body, frayed and/or damaged pull cables).
Operation of the tarpaulin is laboured (sluggish).	<p>The mechanism is not functioning correctly</p> <p>The tarpaulin bows are deformed</p> <p>Excessive tension of the metal pull cables.</p> <p>The metal pull cables are slipping on the front belt pulleys</p>	<p>Check that the bearings or the rear belt pulleys are not blocked (replace the bearings and/or the rear belt pulleys if necessary).</p> <p>Check that the bows are not bent; if necessary, restore the original curvature and align all bows at the same intervals (replace any damaged bows).</p> <p>Ensure that the metal pull cables are not over-tensioned; if they are, reduce the tension via the relevant adjusting screws.</p> <p>Ensure that the metal pull cables and the belt pulleys have not been greased or lubricated; if they have, you must clean them.</p>

## 16. Appendix

### 16.1 Volumetric weights for loosely stacked goods – construction materials

1 m <sup>3</sup>	kg (approx.)	1 m <sup>3</sup>	kg (approx.)
Ash	900	Clay, fresh	1,800
Asphalt (fine tarmac)	2,100 - 2,200	Clay, dry	1,600
Asphalt-coated gravel (rough tarmac)	2,000 - 2,100	Mortar	1,750
Soil, wet	1,930 - 2,100	Sand, wet	1,700 - 2,000
Soil, dry	1,300 - 1,500	Sand, dry	1,200 - 1,650
Lime, burnt	1,250	Slag	2,500 - 3,000
Lime, slaked	1,200	Cement, in sacks	1,950
Gravel	1,700 - 2,000	Bricks	1,800

### 16.2 Conversion table

The following table facilitates the conversion of specific units

Variable	SI units (metric)		Factor	Imperial units	
	Unit name	Abbreviation		Unit name	Abbreviation
Area	Hectare	ha	<b>2.47105</b>	Acre	acres
Volume flow rate	Litres per minute	l/min	<b>0.2642</b>	US gallons per minute	gpm
	Cubic metres per hour	m <sup>3</sup> /h	<b>4.4029</b>		
Force	Newton	N	<b>0.2248</b>	Pound-force	lbf
Length	Millimetre	mm	<b>0.03937</b>	Inch	in.
	Metre	m	<b>3.2808</b>	Foot	ft.
Power	Kilowatt	kW	<b>1.3410</b>	Horse power	hp
Pressure	Kilopascal	kPa	<b>0.1450</b>	Pounds per square inch	psi
	Megapascal	MPa	<b>145.0377</b>		
	Bar (non-SI)	bar	<b>14.5038</b>		
Torque	Newton metre	Nm	<b>0.7376</b>	Pound-foot or foot-pound	ft·lbf
			<b>8.8507</b>	Pound-inch or inch-pound	in·lbf
Temperature	Degrees Celsius	°C	<b>°C x 1.8 + 32</b>	Degrees Fahrenheit	°F
Speed	Metres per minute	m/min	<b>3.2808</b>	Feet per minute	ft/min
	Metres per second	m/s	<b>3.2808</b>	Feet per second	ft/s
	Kilometres per hour	km/h	<b>0.6215</b>	Miles per hour	mph
Volume	Litre	L	<b>0.2642</b>	US gallon	US gal.
	Millilitre	ml	<b>0.0338</b>	US ounce	US oz.
	Cubic centimetre	cm <sup>3</sup>	<b>0.0610</b>	Cubic inch	in <sup>3</sup>
Weight	Kilogramme	kg	<b>2.2046</b>	Pound	lbs

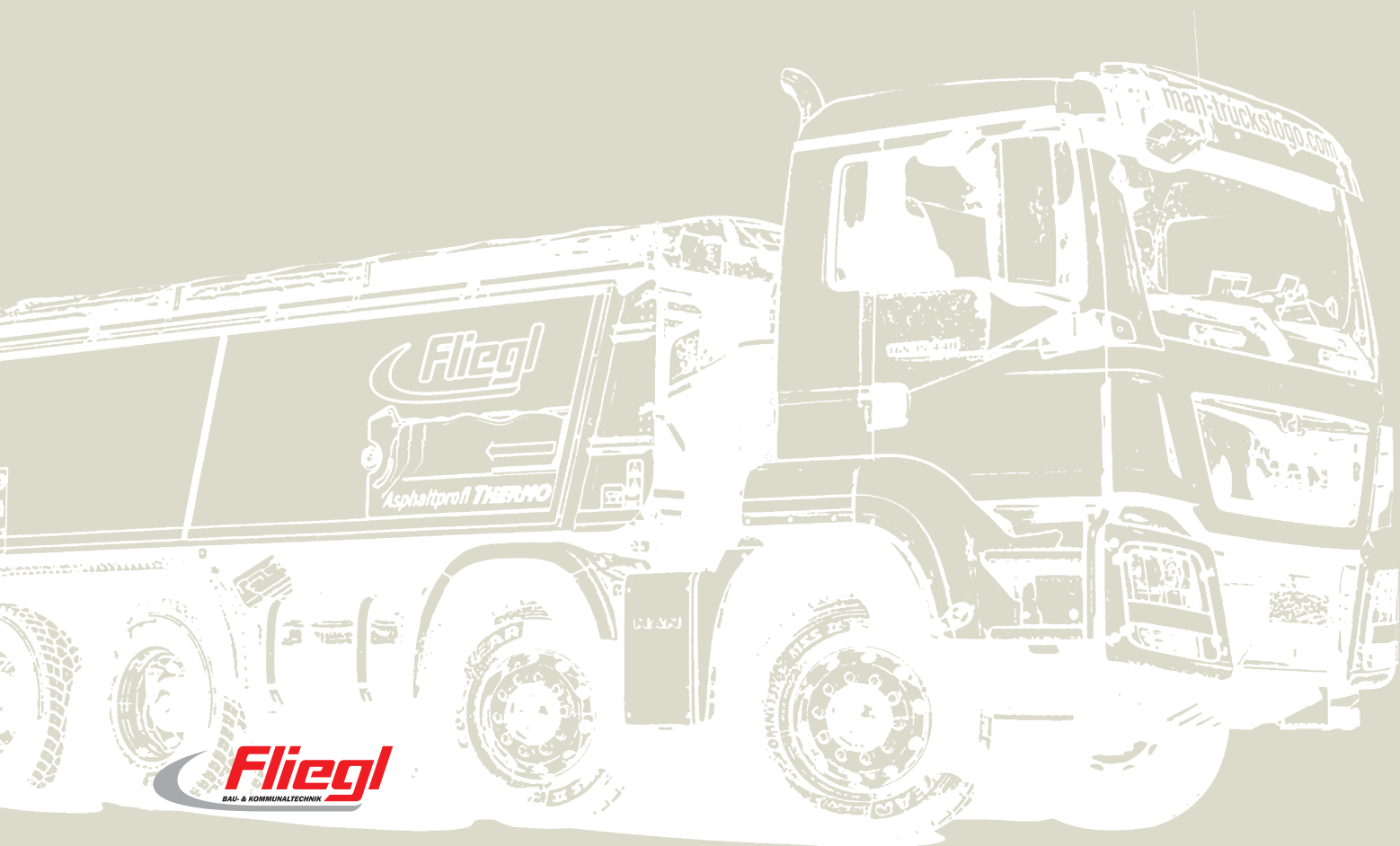


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