Translation of original operating instructions

Fliegl AGRARTECHNIK

ASW GIGANT

Operating instructions

ASW push-off trailer

CE



We are Fliegl.

from model year 03/2019

www.fliegl.com

GB



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 GIGANT push-off trailer.

Fliegl machines and attachments are manufactured with care under continuous monitoring.
The Fliegl GIGANT push-off trailer 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 GIGANT push-off trailer before beginning operation or maintenance of the trailer.
These operating instructions must therefore also be passed on to the operating personnel.

Before putting the Fliegl GIGANT push-off trailer 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 GIGANT push-off trailer can be attached to different vehicles, such as tractors.

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 push-off trailer 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 push-off trailer 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 ourselves 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 push-off trailer.

Identification

Machine identification data

Manufacturer:	**Fliegl Agrartechnik GmbH**
Product:	**GIGANT push-off trailer**
Type:	**ASW 110, ASW 140, ASW 160, ASW 256, ASW 261, ASW 271, ASW 281, ASW 378, ASW 381, ASW 388, ASW 391, ASW 3101, ASW 491, ASW 4101**
Serial number:	**WGJXXXXXXXXXXXXX**

Manufacturer details

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Formal details of operating instructions

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(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: Push-off trailer

Type: ASW 110, ASW 140, ASW 160, ASW 256, ASW 261, ASW 271, ASW 281, ASW 381, ASW 391, ASW 3101, ASW 491, ASW 4101, ASW D 378, ASW D 388, ASW 271 GreenTec, ASW 281 GreenTec, ASW 381 GreenTec, ASW 391 GreenTec, ASW 160 FOX, ASW 256 Compact FOX, ASW 261 Compact FOX, ASW 271 Compact FOX, ASW 281 FOX

Project designation:	Fliegl ASW
Commercial name:	Fliegl ASW GIGANT push-off trailer
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,

04/07/2019 Date

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1. User instructions

This manual provides information about the

- Structure
- Function
- Operation
- Maintenance
- Accessory parts

of the push-off trailer 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 push-off trailer.
All operators are required to read these safety instructions and comply with them at all times.
The regulations of agricultural employers' liability insurance associations 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)	.....
Type	.....
Year of manufacture	.....

For replacement part orders please contact:

Fliegl Agro-Center GmbH
Maierhof 1
84556 Kastl, Germany
Tel.: +49 (0)8671 / 9600 - 0
Fax: +49 (0)8671 / 9600 - 71
E-mail: info@agro-center.de
www.agro-center.de

1.1 Significance of this document

These operating instructions are an important document and are part of the machine.
They are intended for machine users and contain safety-relevant information.
Only the procedures described in these operating instructions are safe.

- Read and note the contents of the section "Basic safety instructions" before first using the machine.
- Before commencing work, always read and note the contents of the relevant sections of the operating instructions.

1.2 Locations in the operating instructions

All directions and locations in this guide are based on the operator's workstation.

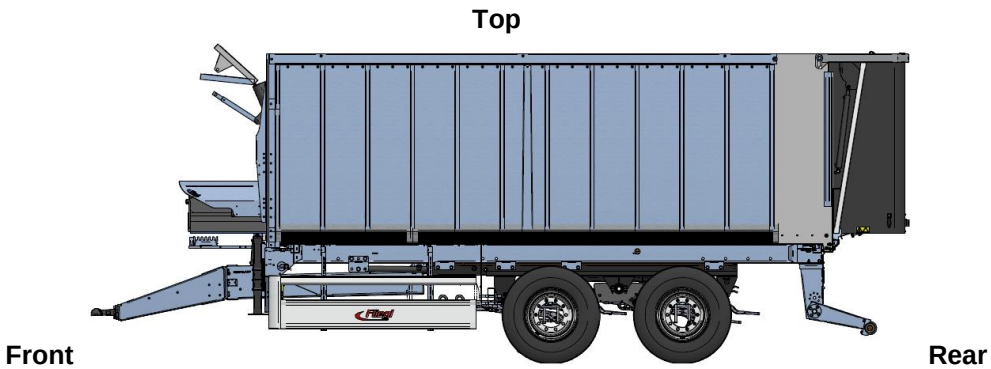


Fig. 1: Main views of the push-off trailer



Fig. 2: Locations in the operating instructions

1.3 Illustrations used

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"

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

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! Direct risk that will lead to serious bodily harm or death.



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

Caution! Possible hazardous situation that could lead to minor bodily harm. Also potential damage to property.



Notice! Possible situation in which the product or other property in the vicinity could be damaged.



Important! For advice about usage and other useful 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 push-off trailer. 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 cited above.
Only the procedures described in these operating instructions are safe.

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

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. A license is required to operate agricultural trailers.
The trailer includes an operating permit or vehicle title.
(***The operator is personally responsible for the registration of the vehicle***.)
Use on public roads is only permitted with the rear panel closed.
Additional lighting equipment must be perpendicular to the road.

Be aware of the legal requirements of your respective country.
Lost permit documents can only be replaced by agreement with the administrative authority specified below. A duplicate certificate will be given to the customer by the administrative authority.

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 tractor hydraulics, the hydraulic lines between the towing vehicle and trailer must be disconnected or their actuation device locked.

The towing vehicle to be used with the trailer must meet the following requirements:
The permitted trailer load must correspond to the permitted total weight of the trailer as a minimum. The towing vehicle must have a sufficient number of hydraulic connections available in order to supply the trailer's individual hydraulic circuits.



- The controls of the on-board hydraulic system must be laid out so that visual contact with the trailer can be maintained during operation.
- The PTO speed must be no more than 700 rpm.
- Before the trailer is connected to the towing vehicle, its compatibility with tow connection(s), hydraulic connections, permitted support loads, axle loads, positive steering angle 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 stipulated maintenance intervals 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, support load, total weight and maximum speed.

Notes on driving with the push-off trailer (ASW)

- 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 uphill, use a low gear. Never change or disengage gears on a gradient.
- Stop the towing vehicle immediately if a brake fault occurs.
- Attend to 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.
- The tractor is to be fitted with ballast weights in order to ensure steering and braking capability (at least 20% of the vehicles empty weight on the front axle).



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 contamination.

- Always ensure that access points are clean and in flawless 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 ASW

- There is an injury risk when coupling devices to the tractor.
- When coupling, do not step between the trailer and the tractor while the tractor is moving backwards.
  Nobody must enter the area between the tractor and the trailer unless the vehicles have been secured against rolling away with the parking brake and/or wheel chocks.
- Only connect and disconnect the drive shaft when the engine is switched off.
  Attach the trailer coupling to the tractor so that, when the trailer is attached, there is sufficient space between the drive shaft and the drawbar, especially during tight turns.
- Before starting to drive, release the parking brake.
  (Turn the crank inward.)

Parking the ASW

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



- Park the push-off trailer on level, solid ground. On soft ground, the supporting foot's surface area must be increased by using a suitable aid (e.g. a wood plank).
- Extend the supporting foot via the hydraulic mechanism.
- When parking the trailer, the drive shaft must be deposited correctly or secured with a chain.
- Ensure that the machine is positioned securely before performing any adjustments, repairs, maintenance or cleaning.

Handling the mech. supporting stand



- Couple the ASW to the tractor (coupling height can be adjusted slightly via the hydr. ASW drawbar suspension).
- Take the load off the supporting foot by operating the hydr. drawbar suspension. Remove the locking pin (by swivelling), push the supporting foot up and lock it in place.
- Ensure that the pin is secured correctly.
  Move the supporting foot down and lock it again.
  Lower the trailer again via the hydr. drawbar suspension.
- Disconnect the hydraulic and electrical lines and uncouple the vehicle.

The tractor is a weight-bearing element for single-axle and tandem trailers. Therefore, the trailer must only be set down on the supporting foot when it is empty.

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 party, or risk of damage to the machine or other property.



The ASW 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.
The trailer is used to spread and transport silage, wood chips, solid manure, compost, dry slurry, dry fermentation residue etc.
Always use a signaller when reversing (as required by German road traffic regulations).

The machine is intended solely for agricultural use and must only be used if:

- All safety equipment specified in the operating instruction is present and in protective 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 damages.*

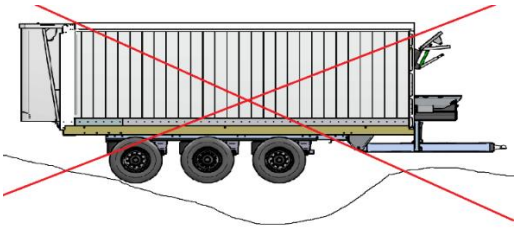


Misuse can be dangerous.

Examples of such misuse are:

- Transporting persons
- Exceeding the permissible total weight
- 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

Different trailer shown. The illustration serves as an example.

Caution when reversing:
Because the area behind the push-off 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

- 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 ongoing 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

- Risk to life and limb of the operator or third parties
- Risk for the machine itself
- Risk 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 requirements of the EC Directive for the use of work equipment 89/655/EEC must be observed.

2.7 Obligations of personnel

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 operating 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 prescribed 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.

2.10 Personal protective equipment

The operating company must provide the following personal protective equipment.

- Safety footwear with protective toe caps
- Close-fitting clothes
- 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

2.11.1 Operation without correct start-up

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
- Drive shaft
- Spreader (optional)

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 coarse dirt or tighten loose screws.
- Establish the cause of the damage as per these operating instructions.
- Rectify the damage as per these operating instructions.
- In the case of damage that cannot be removed independently based on these operating instructions, have the damage repaired by a qualified workshop.

2.11.4 Technical limit values

If the technical limit values 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 limit values is particularly important from a safety perspective:

- Maximum permissible operating pressure of the hydraulic system
- Maximum permissible drive 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

This device shuts down the towing vehicle (tractor) 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

Hydr. protective devices are installed on the machine:

- Pipe-break protection on the hydraulic rear panel
- Pipe-break protection on the hydraulic supporting foot
- Service brake system
- Parking brake (PB)
- Wheel chocks (x2)
- Ladder (standard/optional)

Warning signals

The following warning devices are installed on the machine:

- Warning lamp for unlocked rear panel (optional)

2.12.3 In case of faulty protective devices

Defective safety equipment can lead to dangerous situations. Therefore:

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

Testing safety and protective devices

All safety and protective devices must be tested regularly. Test intervals according to table:

Safety device	Test 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 only workstation is:
The driver's seat of the towing vehicle (tractor)



Fig. 3: Workstation on the machine

2.14 Danger areas

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:

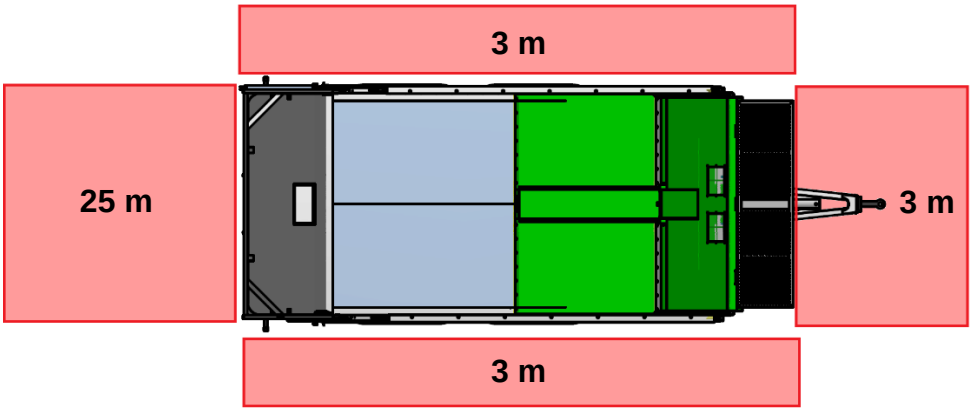


Fig. 4: Danger zone

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
- The operating instructions of the drive shaft
- The operating instructions of the attachments/accessories

2.14.1 Danger zone around PTO

There is a risk of entanglement in the PTO and driven components which can lead to serious injury. Before starting the PTO:

- Ensure that all protective devices are in place and are in protective position.
- Ensure that there are no persons in the danger zone around the PTO.
- Switch off the PTO when not in use.

2.14.2 Danger zone around machine parts that continue running

If there are parts on the machine that continue to run after it is switched off, this can result in accidents involving personal injury. After turning off the drives, the following machine parts continue to run:

- Drive shaft
- Spreader (optional)
- Dosing roller (optional)



Only enter the danger zone once all machine parts have come to a complete standstill.

2.14.3 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:

Notice regarding hazard symbols: - The hazard symbols must be kept clean and must not be concealed - Damaged or missing hazard symbols must be replaced - When attaching additional devices, add the corresponding hazard symbols if necessary - Consult with the manufacturer where necessary		**Risk of crushing** **Risk of hand injuries when reaching into the machine**
		**Danger due to crushing or entanglement**
		**Warning against automatic restart**
		**Caution** **Exercise special caution when handling or touching**
		**Information in operating instructions** **Read contents of operating instructions before handling**
		**Speed sign** **Maximum permitted design speed for the trailer**
		**Final check** **Indicating label for final check performed on the vehicle**
		**Information sign** **Important information and control measures applicable before every start-up**
		**Pictogram sticker for hose labelling** **Identification symbols for hydraulic connectors** **(SVK plugs)**
		**Information sign for bolt and wheel nut check**
		**Information sign** **Information sign on hydr. sliding floor**
		**Company sticker on the vehicle**
		**Type sticker on vehicle**

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

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



ALB plate (mech. ALB)

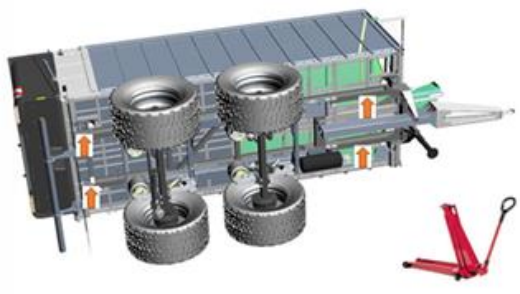


Fig. 5: Lifting points on push-off trailer

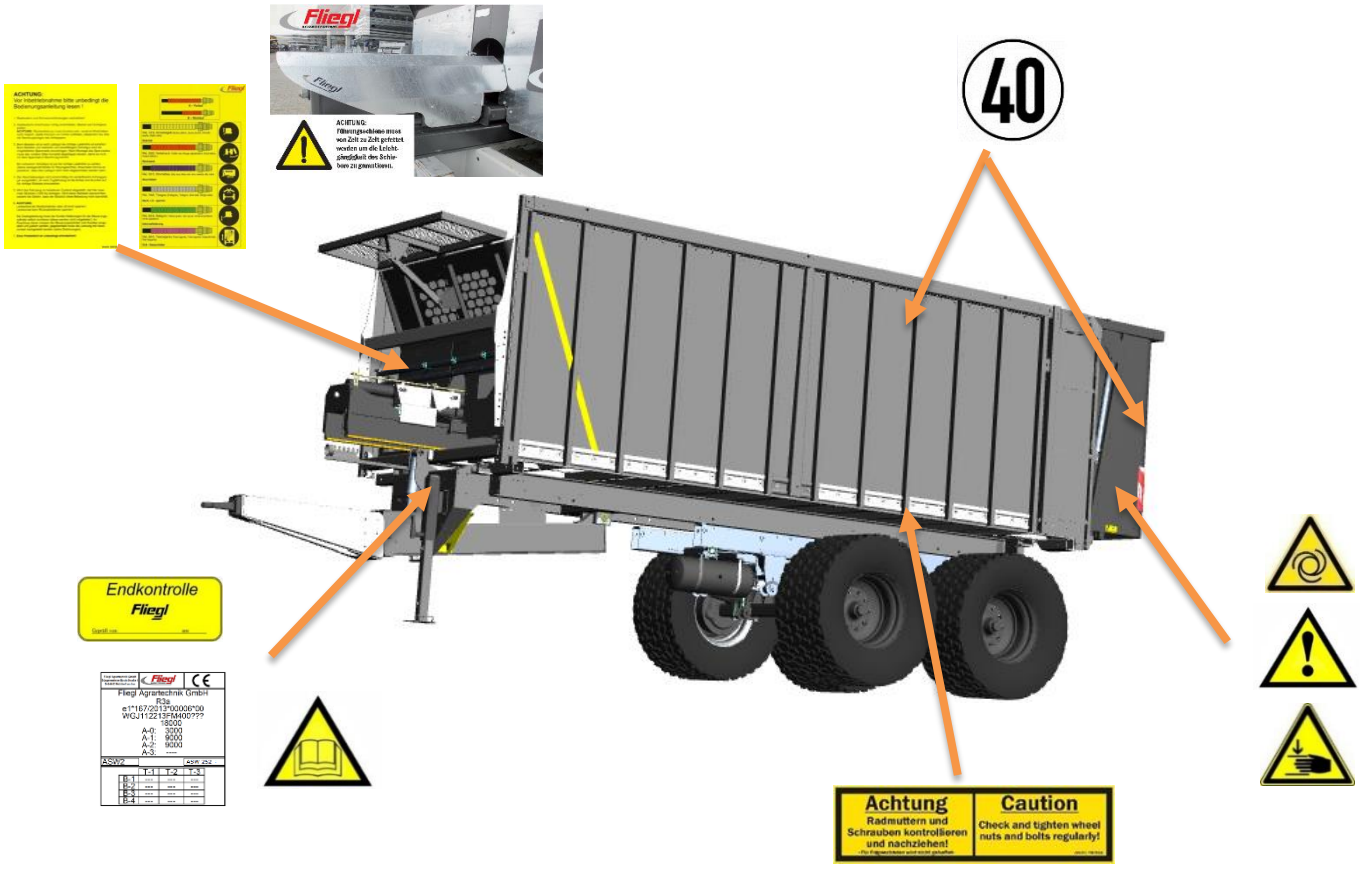


Fig. 6: Warnings and safety instructions affixed to the machine

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.*

3.2 Design variants – standard

Name	Total weight		Name	Total weight
ASW 110 single-axle	10,500 kg		ASW 4101 quattro	40,000 kg
ASW 110 tandem	11,000 kg		ASW D 378 three-axle	24,000 kg
ASW 140 tandem	14,000 kg		ASW D 388 three-axle	24,000 kg
ASW 160 tandem	16,000 kg		ASW 271 GreenTec tandem	20,000 kg
ASW 256 tandem	20,000 kg		ASW 281 GreenTec tandem	21,000 kg
ASW 261 tandem	20,000 kg		ASW 381 GreenTec tridem	29,000 kg
ASW 271 tandem	20,000 kg		ASW 391 GreenTec tridem	29,000 kg
ASW 281 tandem	21,000 kg		ASW 160 FOX tandem	16,000 kg
ASW 381 tridem	29,000 kg		ASW 256 Compact FOX tandem	20,000 kg
ASW 391 tridem	29,000 kg		ASW 261 Compact FOX tandem	20,000 kg
ASW 3101 tridem	29,000 kg		ASW 271 Compact FOX tandem	20,000 kg
ASW 491 quattro	40,000 kg		ASW 281 FOX	23,000 kg

(Weights indicated specifically for Germany; deviations are possible in other countries)

3.3 Functional description

Loading the machine

Loading is performed as follows:
From above via an external attachment (chipper, front loader etc.); pallets, silo bales etc. from the rear via the opened high-capacity rear panel.

Unloading the machine

At the unloading point:
With the high-capacity rear panel open, via the sliding floor hydraulic control on the towing vehicle

Tension cable:

When travelling with grain or loose goods, the supplied tension cables (tool kit) must be attached to the upper belt and placed under moderate tension.

This excludes vehicles in low design or with lateral folding panels (no tension cables possible)



Retract the sliding unit before closing the rear panel!

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:

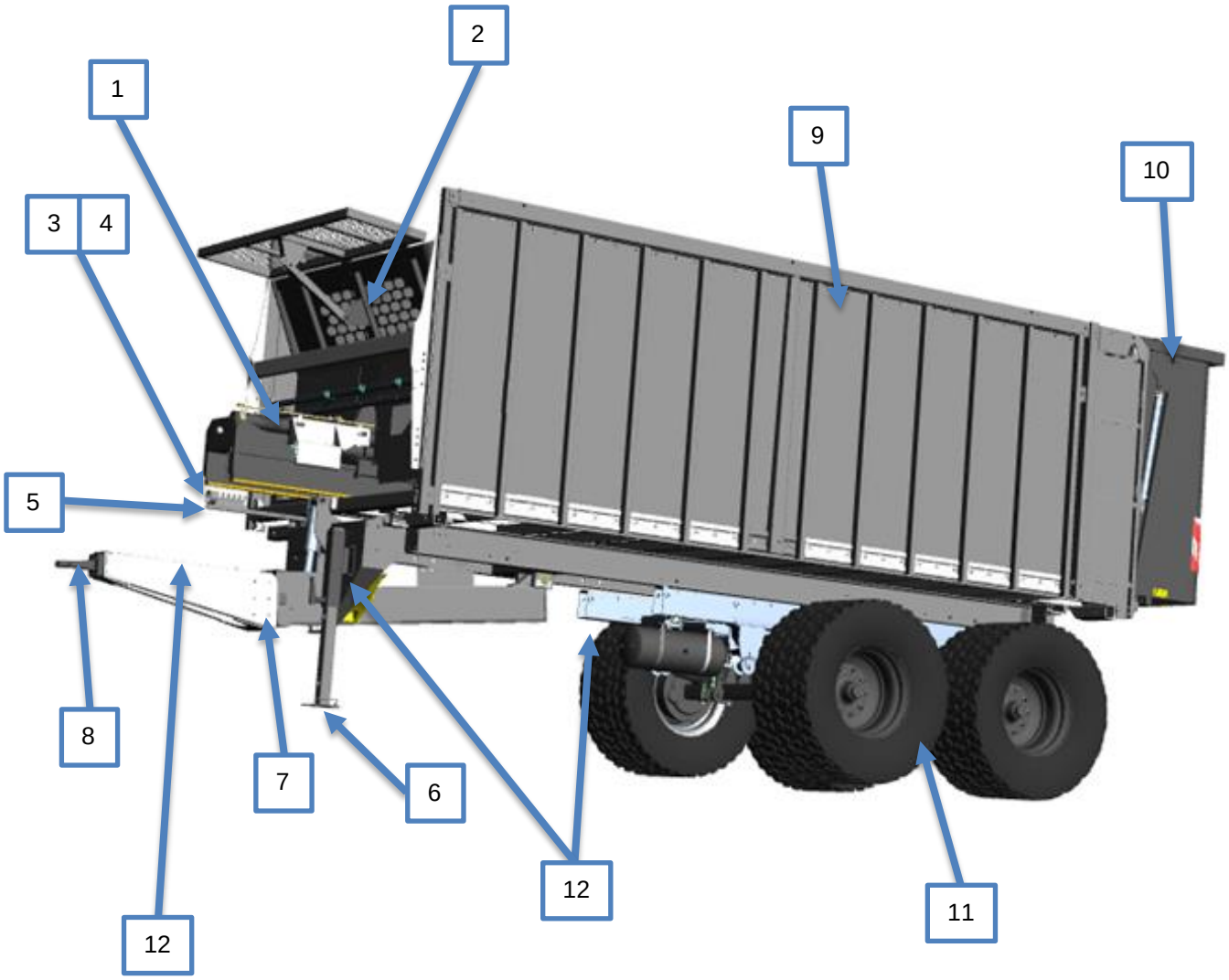


Fig. 7: Layout and components

3.5 Assemblies and components

Item no.	Title
1	Sliding floor cylinder
2	Moving panel
3	Compressed air connections
4	Hydraulic connector
5	Hose holder
6	Supporting mechanism
7	Draw gear
8	Flange coupling
9	Body
10	High-capacity rear panel
11	Axle assembly
12	Parking brake

Item 1 - sliding floor cylinder

For each vehicle type, a separate sliding floor cylinder exists; its size and installation length depends on the vehicle length.

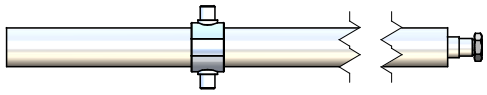


Fig. 8: Assembly – item 1

Item 2 - moving panel with grate extension

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

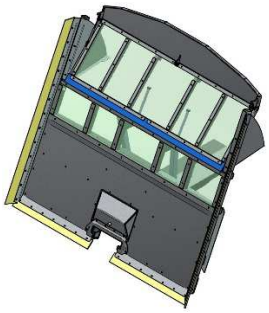


Fig. 9: Assembly – item 2

Item 3 - compressed air connections

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

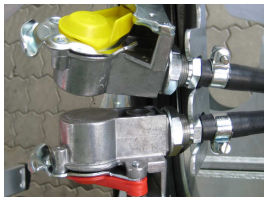


Fig. 10: Assembly – item 3

Item 4 - hydraulic connectors

Individual hydraulic connections are provided for all hydraulic functions.
A description of the coloured markings is provided in section 0 and on the stickers at the front of the vehicle.



Fig. 11: Assembly – item 4

Item 5 - hose holder

When the trailer is uncoupled, the connections are stored here.

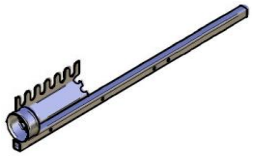


Fig. 12: Assembly – item 5

Item 6 - supporting mechanism

The supporting mechanism serves as a front support when parking the ASW.



Fig. 13: Assembly – item 6

Item 7 - draw gear

Together with the flange coupling, the draw gear forms the link between the towing vehicle and the ASW.

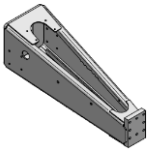


Fig. 14: Assembly – item 7

Item 8 - flange coupling

Flange couplings are available in different standards and designs.



Fig. 15: Assembly – item 8

Item 9 - body

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

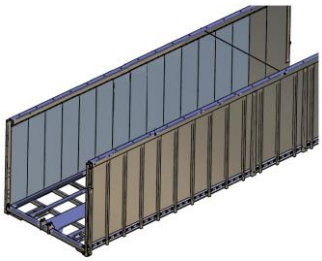


Fig. 16: Assembly – item 9

Item 10 - high-capacity rear panel

High-capacity rear panel with grain hatch, lighting and socket.



Fig. 17: Assembly – item 10

Item 11 - axle assembly

Different axle assemblies are available for the ASW.

- Tandem
- Tridem
- Quattro
- Three-axle

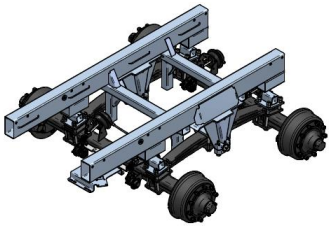


Fig. 18: Assembly – item 11

Item 12 - parking brake

The parking brake secures the ASW when parked so that it cannot roll away.

- Farmer stop brake
- Spindle brake
- Tristop



Fig. 19: Assembly – item 12

The equipment is part of the DE version and may differ from your version.

3.6 Dimensions and weights – standard equipment

Type:	**ASW 110 single-axle**	**ASW 110 tandem**	**ASW 140**	**ASW 160 *FOX***	**ASW 256 Compact *FOX***	**ASW 261 Compact *FOX***	**ASW 271 Compact *FOX***	**ASW 281 *FOX***	**ASW 381 tridem**
Body length (with 800 mm rear panel)	5,100	5,100	5,600	5,600	5,600	6,100	7,100	8,100	8,100
Body width	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380	2,380
Side panel height[1)]	1,500	1,500	1,500	1,500	1,500	2,000	2,000	2,000	2,000
Rear panel height[1)]	1,500	1,500	1,500	1,500	1,500	2,000	2,000	2,000	2,000
Type:	**ASW 391 tridem**	**ASW 3101 tridem**	**ASW D 378 three-axle**	**ASW D 388 three-axle**	**ASW 491 quattro**	**ASW 4101 quattro**			
Body length (with 800 mm rear panel)	9,100	10,100	7,800	8,800	9,100	10,100			
Body width	2,380	2,380	2,380	2,380	2,380	2,380			
Side panel height[1)]	2,000	2,000	2,000	2,000	2,000	2,000			
Rear panel height[1)]	2,000	2,000	2,000	2,000	2,000	2,000			
Type:	**ASW 271 GreenTec**	**ASW 281 GreenTec**	**ASW 381 GreenTec**	**ASW 391 GreenTec**					
Body length (with 800 mm rear panel)	7,100	8,100	8,100	9,100					
Body width	2,380	2,380	2,380	2,380					
Side panel height[1)]	2,000	2,000	2,000	2,000					
Rear panel height[1)]	2,000	2,000	2,000	2,000					

1) Standard design

All dimensions are indicated in mm and include a tolerance of 5%.
Standard tyres were used to determine the dimensions.

Type	ASW 110	Type	ASW 110	Type	ASW 140
Version	Single-axle	Version	Tandem	Version	Tandem
Total weight	10,500 kg	Total weight	11,000 kg	Total weight	14,000 kg
Drawbar load	2,500 kg	Drawbar load	2,000 kg	Drawbar load	2,000 kg

Type	ASW 160	Type	ASW 256	Type	ASW 261
Version	Tandem	Version	Tandem	Version	Tandem
Total weight	16,000 kg	Total weight	20,000 kg	Total weight	20,000 kg
Drawbar load	2,000 kg	Drawbar load	2,000 kg	Drawbar load, laden	2,000 kg

Type	ASW 271	Type	ASW 281	Type	ASW 381
Version	Tandem	Version	Tandem	Version	Tridem
Total weight	20,000 kg	Total weight	21,000 kg	Total weight	29,000 kg
Drawbar load	2,000 kg	Drawbar load	3,000 kg	Drawbar load	2,000 kg

Type	ASW 391	Type	ASW 3101	Type	ASW 491
Version	Tridem	Version	Tridem	Version	Quattro
Total weight	29,000 kg	Total weight	29,000 kg	Total weight	40,000 kg
Drawbar load	2,000 kg	Drawbar load	2,000 kg	Drawbar load, laden	2,000 kg

Type	ASW 4101	Type	ASW D 378	Type	ASW D 388
Version	Quattro	Version	Three-axle	Version	Three-axle
Total weight	40,000 kg	Total weight	24,000 kg	Total weight	24,000 kg
Drawbar load, laden	2,000 kg	Drawbar load, laden	-	Drawbar load, laden	-

Type	ASW 271 GreenTec	Type	ASW 281 GreenTec	Type	ASW 381 GreenTec
Version	Tandem	Version	Tandem	Version	Tridem
Total weight	20,000 kg	Total weight	21,000 kg	Total weight	29,000 kg
Drawbar load, laden	2,000 kg	Drawbar load, laden	3,000 kg	Drawbar load, laden	2,000 kg

Type	ASW 391 GreenTec	Type	ASW 160 FOX	Type	ASW 256 Compact FOX
Version	Tridem	Version	Tandem	Version	Tandem
Total weight	29,000 kg	Total weight	16,000 kg	Total weight	20,000 kg
Drawbar load, laden	2,000 kg	Drawbar load, laden	2,000 kg	Drawbar load, laden	2,000 kg

Type	ASW 261 Compact FOX	Type	ASW 271 Compact FOX	Type	ASW 281 FOX
Version	Tandem	Version	Tandem	Version	Tandem
Total weight	20,000 kg	Total weight	20,000 kg	Total weight	13,000 kg
Drawbar load, laden	2,000 kg	Drawbar load, laden	2,000 kg	Drawbar load, laden	3,000 kg

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.

4. Transport and installation

4.1 Basic requirements



The following means of transport are needed to transport the machine:
Towing vehicles for agricultural or forestry applications (e.g. tractor) with suitable connections for towing couplings, brakes, hydraulics and lighting.

The supply connections are located at the front in the hose tray. These are:

- Connections for the electrical current
- Compressed air connections (type-specific)
- Hydraulic connectors (SVK)



- 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 side panels etc. – must be checked before travelling on public roads.
- Before setting 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 the tractor
- All safety devices are locked and secured
- The rear panel is closed
- The tyres are free of cuts and cracks and have the correct tyre pressure
- The machine is free of harvest residue and coarse dirt
- The lighting system functions flawlessly
- The brake functions flawlessly
- The cables and lines are routed such that they do not stretch or come into contact with the tractor wheels when cornering

4.2 Supply and installation

Note the permitted maximum speeds, axle loads and drawbar loads with regard to the operational limits of the drawbar eye connection. These are specified on the type plate.

4.2.1 Drawbar eye connection

The ordered flange coupling is fitted in top or bottom attachment position on the trailer.
For possible drawbar eye types, refer to section 8.1.3.

Procedure
Check the towing coupling on the tractor to ensure it is fully functional and securely hitched and adjust the trailer height to match the towing vehicle.

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 is not fitted with 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.

Lighting connection

Procedure:

Power is supplied by the towing vehicle via plug connection(s).

Plug connection for lighting
(7-pin connector, ISO 1724)
Control current via (12 V) connector



Fig. 20: 7-pin connector

When establishing the connections, ensure that the plugs and sockets are clean and dry.
Contamination and moisture can lead to short-circuits!

Control panel connection (optional)

Procedure:

Power is supplied by the towing vehicle via plug connection(s).

Plug connection for control panel (3-pin connector, DIN 9680)

Control current via (12 V) connector



Fig. 21: 3-pin connector

ISOBUS control connection (optional)

Procedure:

Connect the 9-pin ISO plug (ISO 11783) to the ISOBUS socket on the tractor



ISOBUS connector



Park socket

Fig. 22: ISOBUS plug connection

4.2.3 Compressed air supply

For compressed air brake system, standard couplings ISO 1728

Procedure:

Connect the standard couplings for the dual-line compressed air brake system (manual control).

Red – supply line
Yellow – brake line



Coupling:

1. Yellow – brake line
2. Red – supply line

Uncoupling:

1. Red – supply line
2. Yellow – brake line

Fig. 23: Compressed air supply

4.2.4 Establishing hydraulic connections

Procedure:

Connect the plug-in coupling, SVK coupling size 3, to the correct SVK sleeve on the towing vehicle and check that it is correctly engaged.

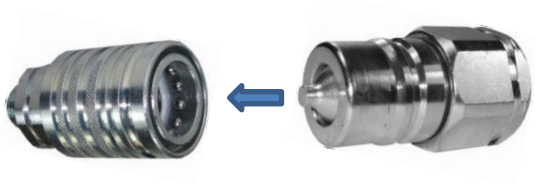


Fig. 24: Hydraulic connections

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

Coupling:

- Before coupling, deactivate the PTO and set the lever on the control device to neutral position.
- Ensure that the couplings are clean.

Constant flow:

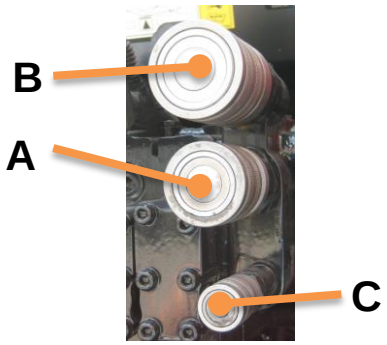
- (1) Pressure connection
  (2) Return connection

Load sensing:

- A - Pressure connection
- B - Return connection
  C - Load sensing connection



Constant flow connection



Load sensing

Fig. 25: Hydraulic connection

For more information, refer to section 6.7.

Dual-action control devices required:
Each control circuit features a supply and return coupling (double action), with the exception of the steered trailing axle and hydr. rear panel (single action).

General safety instructions for the hydraulic system

1. The hydraulic system is under high pressure.
2. When connecting hydraulic hoses to the towing vehicle hydraulics, make sure that the hydraulics are depressurised on both the towing vehicle and trailer side.
3. When coupling and uncoupling, ensure that the couplings of the hydraulic hoses are/do not become dirty.
4. Check hydraulic hoses and couplings regularly and replace them if they are damaged or old (at least every 6 years).
5. The replacement hoses must meet the requirements of the machine manufacturer.
6. When locating leaks, use suitable aids due to the risk of injury.
7. Never try to close leaks with your finger.
8. Liquids (hydraulic oil) escaping under high pressure can penetrate the skin and cause serious injuries.
9. **In case of injuries, consult a physician immediately → risk of infection.**
10. Before working on the hydraulic system, depressurise it and switch off the tractor engine.
11. Only specialist workshops are permitted to perform repair work on the hydraulic system.
12. Ensure that the oil is of the required grade.
13. **Caution when draining hot oil → risk of burns.**

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.**
- **Before starting up the vehicle, ensure that there are no persons or obstructions behind the trailer.**
- **If the roadway behind the trailer is not or only partially visible, reversing must be monitored by a signaller.**
- **Observe the safety instructions that are affixed to the trailer. An explanation of the individual warning symbols is provided on page 27 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 general condition of the trailer.
- Check the cargo space for loose parts lying inside.
- Check the condition of the sealing strips on the moving panel and sliding gate.
- Lubricate the trailer according to the lubrication schedule.
- 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:

- **Adjust the traction bar**
- **Establish the hydraulic and brake connections**
- **Establish the electrical connections**
- **Connect the PTO**

6.1 Draw gear

Three main, type-specific variants

- Draw gear with top/bottom attachment
- Hydraulically sprung draw gear with top/bottom attachment
- Drawbar

6.1.1 Draw gear with top/bottom attachment

Objective

Adjustment of the traction bar height. The vehicle is preconfigured for top or bottom attachment by the manufacturer. Depending on the towing vehicle, a slight adjustment of the traction bar height may be required.
For this purpose, a hole pattern is provided on the traction bar support.
The trailer must be as horizontal as possible when coupled.

Prerequisites

- Suitable spanners (torque wrenches)
- Means of supporting and protecting against falling

Fitting location	Thread – grade (min.)	Tightening torque [Nm]
Drawbar eye	M20 – 10.9	465
Traction bar	M30 – 8.8	1400
Supporting foot	M24 – 8.8	570

6.1.2 Hydraulically sprung draw gear

The draw gear can be mechanically adapted to the coupling height.
In the top/bottom attachment positions.

Procedure

Rotating the traction bar by 180° changes the trailer height from top to bottom attachment. This variant is also hydraulically sprung and the coupling height can be changed by reducing or increasing the oil level in the cylinder.



Fig. 26: Cylinder with stopcocks

The cylinder must never be fully extended or retracted while driving. Otherwise, the suspension function will not work.

6.1.3 Drawbar

Objective

Adjustment of the drawbar height. The height must be adapted to the trailer coupling of the towing vehicle in order to couple the trailer without assistance.

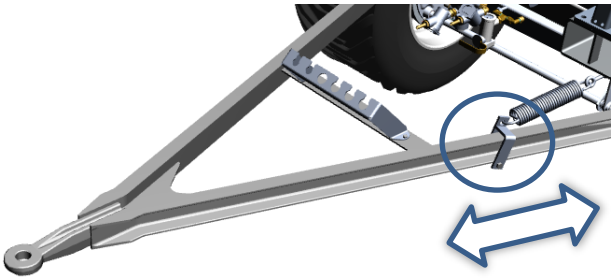
Prerequisites

The trailer and the towing vehicle must be positioned one behind the other on a level surface.

Procedure

Type A

By moving the clamping point on the drawbar



Type B

Via spindles on the attached turnbuckle screw

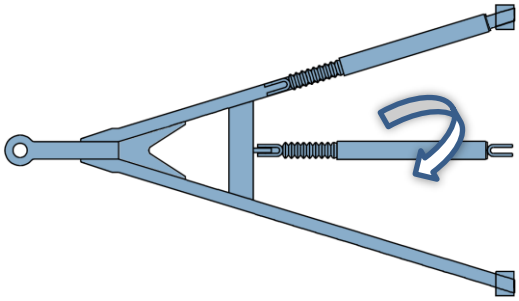


Fig. 27: Adjusting the drawbar height

6.1.4 Setting up the trailer coupling on the towing vehicle

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

Position the trailer coupling (A) on the towing vehicle so that the trailer is horizontal when it is hitched.

With drive shaft:

Attach the trailer coupling (A) to the towing vehicle so that, when the trailer is attached, there is sufficient space between the drive shaft and the drawbar (A1), especially during tight turns.

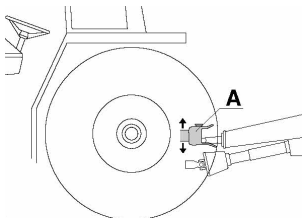


Fig. 28: Setting up the trailer coupling on the towing vehicle

After coupling, move the hydraulic drawbar fully up and down one or more times to ensure it does not collide with the drive shaft.
This allows you to avoid any faults or damage when using the ASW.

6.1.5 Ball head coupling

The ball head coupling must only be coupled with an approved coupling ball (ball diameter 80 mm) that is suitable for ensuring safe attachment and locking.



Fig. 29: Ball head coupling

Maintenance of the ball head coupling:

- Grease the contact surfaces at the coupling point.
  Ensure that the mounting bolts on the ball head coupling are securely fastened. Replace loose bolts and nuts (tightening torque less than 120 Nm) with new ones.
- Replace the ball head coupling if damaged, deformed or worn.
- Check the function of the ball head coupling.
- Replacement to be carried out by qualified specialists only.

6.1.6 Installing forced steering on the towing vehicle (optional)

The forced steering is optional additional equipment, which the customer must adapt individually to each towing vehicle. This means that the settings must be re-adapted every time the towing vehicle is changed. The towing vehicle must feature a suitable coupling mechanism for this purpose.
Forced steering can be implemented for one axle or for two axles, with the rear axle forced on TANDEM vehicles and the first and last axles forced on TRIDEM and QUATTRO models.
Hydraulic forced steering is only available for bottom attachment with Ø 80 mm flange ball head coupling. The dimensions on the Ø 80 ball head coupling and the clearances according to ISO 500 and ISO 730 must be applied.

Procedure
Mounting of the steering cylinder at the same axial and vertical height as the ball head coupling on the towing vehicle (tractor) with 250 mm clearance ($\pm$ 5).

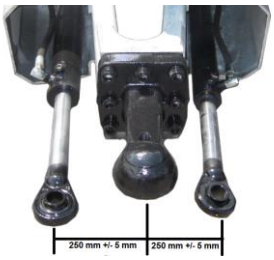


Fig. 30: Installation layout for forced steering



- **The towing vehicle requires a suitable coupling mechanism.**
- **At maximum steering angle, the tyres must not touch the frame or other parts of the vehicle.**
- **Check the axle stops and adapt them to the tyre size if necessary.**
- **At maximum steering angle of the hydraulic cylinders with coupling (52°), ensure sufficient space from the panelling on the outside and from the flange coupling on the inside.**
- **The cylinder protection (on the side of the traction bar) must be checked and adjusted for every towing vehicle type; if necessary, double the cylinder protection until the wheels of the towing vehicle (tractor) make contact at maximum steering angle.**

6.2 Setting up the forced steering (optional)

Adjusting and venting the forced steering (working operation).
The forced steering is pre-fitted to the trailer vehicle and must be adapted to the relevant towing vehicle by the user (see also section 6.1.6).

Prerequisites
Hitch the trailer to the towing vehicle (tractor) via the flange coupling.
Installation as described in section 6.1.6; establish the hydraulic connection to the towing vehicle (SVK plug connection). The tractor/trailer combination must be positioned in a line.

Procedure

Setting up the system

1. Position the vehicle in a line (all wheels must be straight)
2. Connect the steering cylinders to the towing vehicle
3. Establish the hydraulic connection to the vehicle
4. Open stopcocks L1 and L2 *[as well as L3 and L4 on tridem/quattro models]* **(must be opened before travel to avoid damaging the hydraulic cylinders)**
5. Open stopcocks 1, 2 and 3 *[as well as 4 and 5 on tridem/quattro models]*
6. Apply a pressure of 50 bar to the system
7. Close stopcock 1
8. Close stopcocks 2, 3 [4, 5] one after the other
9. Check whether the forced steering is functioning correctly at full steering lock
10. If not, there may be air in the system

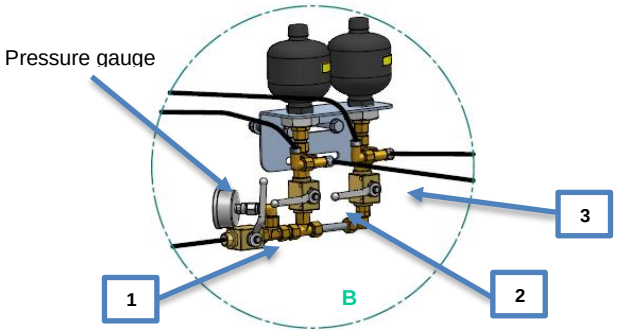


Fig. 31: Forced steering valves (tandem)

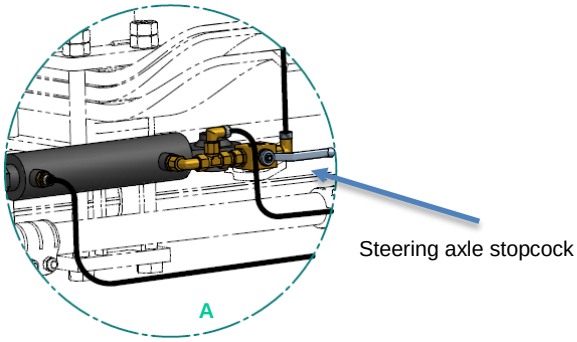


Fig. 32: Steering axle with forced steering connection

Venting the system:

1. If there is air in the system: Vent via the sealing cap and the screw joint on the hydraulic cylinder
2. Open stopcocks (1 - 3)[4 + 5]
3. Flush the system with a pressure of approx. 30 bar, until no more air escapes (use a collecting vessel)
4. Close stopcocks (1 - 3)[4 + 5]
5. Check whether the forced steering is functioning correctly at full steering lock

Note: The system is filled in the factory.



Open Closed

Tandem

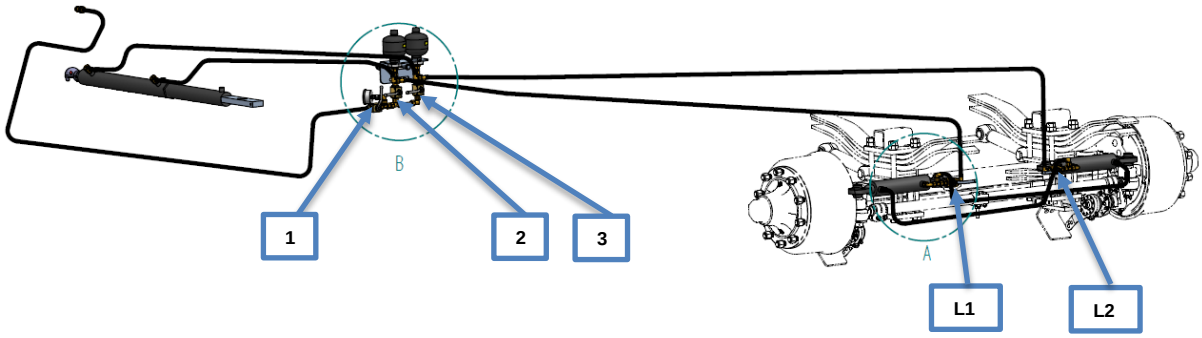


Fig. 33: Tandem steering axle

L1 = steering axle stopcock L2 = steering axle stopcock
The two stopcocks (L1, L2) on the steering axle must be opened during driving operation.

Attention! The trailer is delivered with the stopcocks closed.
Stopcocks L1, L2, L3, L4 must be opened before commencing travel to prevent damage to the hydraulic cylinders.

Tridem/Quattro

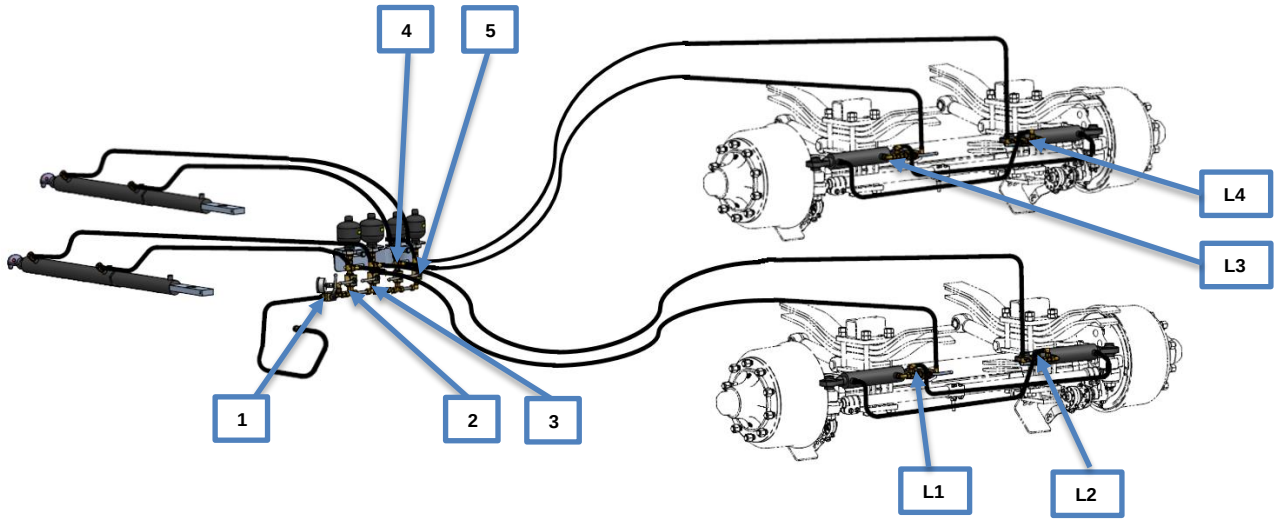


Fig. 34: Tridem/quattro steering axle

L1 = steering axle stopcock L2 = steering axle stopcock
L3 = steering axle stopcock L4 = steering axle stopcock
The 4 stopcocks (LA1, LA2, L3, L4) on the steering axle must be opened during driving operation.

Attention! The trailer is delivered with the stopcocks closed.
Stopcocks L1, L2, L3, L4 must be opened before commencing travel to prevent damage to the hydraulic cylinders.

Checking the working settings
Check the steering angle of the axles (must be adjusted if necessary); check for collision on the spring assembly, air bellows, frame or tyre profile.

The steering angle for the forced steering must be re-adjusted every time the towing vehicle is changed.

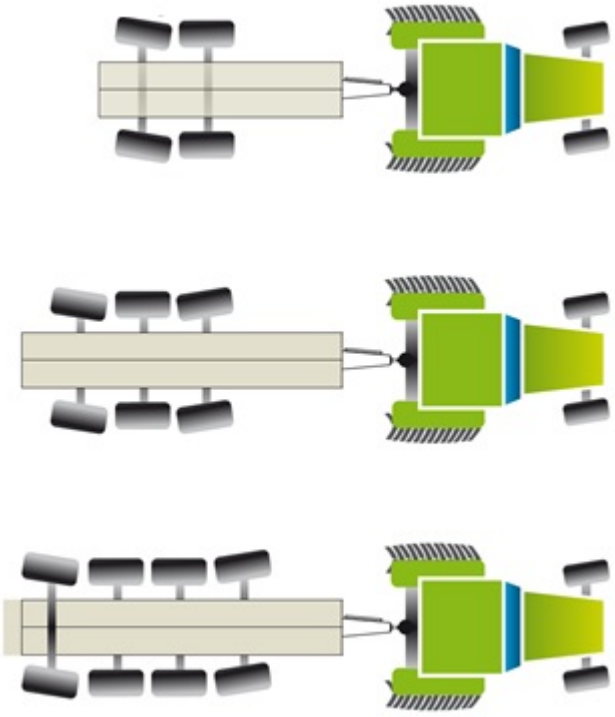


Fig. 35: Steering angle

Tandem

1st axle = rigid
2nd axle = steered

Tridem

1st axle = steered
2nd axle = rigid
3rd axle = steered

Quattro

1st axle = steered
2nd axle = rigid
3rd axle = rigid
4th axle = steered

- Daily system pressure check
- Complete adjustment for every towing vehicle change

Attention! The trailer is delivered with the stopcocks closed.
Stopcocks L1, L2 [L3, L4] must be opened before commencing travel to prevent damage to the hydraulic cylinders.

- **At maximum steering angle, the tyres must not touch the frame or other parts of the vehicle.**
- **Check the axle stops and adapt them to the tyre size if necessary.**
- **At maximum steering angle of the hydraulic cylinders with coupling (52°), ensure sufficient space from the panelling on the outside and from the flange coupling on the inside.**
- **The cylinder protection (on the side of the traction bar) must be checked and adjusted for every towing vehicle type; if necessary, double the cylinder protection until the wheels of the towing vehicle (tractor) make contact at maximum steering angle.**

6.3 Pressurised air suspension (optional)

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

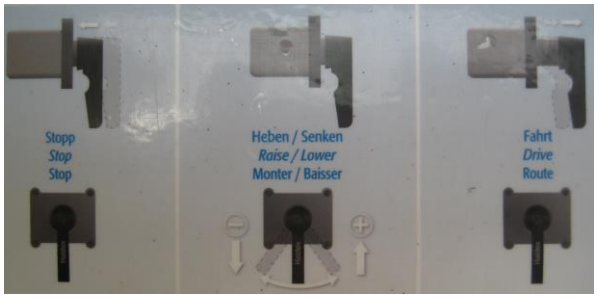


Fig. 36: Raising and lowering with air suspension

6.4 Compressed air brake system

6.4.1 Brake system with manual control valve

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

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

Selecting the operating mode, adjusting the trailer load status

Set the loading conditions of the trailer on the selector lever by turning the handle on the control valve.

➔ Select from operating mode "**Empty**", "**Half load**" or "**Full load**" depending on the trailer load.

"**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.

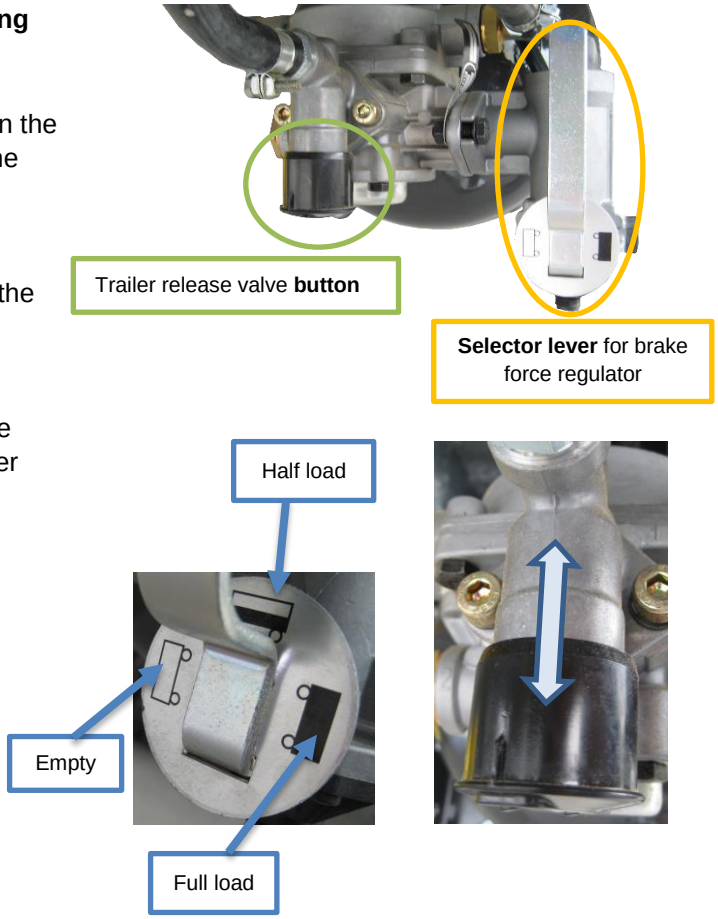


Fig. 37: Manual brake force adjustment

If, when re-coupling the trailer to the towing vehicle, the release valve (button) has not been manually pulled out to the stop, the supply pressure from the towing vehicle pushes the button back out.

6.4.2 Brake system with ALB, brake force regulator

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

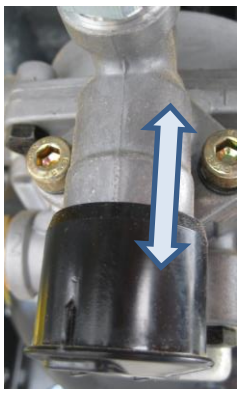


Fig. 38: Manual brake force adjustment

6.4.3 Brake system – release valve

The release valve allows you to reverse the automatic ("emergency") braking that is triggered when the supply line is disconnected.
Pressing the release valve (with the supply/brake line detached) cancels the automatic braking of the service brake system. When the supply line and compressed air are reconnected, the release valve does not revert to its normal operating position.
This must be done manually by pulling out the release valve.





To manoeuvre the uncoupled vehicle, the release valve must be pressed; only then is the service brake released and the vehicle unbraked.
Once manoeuvring is completed, the release valve must be pulled out again.

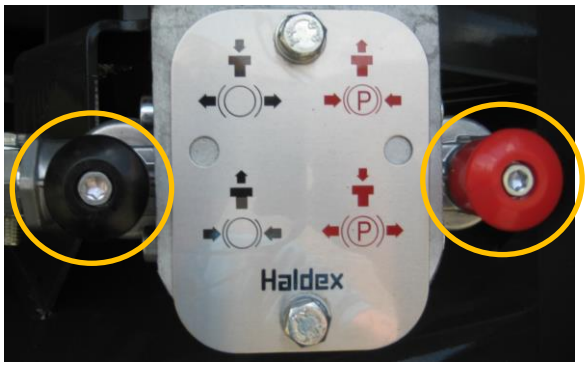
Fig. 39: Manual brake force adjustment

6.4.4 Brake system with combined service/parking brake (Tristop)

Parking and manoeuvring valve with integrated emergency brake valve for the service brake system as well as overflow valve for auxiliary consumers (e.g. air suspension) for dual-line compressed air brake systems in trailers. The bake features a flange-mounted release valve as well as a parking valve for the service and spring-loaded brake. "Parking Hold" is a new additional function with which the service brake is disengaged when the trailer is coupled while the spring-type cylinders move to or remain in brake position. Before travel, the spring-type cylinders must be manually released via the parking valve.

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 5.0 bar.



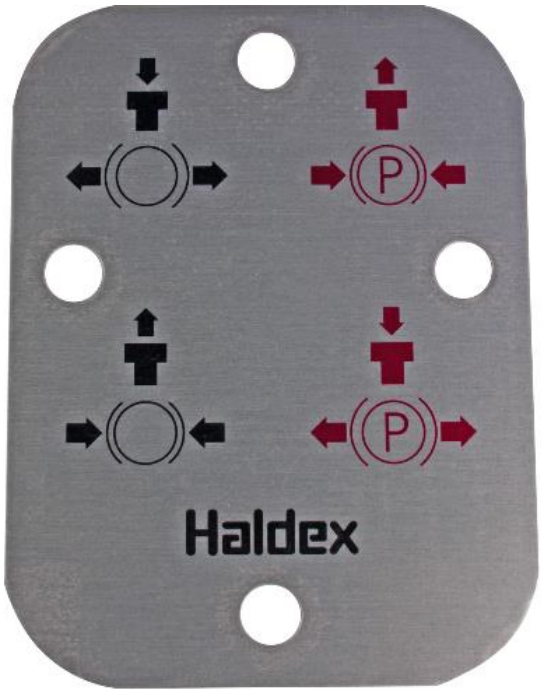


Fig. 40: Tristop operation plate

Release mechanism for service brake system

The release valve allows you to reverse the automatic ("emergency") braking that is triggered when the supply line is disconnected.
Pressing the release valve (black button) – with the supply/brake line detached – cancels the automatic braking of the service brake system. When the supply line and compressed air are reconnected, the release valve automatically reverts to its normal operating position.

Manoeuvring

To manoeuvre the uncoupled vehicle, both buttons must be pressed – first black (service brake) and then red (parking brake). Only then is the service/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.

Pressure loss in supply line – impact on service brake system

If the pressure in the supply line drops by at least 1 bar per second, automatic braking of the trailer is initiated before the pressure in the supply line has fallen to 2 bar. This ensures that the automatic braking of the service brake system takes effect and that the ABS system is regulated.

Impact on the parking brake system

If the spring-loaded brake system is released (red button pressed), the park valve is pushed out automatically, while the parking brake remains disengaged. This ensures a consistent pressure level across the connections.
If the reservoir pressure continues to decline, the connections are vented simultaneously, resulting in automatic actuation of the spring-loaded brake system to prevent the trailer from rolling away.



Fig. 41: Tristop control unit

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.

There must be no persons in the danger zone during coupling and uncoupling!
Before travel, the spring-type cylinders must be manually released via the parking valve!

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

Comprehensive information is available from the brake manufacturer:
www.haldex.com

6.5 Hydraulic brake (optional)

This option is not available for trailer application in Germany.

6.5.1 Brake system without load adjustment valve

The trailer can be equipped with an optional hydraulic brake system.
The brake line is connected to the hydraulic brake connection of the towing vehicle.
The hydraulic cylinders operate the wheel brakes via bell cranks.



Fig. 42: Plug-in coupling of hydraulic trailer brake

6.5.2 Brake system with load adjustment valve

When hydraulic brake systems are connected to the tractor's hydraulic brake system, the trailer must be braked via the tractor's brake system.
The brake pressure must not exceed **120 bar (12,000 kPa)**.
An emergency brake system must be fitted, e.g. farmer stop brake with connecting cable to the tractor; a fixed connection to the tractor, or similar, must be established during driving operation.

➔ Single-action connection via hydraulic coupling (SVK)



Fig. 43: Load adjustment valve

- Test the brake function before driving with the trailer.
- The response characteristics of the brake can be altered by means of a throttle check valve in the tractor brake system (if fitted).

Work on the brake system must only be performed by authorised specialist workshops.

6.6 Parking brake

6.6.1 Spindle brake / parking brake

Applying the brake:

To activate the spindle brake, you must turn the crank in clockwise direction.
Do this until you feel resistance.

Releasing the brake:

To release the brake, you must turn the crank in the opposite direction (anti-clockwise) until the tension on the brake cable is released. (The cable must sag slightly.)





Fig. 44: Crank

6.6.2 Farmer stop – parking brake

Applying the brake:

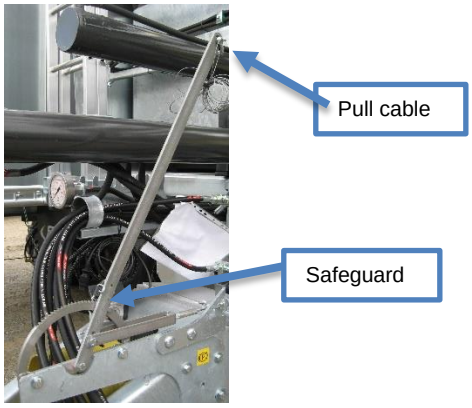
To activate the parking brake, pull the actuating lever towards the drawbar eye. The lever must be pulled tight to ensure that the brake is correctly applied. In addition, mechanical and positive engagement of the saw tooth profile on the crown must be ensured.

Releasing the brake:

Briefly pull the actuating lever towards the side panel. This releases the locking mechanism and disengages the brake.

Safeguard:

To prevent accidental disengagement of the brake, the locking mechanism features a safeguard, which is activated/deactivated through folding.



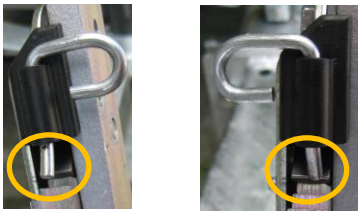


Fig. 45: Farmer stop

A pull cable at the top of the lever also allows the braking function to be used from the operator's position.

6.7 Hydraulic system

6.7.1 Standard constant flow version (open centre, OC)

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.

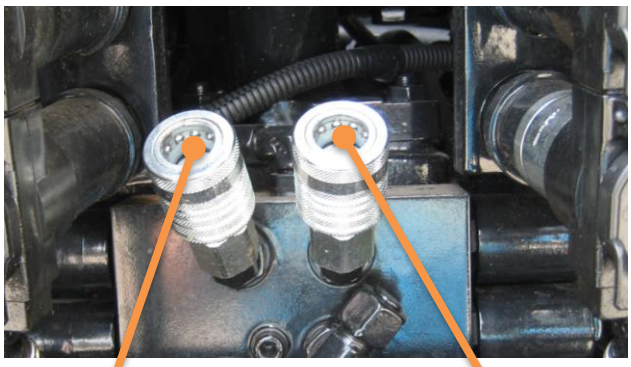


Fig. 46: Hydraulic connection

Dual-action control device

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.

6.7.2 Additional load sensing (LS) version [also known as "power beyond"]

Connection with load sensing (LS)

Procedure:

The towing vehicle must be parked when connecting the hydraulic lines.

- Connect the load sensing line to the LS connection of the towing vehicle (smallest coupling cross-section)

  Connect the pressure line (P) (medium coupling cross-section)

- Connect the oil return line (T) (largest coupling cross-section)

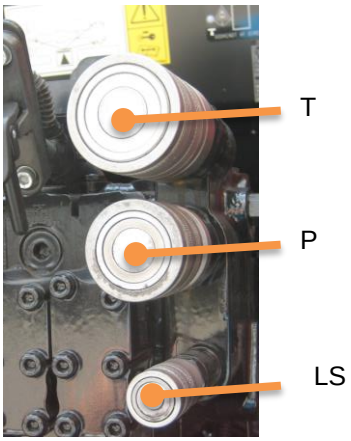


Fig. 47: Hydraulic connection

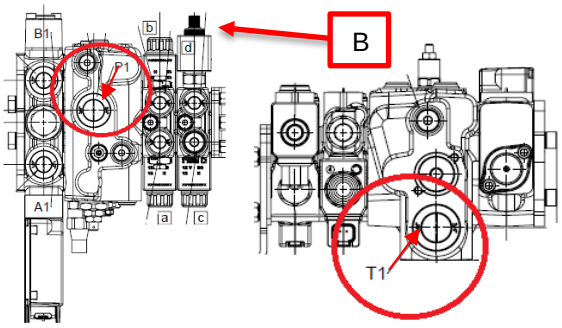


Fig. 48: Hydraulic block

Emergency manual operation
The adjusting wheel "B" is intended for emergency manual lowering of the tailgate.

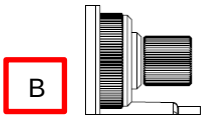


Fig. 49: Adjusting wheel

Failure to observe the above will result in a continuous load on the pressure relief valve of the towing vehicle hydraulics and excessive heating of the oil.

6.7.3 Load sensing or constant flow operation

Operation with load sensing	Operation with constant flow
Turn the screw at position ② clockwise up to the stop. Turn the screw at position ① clockwise up to the stop. If the pressure in the P line does not drop after operation of a function, turn the screw anti-clockwise until the pressure declines. The pressure should reduce within 1-2 seconds. The LS line of the towing vehicle is connected at position ⑤. The connection at position ④ must be closed.	Turn the screw at position ① anti-clockwise up to the stop. Turn the screw at position ② anti-clockwise up to the stop. The connections at positions ④ and ⑤ must be closed with dummy plugs.

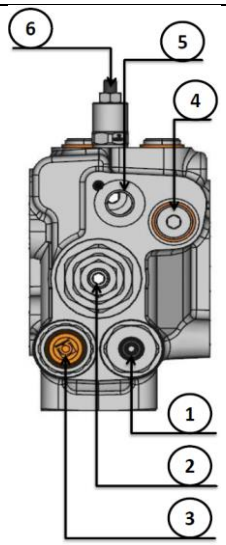


Fig. 50: Hydraulic block

① Adjusting screw for LS relief SW10 ⬡ 3
② Adjusting screw for LS / constant flow SW17 ⬡ 5
③ Adjusting screw for pressure relief valve preset to 200 bar
④ LS+ connection 1/4" GAS ISO 1179
⑤ LS+ connection 1/4" GAS ISO 1179
⑥ Adjusting screw for LS amplifier preset to 10 bar pressure difference

The pressure relief valve at position ③ is preset to 200 bar and must not be changed.
Position ⑤ must always be used to connect the LS line.
The LS amplifier at position ⑥ is preset to 10 bar and must not be changed.

6.8 Setting the flow control valve/potentiometer (optional)

Please also refer to the information in section 8.5. Notes on connecting the hydraulic lines are provided in the ASW replacement parts list.

6.8.1 Mechanical flow control valve

Functional description

The push-off speed is set via a **manually adjustable flow control valve**.
It is located at the bottom right behind the recess in the bulkhead guard, if fitted.
A pressure sequence valve ensures that the push-off unit only begins to work after the sliding gate is fully open.

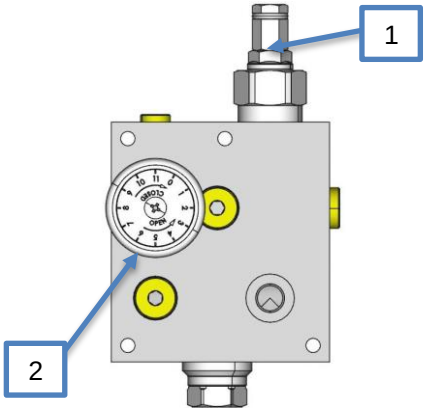
Procedure:

The push-off speed is set via the adjusting wheel at position "**2**".
Turning the wheel clockwise reduces the speed. Turning it anti-clockwise raises the speed.

Setting values

- Start with setting 2 - 3.
- Make the setting depending on the towing vehicle; internal consumption approx. 8.8.
- The setting depends on the spreading medium and application amount.

Objective: The moving panel travels towards the spreading roller with a constant working pressure.



1 Adjusting screw for pressure sequence valve
2 Adjusting wheel for flow rate of push-off cylinder

Fig. 51: Mechanical control valve

The flow control valve is correctly set in the factory and must not be changed.

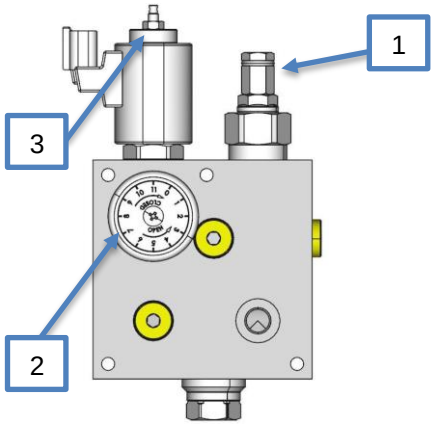
In addition to the valve setting, the application amount and spreading pattern are also affected by the travel speed. To achieve optimum results, test runs and adjustment are required while working.
The setting of the push-off speed must be adapted to the load to be spread.

Due to their design, different oil flow rates exist in the push-off cylinders, which become active one after the other. Therefore, to ensure a constant push-off speed, the oil flow rate must be adjusted when the moving panel has completed 30% and 60% of its travel.

6.8.2 Electrical potentiometer

In the case of the electrical flow control valve, the push-off speed is adjusted via an electrical stepper motor on the control valve. The stepper motor is controlled from the vehicle cab via a potentiometer.

Procedure:
For normal operation, the hand wheel must be turned from position "2" in clockwise direction up to the stop.
In the case of an electrical system fault, the valve can be opened manually by turning the hand wheel anti-clockwise.
At position "3", the switch box and potentiometer are connected.



1 Adjusting screw for pressure sequence valve
2 Adjusting wheel for flow rate of push-off cylinder
3 Electrical flow control valve for push-off cylinder

Fig. 52: Electrical flow control valve

The flow control valve is correctly set in the factory and must not be changed.

For objective and operation, see 7

Due to their design, different oil flow rates exist in the push-off cylinders, which become active one after the other. Therefore, to ensure a constant push-off speed, the oil flow rate must be adjusted when the moving panel has completed 30% and 60% of its travel. On the potentiometer, the basic setting must be reduced by two scale marks in each case.



Fig. 53: Control unit for electrical potentiometer

Do not place the control unit loosely in the cab.
The control unit for the electrical potentiometer must be mounted on a suitable retainer in the cab of the towing vehicle.
Loose objects in the cab can fall down and block control elements, such as pedals. This can result in a loss of control over the tractor/trailer combination and thus give rise to dangerous situations (in road traffic).

6.8.3 Manual emergency operation of the hydraulic control

The rear panel can be closed in manual emergency mode. This returns the push-off trailer to normal travel position.

Single-action control unit

Lowering

To lower the rear panel, slowly turn out the adjusting wheel.

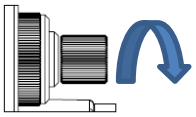


Fig. 54: Adjusting wheel **"B"**

Raising

To raise the rear panel, in order to unload the trailer, proceed as follows:

1. Press and hold button "c"
2. Turn out adjusting wheel "B"

   When the rear panel is open

3. Turn adjusting wheel "B" back in
4. Release button "c"

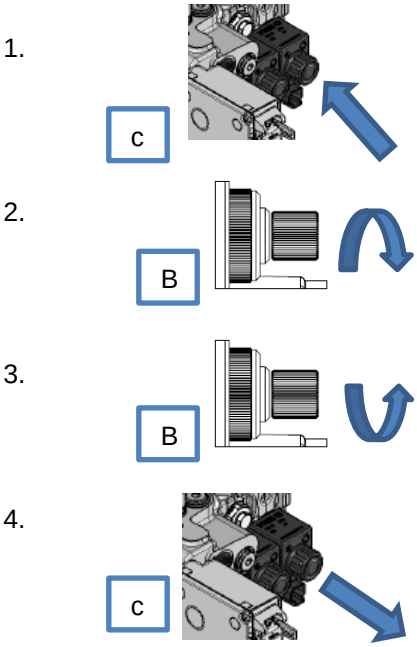


Fig. 55: Control elements

Dual-action control device

Lowering

To lower, press button "c" at the top or bottom.

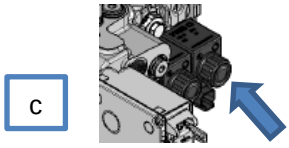


Fig. 56: Control elements

6.8.4 Cause of control unit malfunction

If the control unit is not connected correctly, it can be damaged.
The following possible causes exist:

- The control unit is pressurised but no line is connected to the port of the oil return line (T).
- The connection couplings "P" and "T" have been swapped so that pressure from the towing vehicle is applied directly to connection "T".

If pressure is applied to connection "T" on the control unit, it can be damaged.

6.9 Adjusting the grate extension

The grate extension is set prior to initial start-up through brief operation of the push-off process; as a result, the sliding floor and the bulkhead are moved back slightly.

Switch off the towing vehicle.
Carefully climb up the ladder and adjust the grate extension as required.
Then secure the bolt again.

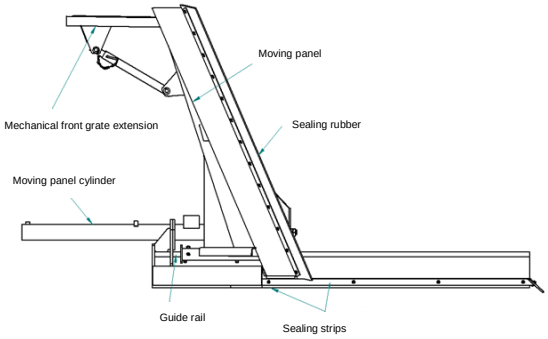


Fig. 57: Grate extension

6.10 Drive shaft for attachment (optional)

Attach the drive shaft between the tractor and the Fliegl ASW.
Ensure that the swivel head audibly engages in the PTO stub.



Fig. 58: Connecting the drive shaft

Before assembly, check the minimum length of the drive shaft.
The minimum length is the smallest possible distance between the tractor PTO and the connection point on the trailer.
An excessively long drive shaft can buckle during operation or even break off.
The section tubes of an excessively long drive shaft can be shortened using an angle grinder with a metal cutting disk or similar tool. The tubes are made of hardened material. After cutting, deburr both section tubes and remove all swarf.
You must also read the drive shaft operating manual carefully and follow the contained instructions.



Fig. 59: Drive shaft

Shorten the drive shaft and the corresponding protective tubes on both sides. Otherwise, the shaft could be damaged.

Only attach the drive shaft when the tractor motor is switched off.
With regard to the attachment of the drive shaft, you must also read and follow the instructions in section 15.1.

Check the drive shaft length when straight and at maximum steering angle.
Check that the drive shaft profile has overlapped by 2/3 and can still move freely when steered.

With overload protection → max. torque 2000 Nm

7. Use and operation



Read carefully. If there is anything you do not understand, please 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.
- The hoses are labelled.
- The operator is responsible for renewing the labels if they should be lost or become unreadable. Otherwise, the hydraulic hoses may be connected incorrectly to the towing vehicle.

7.1.2 Coupling the trailer



When coupling and uncoupling, you must also observe the information in section 4.2. Read this section carefully prior to start-up.

- Move the towing device of the towing vehicle or the drawbar eye of the trailer to the correct height. See section 6.1.2.
- Open the towing device on the towing vehicle.
- Move the towing vehicle backwards until the drawbar eye engages in the towing device.
- Secure the towing vehicle against rolling away (parking brake) and turn off the engine.
- Check whether the towing device is engaged.
- If the trailer is equipped with forced steering, the control cylinder of the forced steering must be attached to the mounting point on the towing vehicle.
- Establish the electrical connections between the towing vehicle and trailer.
- Establish the compressed air supply between the towing vehicle and trailer, if applicable.
  Establish the hydraulic connections between the towing vehicle and trailer.
  Connect all hydraulic lines to the towing vehicle in pairs (double-action).
  For labelling to identify connection points, see the stickers on the vehicle and on the couplings.

Releasing the parking brake

The hand brake lever is located on the right of the traction bar.

- Parking brake version:
  To release the parking brake on the trailer, apply the handbrake lever a little (drawbar eye direction).
  It will trigger itself. Then reset the lever arm.

- Spindle brake version:
  To release the parking brake on the trailer, turn the crank anti-clockwise.

- Tristop version:
  To release the parking brake on the trailer, operate the relevant release button.

  - Remove the wheel chocks and stow them.
  - Start the towing vehicle engine.
  - Retract the supporting mechanism and, if possible, secure it in place.
  - Check the service brake and parking brake before starting work.

The parking brake is applied by pulling in the direction of the drawbar eye.
The PB is released by letting down the handbrake lever.

Road traffic regulations must also be observed when using the brakes (including the parking brake).

7.1.3 Electrical and electronic control accessories

Separate instructions are provided for the electronic controls. See section 10.

- Electrical potentiometer
- Fliegl Trailer Control (FTC)
- Fliegl Weighing System (FWS)
- Fliegl Tracker

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 (e.g. potentiometer) if necessary

7.1.5 Uncoupling the trailer

Follow the instructions in sections 7.1.1 to 7.1.2 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 trailer, repeated and summarized together for better clarity:

1. The weights and loads specified on the type plate must be observed.
2. Note the maximum permitted drawbar load of the trailer coupling.
   (Note the maximum permitted coupling load for the drawbar.)
3. When parking the vehicle, make sure the support foot is correctly locked.
4. Never park the push-off trailer on the supporting mechanism **while it is loaded**.
5. Park the push-off trailer so that it is stable. If the ground is soft, increase the size of the support plate of the supporting foot.
6. When parking the trailer, secure it against rolling away (parking brake, wheel chocks).
7. The push-off trailer must only be attached with the designated devices and in compliance with regulations.
8. Connect the brake system and check to ensure it is functioning properly. Follow the manufacturer's instructions.
9. There is a risk of injury when coupling and uncoupling the push-off trailer to and from the tractor (danger due to crushing and shearing points when actuating the support gear).
   Keep children away!
10. When coupling, make sure that the trailer coupling pin is secured.
11. In the area around the tractor three-point linkage, there is a risk of injury at crushing or shearing points.
12. The drive shafts must meet the requirements of the attachment manufacturer.
13. The drive shaft must only be coupled or uncoupled when the tractor engine is switched off.
14. For wide angle drive shafts, make sure the wide angle joint is connected on the tractor side.
15. Ensure that the drive shaft couplings are correctly engaged.
16. Secure the drive shaft with the chain to prevent it turning.
17. **Do not stand on the drive shaft.**
18. When the drive shaft is switched on, avoid driving around tight bends.
19. Before first-time start-up, move all protective devices to the protective position.
20. Before coupling or uncoupling the vehicle, secure it against rolling away using the parking brake and/or wheel chocks.
21. Movable attachments, such as the sliding gate and rear panel, must be secured in their end positions. Special caution is required when opening and closing these parts.
22. Move all devices to the transport position before driving on public roads.
23. Allow for reduced load on the tractor front axle and loss of steering ability due to the drawbar load of the trailer.
24. There must be no persons in the danger area while the load (straw, manure, compost, etc.) is being discharged.
25. **The sliding unit must be retracted before closing the rear panel!**

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.

Compression process with pressure valve (optional)

The load (e.g. silage) can be compressed by means of a pressure valve to accommodate more material.
The valve must be activated via the control unit before the compression process.
During this process, the sliding floor remains stationary. Only the moving panel moves backwards. When the working pressure of **80 bar** is reached (this value must not be changed), the valve switches off.
Upon completion of the compression process, the pressure valve must be deactivated so that the sliding floor and moving panel move backwards together during unloading.



Fig. 60: Control unit for pressure valve

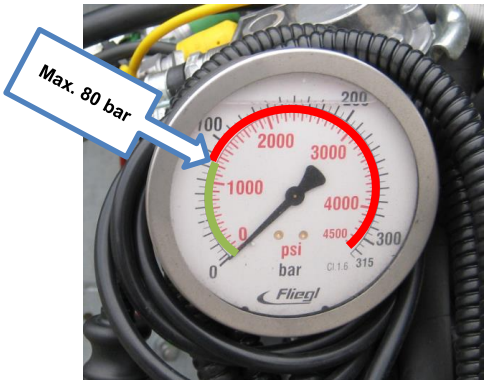


Fig. 61: Working pressure gauge for the sliding unit

Caution: Maximum working pressure: 80 bar; otherwise the rear/side panel may be damaged.

Standing on the loading area is prohibited.

7.2.3 Emptying the trailer

- There must be no objects or persons within the 25 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. During push-off, there is a risk of damage to the grate extension (in conjunction with the tension cable).
- If necessary, fold the grate extension down.
- Apply hydraulic pressure to the hydraulic circuit for the rear panel and push-off process.
- The rear panel moves up out of its retainer and swings open 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.

Emptying through the grain hatch

When emptying grain through the grain hatch, the working pressure must not exceed **80 bar**.
Otherwise the rear/side panel may be damaged.
No pressure restriction is fitted!

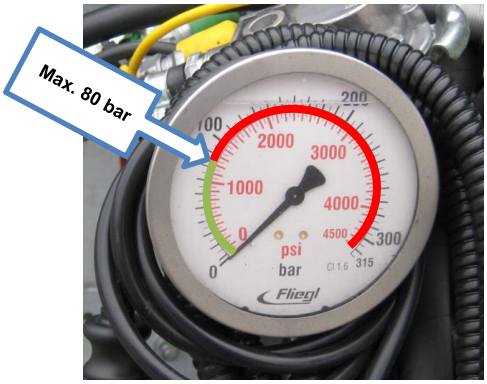


Fig. 62: Working pressure gauge for the sliding unit

Caution: Maximum working pressure: 80 bar; otherwise the rear/side panel may be damaged.

The tension cable can be removed when transporting lightweight goods.

Particular care must be taken when reversing for emptying purposes.

First, move the sliding unit forwards. Then close the rear panel.
Otherwise the sealing strip may be damaged.

7.3 Chassis lock

7.3.1 Chassis lock, bolted

The chassis lock for swap chassis is bolted as standard.

Installed on the following models:

- ASW 256
- ASW 261
- ASW 271
- ASW 281
- ASW 381
- ASW 391
- ASW 3101
- ASW 491
- ASW 4101



Fig. 63: Lock, bolted



When travelling with non-secured chassis locks, the body can slip or topple while moving.



The screw joints must be checked regularly to ensure they are securely fastened
(M 24; 730 Nm). Never travel with non-secured bodies.

7.3.2 Chassis lock, Twistlock (optional)

For vehicles with swap chassis, the optional Twistlock quick-change mechanism can be used.

Available for the following models:

- ASW 256
- ASW 261
- ASW 271
- ASW 281
- ASW 381
- ASW 391
- ASW 3101
- ASW 491
- ASW 4101

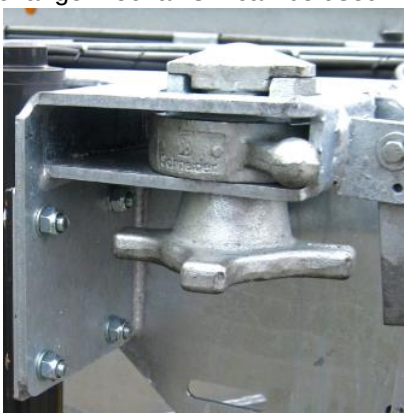


Fig. 64: Twistlock locking



When travelling with non-secured chassis locks, the body can slip or topple while moving.



Never travel with non-secured bodies.

7.3.3 Using the chassis locks

Procedure

- Unload the body
- Disconnect the hydraulic connections
- Disconnect any electrical connections between the chassis and body
- Fully raise the trailer with the air suspension, or
- Raise the trailer with the optional hydraulic lifting device
- Attach supporting feet to the body
- Lower the bottom parts of the supporting feet and lock them; ensure that all supporting feet are in firm contact with the ground
- Loosen the clamping nuts on all four chassis locks
- Lift the locks with the clamping nuts and rotate them by 90°
- Fully lower the trailer with the air suspension, or
- Lower the trailer with the optional hydraulic lifting device
- Carefully drive the towing vehicle forwards to straighten the chassis

A hydraulic lifting device can be retrofitted to the trailer.
In this case, the disassembly process is the same as for trailers with air suspension.

The optional hydraulic lifting device is intended for the disassembly of the chassis (without air suspension) and body and must be ordered separately.
It can be retrofitted for specific bodies, such as a vacuum tank, to enable higher lifting of the trailer.



When removing and applying the body, there is a risk of the body falling and causing serious injury. Never stand under suspended loads.

Locking the body with chassis locks:

- Rotate all four locks with the clamping nuts so that they are positioned longitudinally.
- Place the body onto the chassis.
- Lift the locks with the clamping nuts and rotate them by 90°.
- Tighten the clamping nuts.
- Ensure that rotation of the clamping nuts is prevented by the locking mechanism.

When travelling with non-secured chassis locks, the body can slip or topple while moving. Never travel with non-secured bodies.

7.4 Loading and unloading swap bodies

The user must ensure that the swap bodies employed are:

- **In safe condition**
- **Suitable for the intended application**
- **Used for their designated purpose**

Swap bodies must only be set down on flat, level ground with sufficient load-bearing capacity. Locations for setting down swap bodies must be selected and prepared with due care and attention. If necessary, the supporting feet must be underlayed to increase the support area in line with the load-bearing capacity of the foundation.

Damage to the foundation will cause an uneven distribution of forces when setting down the swap bodies, thereby placing excess strain on the ground and the swap bodies themselves. Base plates should be used to avoid wear and trip hazards.



Fig. 65: Low-wear support surface

The load-bearing capacity of asphalt surfaces varies significantly according to the temperature (frost or sun exposure) and composition of the asphalt.
Since it is impossible to be sure about these properties at every location, it is generally advisable to use base plates at all times.



Fig. 66: Asphalt surface damaged by supporting foot

Never park the push-off system on the supporting feet when loaded. Always park the push-off system on solid ground.
Never park the push-off system on the supporting feet while attachments are fitted.

7.4.1 Parking height

The length of the supporting feet must never be provisionally increased by propping up the supporting feet since the body could be knocked off the props when driving underneath it. Adjustable supporting feet must be used where necessary.

It must be ensured that all four adjustable supporting feet are always set to the same parking height.

7.4.2 Attaching the lifting cylinders to the swap chassis

If possible, have the cylinders fitted by a specialist workshop.

Attaching the hydraulic (lifting) cylinders

If the lifting cylinders have not yet been fitted to the swap chassis, they must be attached as follows:

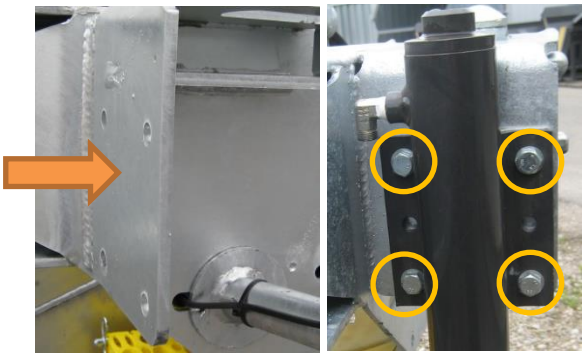


Fig. 67: Attaching the lifting cylinder

Step 1

Attach the lifting cylinders to the mounting plate on the swap chassis

Step 2

Route the hydraulic line from the front of the ASW to the 4 individual lifting cylinders



Fig. 68: Connecting the hydraulic line

Step 3

Connect the hydraulic line to the lifting cylinder

Step 4

Bleed the hydraulic system

7.4.3 Using the supporting feet

Most accidents occur when working with the supporting feet.
When using the supporting feet, ensure that hands and feet are not crushed.

The supporting feet are not connected to the swap body. They are supplied separately and attached for use when required.

- Slide the supporting feet into the lateral guides
- Lock the supporting feet
- To adjust the height, release the lock on the foot and re-engage it after the adjustment

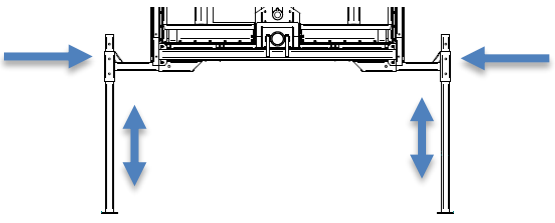


Fig. 69: Attaching the supporting feet

7.4.4 Loading and unloading the swap body

The swap body must be loaded and unloaded in a jerk-free manner and without any tilting, tipping or slipping of the swap chassis or supporting feet.

Unloading the swap body

Procedure

- Release the attachment between the body and chassis.
- Open the stopcocks ① on the 4 lifting cylinders.
- Extend the lifting cylinders by operating the hydraulics on the towing vehicle.
- Slide the supporting feet into the designated guides.
  Secure the supporting feet with a safety bolt.
- Slowly retract the hydraulic cylinders into their initial position.
- Close the 4 stopcocks ② again.
- You can drive the chassis out from underneath the swap body.



Fig. 70: Undoing the attachment



Fig. 71: Opening/closing the stopcock

Loading the swap body

Procedure

- Drive the chassis underneath the swap body.
- Open the stopcocks ① on the 4 lifting cylinders.
- Extend the lifting cylinders by operating the hydraulics on the towing vehicle.
- Remove the safety bolts from the supporting feet.
- Pull the supporting feet out of the guides.
- Slowly retract the hydraulic cylinders into their initial position.
- Close the 4 stopcocks ② again.
- Secure the attachment between the body and chassis.

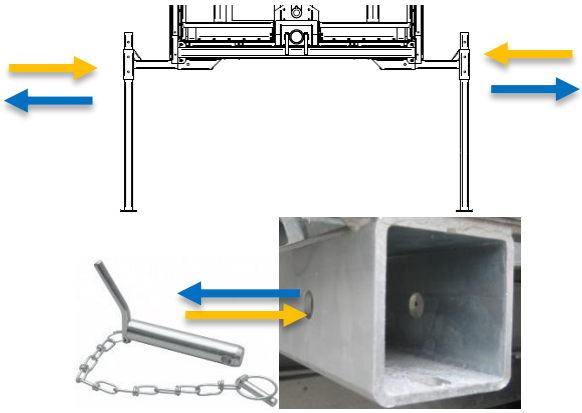


Fig. 72: Attaching the supporting feet



Fig. 73: Unloading the swap body

8. Basic equipment (standard, optional)

8.1 Draw gear

8.1.1 Rigid traction bar

The rigid traction bar is suitable for top or bottom attachment and is available in different offset heights.

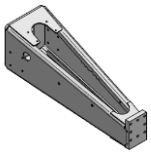


Fig. 74: Rigid traction bar

8.1.2 Traction bar with sprung draw gear

Conditions for operation:

- Double-action hydraulic connection

Operation only from the machine workstation

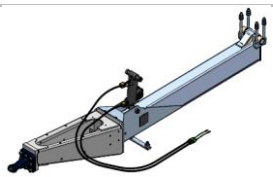


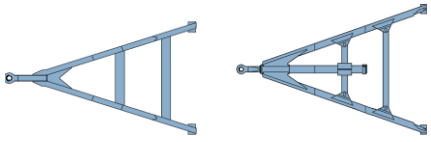
Fig. 75: Traction bar suspension

8.1.3 Drawbar

The drawbar is only available for the three-axle ASW models.

Versions

- Fixed drawbar
- Extendible drawbar



Fixed Extendible

Fig. 76: Drawbar

8.2 Flange couplings

The flange couplings are assigned to different total vehicle weight classes.
The following drawbar eyes are available for the push-off trailer:

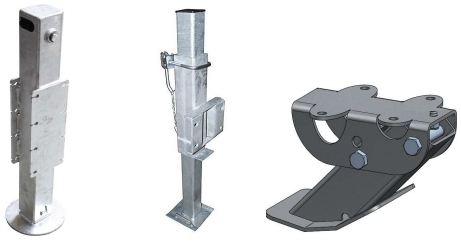
Flange couplings		
DIN drawbar eye 40 (Ø 40 mm)[1)] 	Ball head K80 (Ø 80 mm) [2)] 	Drawbar with swivelling eye (∅ 51 mm) [2) 3)] 
Piton-Fix [2)] 	Pivoting drawbar eye (50 mm, up to 14 t) [2) 3)] 	[1)] Standard [2)] Option [3)] Export only

8.3 Supporting mechanism

Depending on the ASW version, the following types of supporting mechanism are available.

Versions
1. Hydraulic supporting foot
2. Supporting stand
3. Hitch supporting foot, rigid (optional)*

*Only possible with bottom hitch (export only)



1 2 3

Fig. 77: Supporting mechanism

8.4 Swap chassis

The following models feature a swap chassis as standard. The swap chassis is equipped with a trailer lock.

- ASW 256
- ASW 261
- ASW 271
- ASW 281
- ASW 381
- ASW 391
- ASW 3101
- ASW 491
- ASW 4101

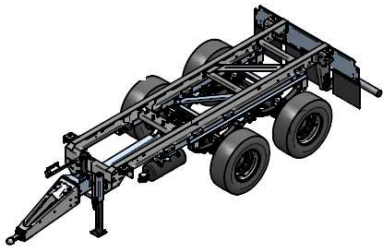


Fig. 78: Swap chassis

8.5 Moving panel and sliding floor

Every ASW type has a specially designed moving panel and sliding floor unit. These differ in their length, number of hydraulic cylinders on the sliding wall as well as the length and size of the thrust cylinder of the floor unit.

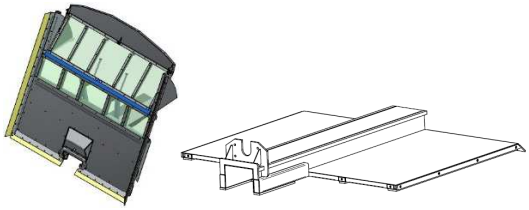


Fig. 79: Sliding floor unit

Further details and replacement parts for the sliding floors and their hydraulic cylinders are provided in the replacement part lists.

8.6 Front grate extension



Fig. 80: Front grate extension / tension cable

During push-off, there is a risk of damage to the front grate extension or any tension cable that is used.

8.7 Axle adjustment

8.7.1 Manual axle adjustment

The drawbar load is changed by adjusting the axle spacing.



Fig. 81: Axle adjustment

Procedure:

1. Park the vehicle in a horizontal position while secured with the parking brake.
2. Loosen and remove the screws (x 4) connecting the chassis (see arrow) to the vehicle frame.
3. Carefully move the chassis forwards and backwards to assume the required drawbar load position.
4. Re-apply and secure the connecting screws.
5. Release the parking brake.
6. Move the axle assembly backwards to increase the drawbar load.
7. Move the axle assembly forwards to reduce the drawbar load.



Note the max. drawbar load on the tractor.

When the axle spacing from the central trailer axle is changed, the trailer's suitability for public road use is no longer assured.

The vehicle is used at the operator's own risk.
The setting (without attachment of auxiliary devices) is marked on the frame and chassis.
(The marking is applied for manual and hydraulic axle adjustment.)

8.7.2 Hydraulic axle adjustment (optional)

Hydraulic axle adjustment is available as an option as of ASW 256 (for infinitely variable drawbar load adjustment).

When travelling on public roads, the axle position must be adapted to the drawbar load specified on the type plate.

Adjusting the axle assembly hydraulically
The trailer drawbar load on the towing device of the tractor can be altered by adjusting the axle assembly. The axle assembly is moved with the aid of hydraulic cylinders.

Move the axle assembly backwards to increase the drawbar load
Move the axle assembly forwards to reduce the drawbar load



Fig. 82: Hydraulic axle adjustment

8.8 Air suspension (optional)

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. 83: Air suspension height

8.9 Steered trailing axle (optional)

On tandem assemblies, the steered trailing axle is always the second axle; on quattro assemblies, it is the first and last axle.

Adjusting the steering axle
If the trailer is equipped with steering axles, the setting of the axles must be checked in new condition and after fitting new tyres.

- Couple and fully load the trailer.
  Drive round a tight corner with the towing vehicle and stop the tractor/trailer combination while in the corner.
- Measure the distance between the tyres and frame.



Fig. 84: Trailing axle

With a fully laden trailer, the distance between the tyres and frame must be at least 10 mm. The measurement must be performed on both sides of the trailer for all steering axles.
If the distance is too low, the setting must be adjusted as follows:

- Travel a short distance in a straight line so that the tractor/trailer combination is straight.
- Undo the lock nut of the adjusting screw on the side to be adjusted.
- Adjust the adjusting screw.
  → Turn anti-clockwise to increase the distance between the tyres and frame.
  → Turn clockwise to reduce the distance between the tyres and frame.

Drive another tight corner with the tractor/trailer combination and repeat the measurement.

The steering axle must only be adjusted by authorised specialist workshops.

If the steering axles are set incorrectly, there is a risk of the tyres being damaged when travelling around tight corners.

If the trailer is equipped with a TRIDEM or QUATTRO axle assembly, the measurement and adjustment must also be performed on the front axle.

The **steering axle must be locked** at speeds over 15 km/h and when reversing.

9. Accessories

9.1 Reversing/monitoring camera

A reversing camera is recommended to improve visibility when reversing.

The monitoring camera allows you to observe the loading and unloading process and can also be connected to the reversing camera.
(No separate monitor needed.)



Fig. 85: Reversing camera

9.2 Lights

9.2.1 Marker lights

Marker light types

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



Fig. 86: Marker lights

9.2.2 Warning lamp

The warning lamp lights up to indicate that the rear panel is open. This warning is triggered by a sensor between the body and rear panel.



Fig. 87: Warning lamp

9.2.3 Beacon light

When travelling on public roads, the beacon light warns other road users of a slow-moving vehicle.
It is attached to the rear panel.



Fig. 88: Beacon light

9.2.4 Working light

The working light can be used to illuminate the working area behind the ASW. It is operated via the designated control unit.



Fig. 89: Working light

9.3 Potentiometer (optional)

The potentiometer ensures uniformly constant emptying and is ideally used for attachments such as spreaders or overloading augers.

- Mechanical potentiometer
- Electrical potentiometer

For more information, refer to section 0.

9.4 Load space covers

9.4.1 Sliding tarpaulin

Opening the closed tarpaulin

1. Release the retaining cable on the rear panel
2. Deposit the retaining cable to the side of the trailer
3. Using the hand crank, move the sliding tarpaulin forwards until the end position is reached
4. Secure the tarpaulin with the retaining cable on the left and right



Closing the open tarpaulin

1. Release the tarpaulin retaining cable on the left and right
2. Deposit the retaining cable to the side of the trailer
3. Using the hand crank, move the sliding tarpaulin backwards until the initial position is reached
4. Secure the tarpaulin to the rear panel using the retaining cable



Fig. 90: Mechanical sliding tarpaulin

9.4.2 Speed Cover roll net

The Speed Cover system is a space-saving solution that can be easily retracted via a winding mechanism so as not to obstruct the load area. The roll net is rolled up by means of a hydraulic oil motor. This tensions the lateral springs. When closed, the roll net rapidly moves towards the rear of the trailer under tension.





Fig. 91: Speed Cover

9.4.3 TopLift hydraulic folding roof

The elevating roof is split along its centre. It can be rapidly opened and closed on both sides with hydraulic assistance. This allows trailers to be loaded with a higher material cone with the elevating roof opened, while the roof can also be closed.
The elevating roof is equipped with a strong, tear-proof tarpaulin. The two halves overlap to provide complete rain protection.
The system can be controlled directly from the driver's cab.



Fig. 92: TopLift

9.4.4 Toplift light hydraulic folding roof

The system is operated by hydraulic control. The two frames, which are covered with a robust PVC net, can be opened fully to either side. When closed, the cover system does not exceed the width of the vehicle. Thanks to the folding structure, very high material cones can be easily covered and perfectly secured. The system can be controlled directly from the driver's cab.



Fig. 93: TopLift light

9.5 Folding side panel, mechanical

The mechanical folding mechanism facilitates loading from the side and enables the use of low-height loading vehicles.

The heavy folding mechanism must be operated by 2 people.

A suitable working platform for completing the process must be provided by the manufacturer. (Risk of falling!)



Fig. 94: Folding side panel

9.6 Cardan shaft drive for auxiliary devices

A drive shaft is installed in the chassis frame.
This allows rear-mounted auxiliary devices (e.g. spreader) to be powered via the cardan shaft drive of the towing vehicle.

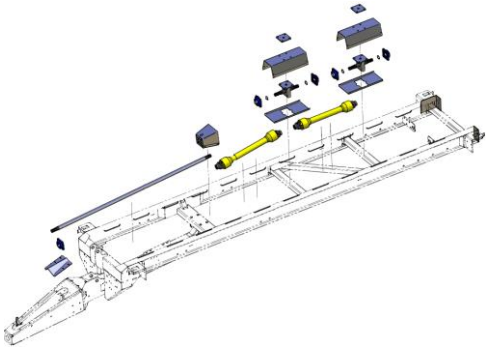


Fig. 95: Through drive

9.7 Underride guard

9.7.1 Rear underride guard (mechanical, hydraulic)

An underride guard is fitted to the rear of the ASW.
It can be folded up either mechanically or hydraulically.

This process must be completed before working with the trailer.

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



Fig. 96: Underride guard, hydr.

9.7.2 Side impact protection

The side impact protection can be folded inward on the ASW.

It must be set to vertical position when travelling on public roads.



Fig. 97: Side impact protection

9.8 Protect package

With this additional package, the following components are made from plastic or rubber:

- Plastic mudguards
- Plastic rear apron
- Lateral profile fillers (rubber) on side panels





Fig. 98: Protect package

9.9 Additional accessories

- Ladder
- Tyre pressure control system, 2-line, up to 4.5 bar, with compressor
- Changeover valve with control panel, double-action, 2 functions
- Double changeover valve with control panel, double-action, 3 functions
- ISOBUS wiring harness, connecting cable according to ISO 11783 for InCab socket
- Pressure valve
- Hydraulic lines for attachment

9.10 Fliegl Trailer Control (FTC)

Fliegl Trailer Control is an ISOBUS control system for push-off trailers, which is compatible with any existing ISOBUS display and does not require an additional control panel on the tractor.

Fliegl Trailer Control only requires three hoses:
P = pressure
R = return
LS = load sensing

The operating instructions are supplied separately.
(See section 10.)



Fig. 99: Trailer Control

9.11 Fliegl Weighing System (FWS) ISOBUS

Weighing sensors and weighing system components must be fitted to the ASW.
You also require an ISOBUS display and/or ISOBUS control system in your towing vehicle.
You configure the operation in your ISOBUS control system.

The operating instructions are supplied separately.
(See section 10.)



Fig. 100: Control module

9.11.1 Bluetooth thermal printer for FWS

All saved data can be printed on-site via the Bluetooth printer.

The operating instructions are supplied separately (see section 10).



Fig. 101: Thermal printer

9.11.2 External display for FWS

The current weight in the ASW can be shown on the display attached to the side panel.



Fig. 102: External display

9.12 Fliegl Tracker

The beacon-based Fliegl Tracker vehicle detection system allows data to be transmitted between the harvesting and loading vehicles, for example.
One system to benefit from this procedure is the Fliegl Weighing System (FWS).



Fig. 103: Beacon

The operating instructions are supplied separately.
(See section 10.)

9.13 Universal terminal with colour touchscreen

The universal terminal can be used to operate the ISOBUS control systems.



Fig. 104: Universal display

The operating instructions are supplied separately.
(See section 10.)

10. Service and maintenance

Secure the parked tractor/trailer combination
Secure the tractor/trailer combination, store the ignition key securely
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 Customer service

Please contact:

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

Telephone: +49 (0)8631 / 307 - 461
Fax: +49 (0)8631 / 307 - 550
E-mail: service@fliegl.com
Internet: www.fliegl.com

10.2 Replacement parts

For a detailed list of all relevant replacement parts, please refer to the replacement parts list for the **ASW push-off trailer** (separate document)

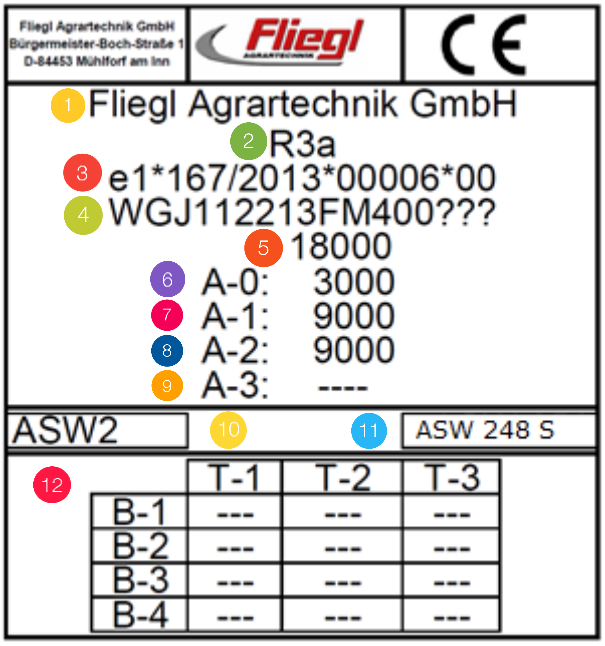
For replacement part orders, please contact:

Fliegl Agro-Center GmbH
Maierhof 1
84556 Kastl, Germany
Tel.: +49 (0)8671 / 9600 - 0
Fax: +49 (0)8671 / 9600 - 71
E-mail: info@agro-center.de
www.agro-center.de

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)



(example of sign)
Fig. 105: 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				
		Daily	50 oper. hrs. [4]	100 oper. hrs. [5]	As needed
Chassis					
Check tyre pressures		x			
Check wheel nuts to ensure correct tightening torque[1]				x	
Drain the water from the compressed air reservoir		x			
Check the wear on brake linings				x	
Check the actuating travel of the brake cylinder and adjust as necessary[7]			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	
Lubricate all lubrication points on the trailer			x		
Vent the forced steering				x	
Check the slide rail of the adjustable axle for wear				x	
Check that the traction bar bearings are securely fastened			x		
Check all screw connections on the chassis and attachment as well as the mounting points of the drawbar eyes and balls to ensure they are securely fastened[1][2]			x		
Structure					
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[6]		x			
Check the tension cable		x			
Ensure that chassis locks are securely fastened		x			
Check the mounting rail of the energy chain for contamination		x			

Maintenance task	Interval					
		Daily	50 oper. hours	100 oper. hours	2500 oper. hours	As needed
Accessories						
Lubricate the bearings of the PTO through drive		x				x
Lubricate the drive shafts			x			
Check the oil levels of the gear mechanisms and top up if necessary[8)]					x	
Lubricate the drive chains of the dosing roller drive				x		
Check the blades of the spreading plate shafts and dosing rollers for wear			x			

1. For commercial vehicles, check the screw connections after the first 10 operating hours
2. Retighten all loose screw connections as necessary
3. W = workshop task
4. Or weekly
5. Or quarterly
6. Replace hydraulic hoses every 6 years
7. Every time the brake linings are replaced.
8. After the first 250 operating hours

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.

In this case:

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

Frame:

Check the suspension, axle mountings and screw connections every day and re-tighten 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 drawbar eye after the first 10 operating hours, then check every 50 operating hours to ensure they are firmly seated and re-tighten 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 re-tighten.
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.
   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 rotating and 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. Remove stones or other foreign objects from the trailer with a shovel or similar tool.

Cleaning

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.

Manure transport can cause discolouration of the ASW.
However, this does not damage the protective layer of the body.

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 a blow-out 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

Lubricants to use:

Lubricants	Type	Quality
Oils	Gear oil SAE 90 EP	API-GL 5
Greases	Lithium grease	DIN 51 502, KP 2K

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.

Lubricating the drive shafts:

The drive shafts must be lubricated at the specified points every 50 operating hours.

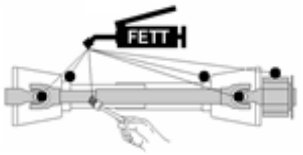


Fig. 106: Lubricating points

Central lubrication points:
Grease banks are located at the side of the vehicle to supply the bearings on the through drive (under the vehicle) and on the spreading rollers. See images.

The lubricating blocks are located on the left underside of the body and on the right side panel of the spreader. For maintenance intervals, refer to the table (at least every 50 hours).



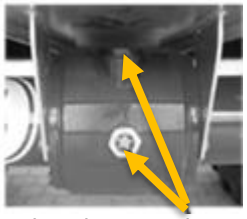


Fig. 107: Central lubrication points

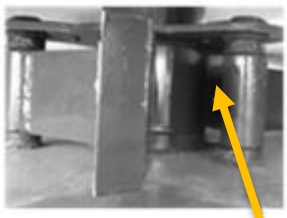
Lubrication schedule
The lubrication schedule applies to all Fliegl push-off trailers.
Dispose of old oil and grease in the correct manner.

Every 8 op. hrs.	Every 50 op. hrs.	Every 100 op. hrs.	Every 500 op. hrs.
- Ratchet clutch	- Overrun mechanism - Drive shaft bearings - Spreader bearings - Spreading rollers - Transmission bearings (Profi spreader only)	- Parking brake - (with pneumatically operated trailers) - Brake linkage - Spring bolts - Centre bearings - Pivot point of steered trailing axle - Pivot point of hydraulic rear panel	- Wheel hub bearings

Lubricating the spreader gear unit and topping up or changing oil



Check the oil level on the spreader gear unit and top up if necessary Target quantity = centre to upper edge of sight glass



Check that there is sufficient grease on the intake elements and regrease thoroughly if necessary

Fig. 108: Lubrication points on spreader gear unit and intake elements

10.4.5 Tyres and wheels

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

Dimension	Load index	Tyre pressure [bar]
15/70-18	16 PR	4.25
340/65-R18	Michelin	5.00
385/65-22.5	New	9.00
445/65-22.5	New	9.00
500/50-17	10 PR	4.00
500/50-17	149A8	3.00
550/45-22.5	16 PR	2.80
550/60-22.5	16 PR	2.80
560/45-R22.5	Radial	4.00
560/60-22.5	16 PR	4.00
560/60-R22.5	Radial	4.00
600/55-22.5	16 PR	3.60
650/50-R22.5		4.00
650/55-R26.5	Radial	4.00
700-22.5	16 PR	2.20
700-22.5	12 PR	2.20
710/50-R26.5		4.00
750/45-R26.5		4.00

The numbers in the table may differ depending on the tyre manufacturer.
Not all tyres are suitable for speeds > 40 km/h.

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 14.2.

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

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 are the minimum requirement.
Different maintenance cycles may be needed in individual cases.

10.4.6 Maintenance of the compressed air brake system

Draining water from the air tank:

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

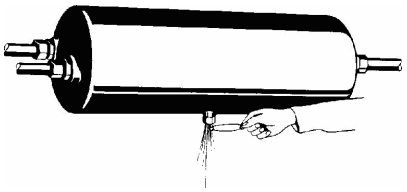


Fig. 109: Reservoir

Line air filter

The two filter housings (1) contain sieve inserts (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 → see Fig.

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

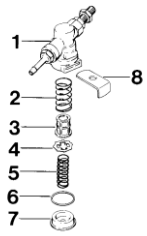


Fig. 110: Individual parts of line filter

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 regulation

ALB = automatic load-dependent brake force regulation.
The setting length is specified on the ALB plate.
This setting must not be changed.

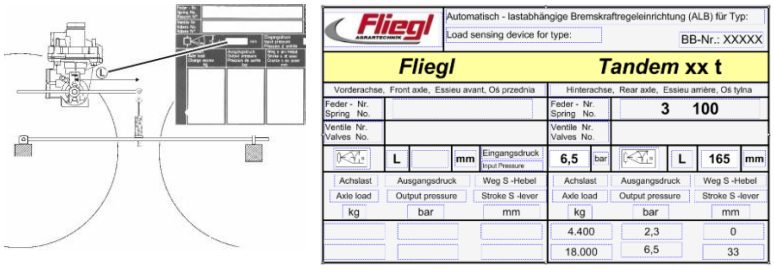


Fig. 111: Setting length on ALB regulator and ALB plate on the vehicle

Compressed air line filters

Compressed air line filters (2 filters)
The sinter filter cartridges must be cleaned every 2-3 months (with Nitro cleaning solution)

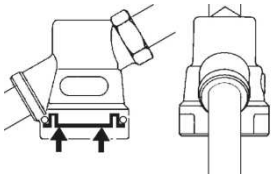


Fig. 112: Line filters

Pressurised air suspension

The air suspension must be checked every 2 weeks.

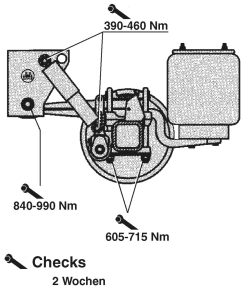


Fig. 113: Air suspension

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.

10.4.7 Checking the seals on the moving panel and sliding floor

- Check the sealing strips on the moving panel and the sliding floor for damage.
  If the sealing strips no longer form a tight seal due to damage and/or wear, they must be replaced.
- Undo and remove the screws and nuts on the relevant sealing strip.
- Pull the sealing strip out of its retainer.
- Insert a new sealing strip into the groove.
- Re-attach the sealing strip using the retaining screws and nuts.
- Check the slide rails of the moving panel and sliding floor.
- Measure the thickness of the slide rails for the moving panel and sliding floor.
  If the thickness is less than 6 mm, have the slide rails replaced by a specialist workshop.

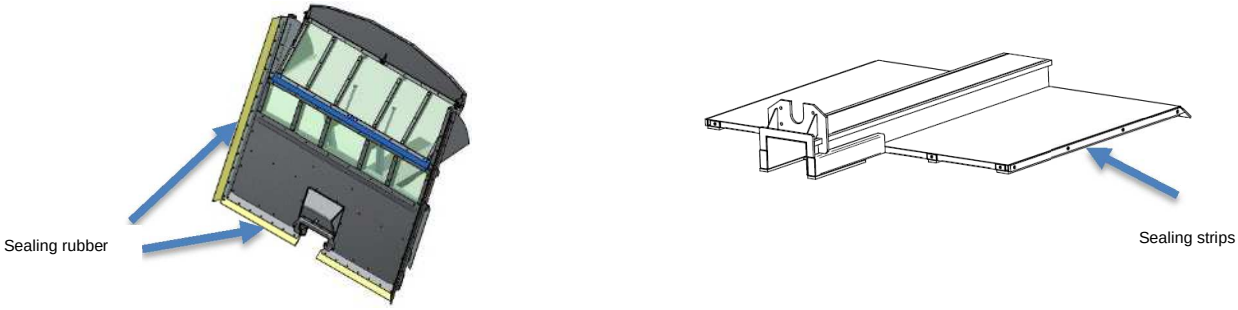


Fig. 114: Checking the sealing strips on the moving panel and sliding floor

10.5 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.**

10.5.1 List of warning and fault signals

Fault / error message	Possible cause(s)	Remedy
Overrun brake mechanism	Braking effect too low Braking effect too high	Identify the cause of lacking brake force *Re-adjust the turnbuckles → see section 6* *Visit a specialist workshop*
Compressed air brake with ALB valve	Braking effect too low Brake force too high	Identify the cause of lacking brake force Visit a specialist workshop
Standard brake – spindle pull	Braking effect too low	Identify the cause of lacking brake force Adjust the cable pull or Visit a specialist workshop
Standard brake – farmer stop	Braking effect too low	Identify the cause of lacking brake force Adjust the cable pull or Visit a specialist workshop

Fault / error message	Possible cause(s)	Remedy
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
Tool 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
Tool 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
Drive shaft is no longer turning	PTO on tractor or on trailer through drive defective	Determine the cause
	PTO not connected	Visit a specialist workshop
Low lift and break-out forces	Insufficient oil pressure	Check the tractor hydraulics
Vibration on the push-off trailer	Speed too high	Reduce
	Drive shaft faulty	Replace, contact manufacturer's customer service or visit a specialist workshop
	Spreading rollers, bearings faulty	Replace, visit a specialist workshop
	Spreading rollers, loss of throw blade or roller blade	Replace, visit a specialist workshop

Fault / error message	Possible cause(s)	Remedy
Push-off not possible	Hydraulics not connected	Check the hydraulic connection and connect if necessary
	Fill level of spreading material too high	Check fill quantity and reduce if necessary
Spreader stopped	Not switched on	Switching on the spreader
	Through drive not coupled	Couple
	Through drive defective	Replace or repair the parts, visit a specialist workshop
Feed regulation not possible (electr. potentiometer)	No power supply	Connect
	Control cable faulty	Repair or replace; visit a specialist workshop
	Controller faulty	Replace
Sliding gate does not open fully	Material in the sliding gate too tightly compacted	Loosen material
	Stopcock not switched over	Open stopcock
	Working pressure	If necessary, visit a specialist workshop to have the working pressure increased



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

10.6 Decommissioning

10.6.1 Temporary shutdown

Switch off the machine and all attached assemblies, disconnect the machine; see section 7.1.5.
Clean and maintain the machine (see section 0).

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

10.6.2 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 push-off trailer thoroughly inside and out, then leave the push-off 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).

10.6.3 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.

10.6.4 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

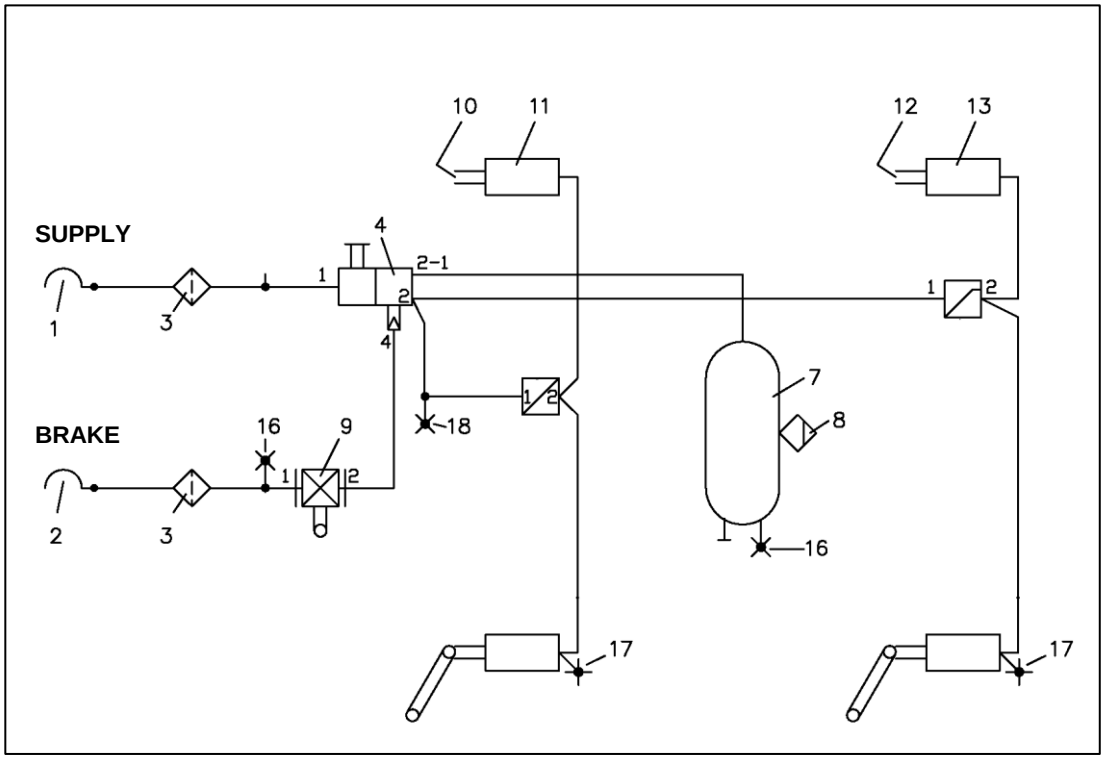


Fig. 115: Compressed air diagram with mech. ALB

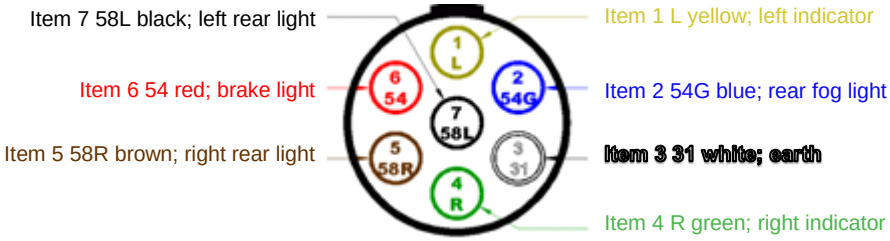
HALDEX BRAKE PRODUCTS GmbH	Dual line brake system according to StVZO (Germany)/lof	380 090 300
Customer:		11/07/2003
Veh. type:		Page 1

Item	Qty.	Designation	Order no.
1	1	Coupling head "supply"	334 055 …
2	1	Coupling head "brake"	334 054 …
3	2	Line 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 Contact assignment plan

According to DIN/ISO 1724 (12 V)



Contact assignment plan – 12 V

Assignment plan							
Contact assignment plan	**Left indicator**	**Rear fog light**	**Earth***	**Right indicator**	**Right rear light**	**Brake light**	**Left rear light**
	1	2	3	4	5	6	7
	L	**54g**	**31**	**R**	**58R**	**54**	**58L**
7-pin connector ISO/DIN 1724	**Yellow**	**Blue**	**White**	**Green**	**Brown**	**Red**	**Black**

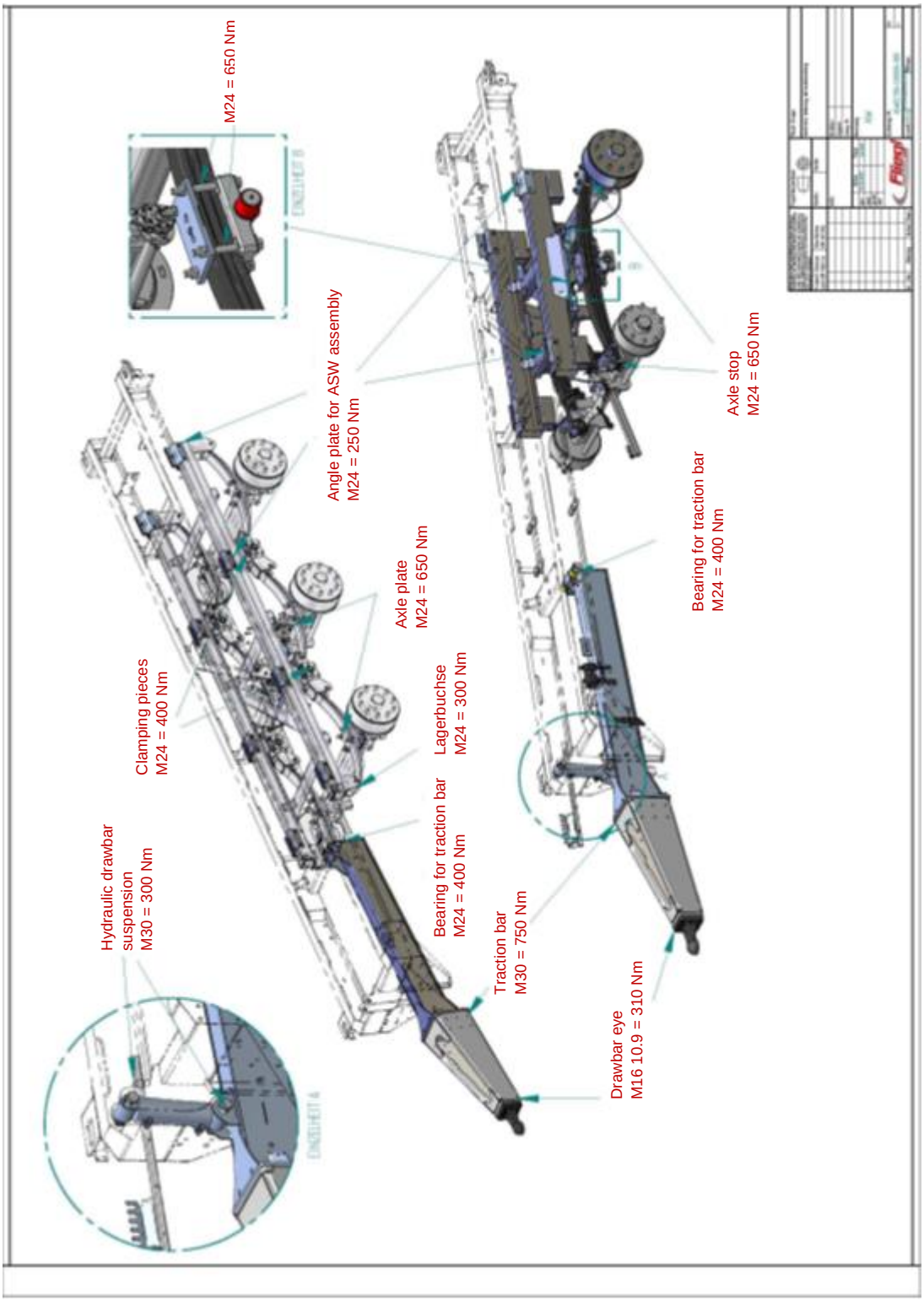
*** The three ground wires must not be electrically connected to the trailer.**

12.2 Rear light model



Fig. 116: Rear light

13. Tightening torques for screws on ASW



14. Axles

14.1 Assemblies

The ASW push-off trailers feature type-specific axle assemblies

14.1.1 Titan tandem assembly

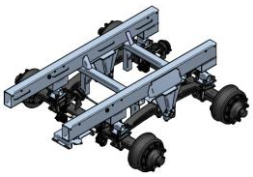


Fig. 117: Titan tandem assembly

14.1.2 Titan Plus tandem assembly

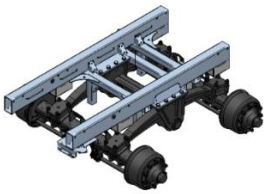


Fig. 118: Titan Plus tandem assembly

14.1.3 Gigant tandem assembly



Fig. 119: Gigant tandem assembly

14.1.4 Gigant Plus tandem assembly



Fig. 120: Gigant Plus tandem assembly

14.1.5 Tandem hydraulic suspension

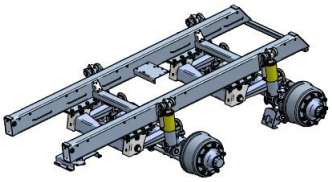


Fig. 121: Tandem hydraulic suspension

14.1.6 Tandem air suspension

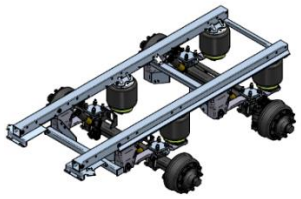


Fig. 122: Tandem air suspension

14.1.7 Gigant tridem assembly



Fig. 123: Gigant tridem assembly

14.1.8 Gigant Plus tridem assembly

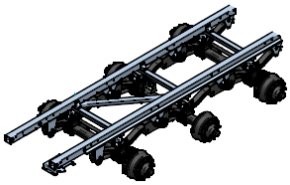


Fig. 124: Gigant Plus tridem assembly

14.1.9 Tridem hydraulic suspension

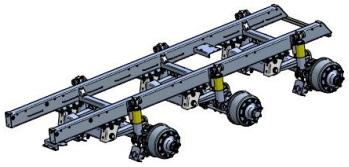


Fig. 125: Tridem hydraulic suspension

14.1.10 Tridem air suspension

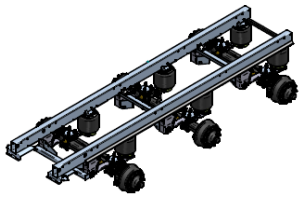


Fig. 126: Tridem hydraulic suspension

14.1.11 Gigant Plus quattro



Fig. 127: Gigant Plus QUATTRO

14.1.12 Quattro air suspension

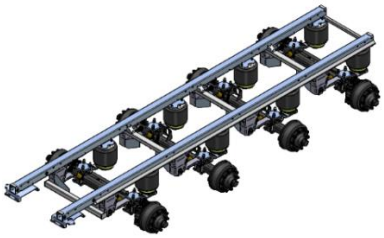


Fig. 128: Quattro air suspension

14.1.13 Quattro hydraulic suspension

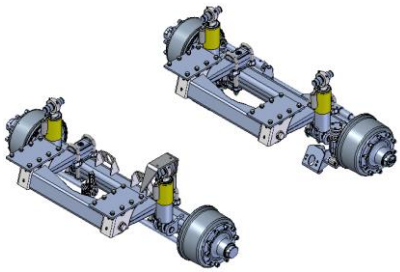


Fig. 129: Hydraulic suspension

14.2 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: https://www.bpw.de/service/downloads.html
ADR: http://www.adraxles.de/download
FAD: http://www.fadassali.it/eng/manuals_e.aspx

The axle manufacturer can provide you with the latest maintenance manuals.

15. Appendix

15.1 Safety and operating conditions of the drive shafts



This information is provided for your safety.

Correct use of the drive shafts and completeness of the accident prevention devices are essential requirements for operator safety.
A large proportion of accidents occur as a result of missing or manipulated safety devices.
The manufacturer therefore recommends the use of suitable protective systems for drive shafts and PTOs. Any damaged parts of the safety devices must always be replaced with original replacement parts.
It is strongly recommended to the manufacturer of the work machine to attach suitable stickers.
These stickers must state that all safety devices must be attached and in functional condition.
It is also recommended to the manufacturer of the work machine to supplement the operating instructions with a list of the safety devices and stickers, indicating the corresponding locations and order numbers.
The basic instructions for safe and correct use of the drive shaft are provided on the safety stickers and in the operating manual supplied with the drive shaft.
The stickers and operating instructions are available in different versions, depending on the country of destination of the drive shaft.
Before starting actual work, please read carefully through this information and the operating instructions for the work machine.



Fig. 130: Drive shaft



All rotating parts must be adequately covered.
The safety devices on the tractor and working attachment form an integral system with the drive shaft guard.

The work machine should be driven only with original drive shafts, which are constructed with the length, size, couplings and safety devices that correspond to their intended application. When working with the machine and drive shaft, strictly observe the specifications regarding rotational speeds and output, as detailed in the operating instructions for the machine.



The drive shafts, overload clutches and overrun clutches listed in the catalogue are intended for use at rotational speeds up to a maximum of 700 rpm.
Avoid overloads and switching on the PTO while under load.
Always attach overload and overrun clutches on the machine side of the drive shaft. Use of the drive shaft and overload/overrun clutches for anything other than the intended purpose is not allowed.

All rotating parts must be adequately covered.
The safety devices on the tractor and working attachment form an integral system with the drive shaft guard.

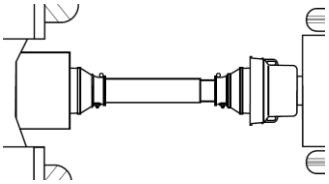


Fig. 131: Drive shaft

Before every start-up, ensure that all safety devices on the drive shaft, tractor and work machine are installed and functional.
Before operating the drive shaft, always replace any damaged or missing parts with original spare parts, or have them correctly retrofitted.

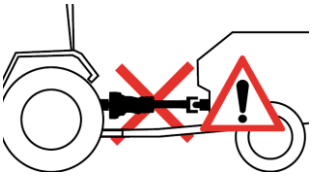


Fig. 132: Drive shaft attachment

Before entering the work area and before carrying out maintenance work, always switch off the engine, remove the ignition key and check that all rotating machine parts have come to a stop.

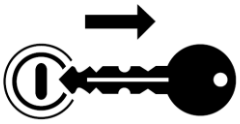


Fig. 133: Ignition

Do not enter the work area while parts are still rotating.
For your safety, do not wear loose clothing, belts or other loose items. There is an increased risk of accidents if these come into contact with machine parts.



Fig. 134: Risk of entanglement

Do not use the drive shaft to lean on, or for climbing up.

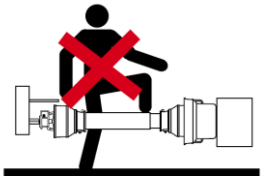


Fig. 135: No standing

In all operating conditions, protective tubes must have a sufficient overlap, and their lengths must therefore comply with length values given in the corresponding table.
Sectional tubes must also be sufficiently covered when the drive shaft is stopped.

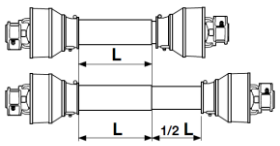
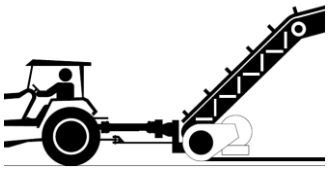
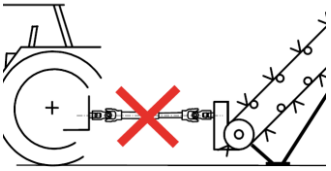


Fig. 136: Drive shaft length

MACHINES OPERATED IN A STATIONARY POSITION
(Pumps, lifting equipment, generators, dryers etc.)
Only to be used when coupled to the tractor.
If necessary, immobilise the tractor with blocks under the wheels.
The tractor must be coupled to the machine and positioned such that the coupling angles are narrow and uniform.


Fig. 137: Stationary machine

MACHINES OPERATED IN A STATIONARY POSITION
(Pumps, lifting equipment, generators, dryers etc.)
Only to be used if the protective tubes are adequately covered.
In all circumstances, the maximum extension length L of the protective tubes must never exceed the values given in the corresponding table.
All rotating parts must be adequately covered.


Fig. 138: Operation without protective tube

SIMPLE CARDAN SHAFTS
Work with limited and uniform angles ($\alpha_1 - \alpha_2$).
On tight bends, joint angles can be very wide, but must not exceed the maximum articulation angle of 45°, even if they are uniform. If the angles are too large or non-uniform, switch off the PTO. See "Application characteristics".

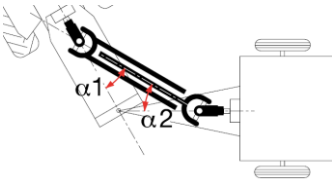


Fig. 139: Stationary machine

WIDE-ANGLE CONSTANT VELOCITY JOINTS
A wide-angle CV joint can briefly (for example when driving on bends) reach wide joint angles (80° or 50° depending on joint type), without creating torsional oscillations.
If a wide-angle CV joint is present on the tractor side with a simple joint on the machine side, it is strongly recommended not to exceed an angle difference of 16° at 400 rpm and 9° at 700 rpm in continuous operation in order to prevent irregular movements.

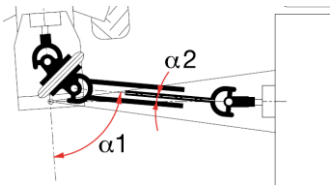
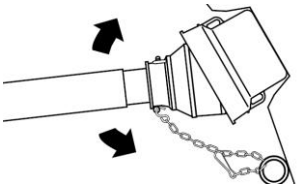


Fig. 140: Stationary machine

Fasten the safety device holding chains correctly.
Optimum operating conditions exist when the chain is positioned radially relative to the drive shaft.
When setting the chain length, check that the deflection angle is ensured in all working, transport and travel positions. If chains are excessively long, there is a risk that they could wind around the drive shafts.


Fig. 141: Stationary machine

Provide sufficient lighting when starting up for night-time operations or in the case of poor visibility.

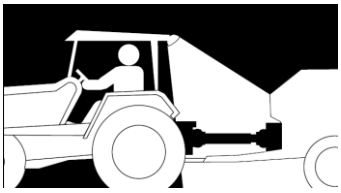


Fig. 142: Night-time use

The tractor symbol printed on the cover indicates the tractor side of the drive shaft. Always attach any overload or overrun clutches on the machine side.

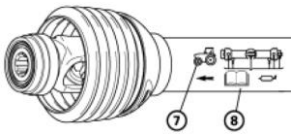


Fig. 143: Labelling

Before commencing work, check that the drive shaft is securely connected to the tractor and the work machine. Check the tightening torque of any mounting bolts.

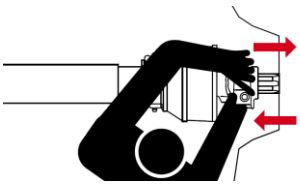


Fig. 144: Checking

Friction clutches can reach very high temperatures during operation. To avoid fire risks, keep combustible materials away from the clutch and avoid long slip phases.





Do not touch.

Do not use the chains for handling or hanging up the drive shaft when work is completed. Instead, use a support which is more suitable for this purpose.

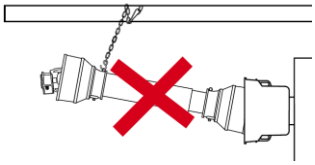


Fig. 145: Handling

To prevent injuries or damage to the safety device resulting from the drive shaft coming apart, keep the drive shaft in a horizontal position. Use a suitable means of transport that can support the weight of the drive shaft.

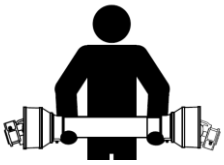
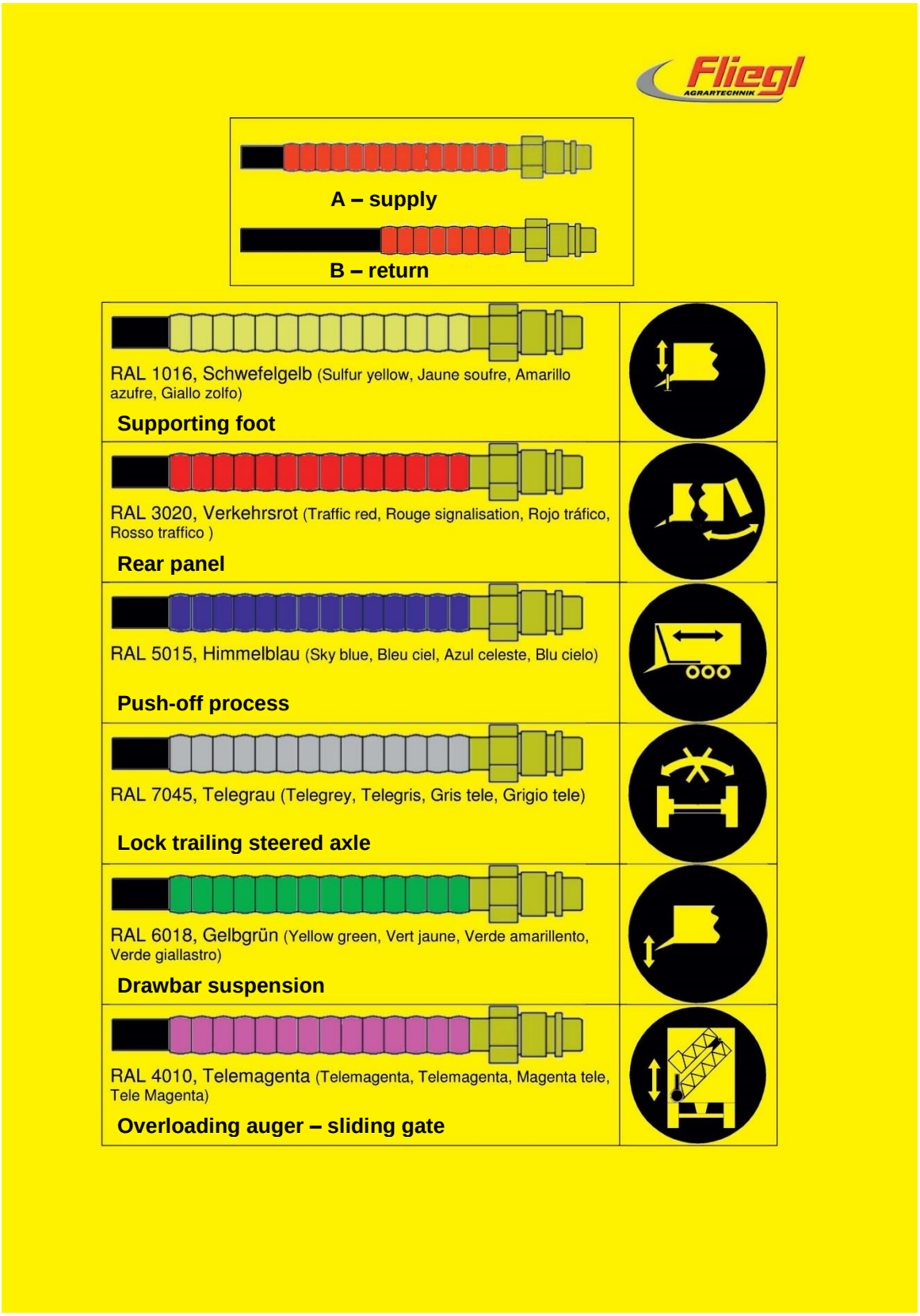


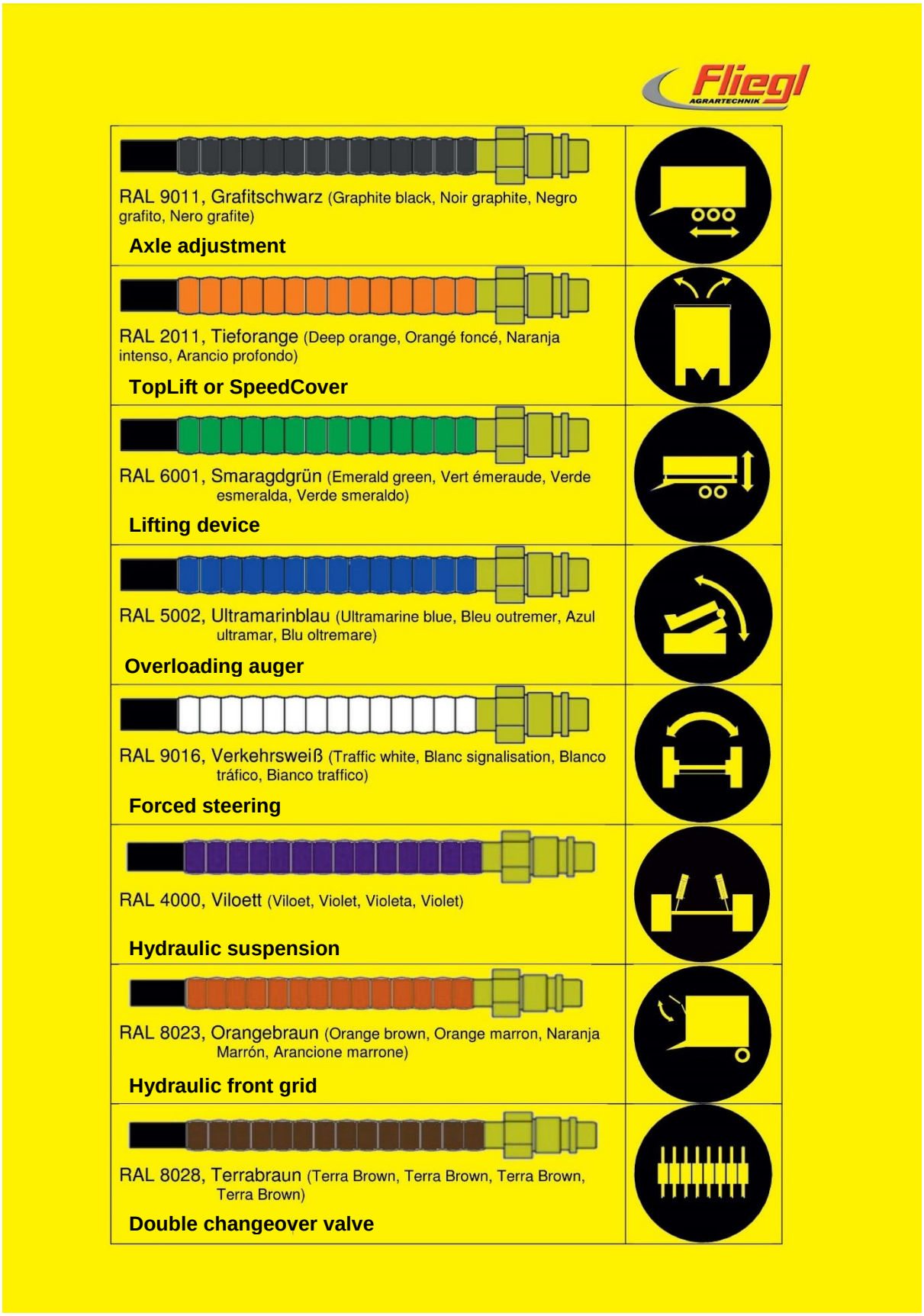
Fig. 146: Transport

Carry out all maintenance and repair work only with suitable accident prevention devices. Replace worn or damaged components only with original parts supplied by the drive shaft manufacturer. No parts of the drive shaft must be converted or altered without authorisation.
The drive shaft dealer is responsible for any work not described in these operating and maintenance instructions.



15.2 Designation of the hydraulic connections




RAL 9011, Grafitschwarz (Graphite black, Noir graphite, Negro grafito, Nero grafite)
Axle adjustment
RAL 2011, Tieforange (Deep orange, Orangé foncé, Naranja intenso, Arancio profondo)
TopLift or SpeedCover
RAL 6001, Smaragdgrün (Emerald green, Vert émeraude, Verde esmeralda, Verde smeraldo)
Lifting device
RAL 5002, Ultramarinblau (Ultramarine blue, Bleu outremer, Azul ultramar, Blu oltremare)
Overloading auger
RAL 9016, Verkehrsweiß (Traffic white, Blanc signalisation, Blanco tráfico, Bianco traffico)
Forced steering
RAL 4000, Viloett (Viloet, Violet, Violeta, Violet)
Hydraulic suspension
RAL 8023, Orangebraun (Orange brown, Orange marron, Naranja Marrón, Arancione marrone)
Hydraulic front grid
RAL 8028, Terrabraun (Terra Brown, Terra Brown, Terra Brown, Terra Brown)
Double changeover valve

15.3 Maintenance information

Achtung! Attention!



1. Radmuttern und Schraubverbindungen regelmäßig nachziehen!

   Tighten the wheel nuts and screw joints on a regular basis!



2. Hydraulische Anschlüsse richtig anschließen, Stecker auf Dichtheit und Funktion prüfen

   Connect hydraulic couplings correctly, check plugs for leaks and functionality.



3. Beim Beladen ist je nach Ladegut die richtige Ladehöhe einzuhalten (Siehe beiliegende Tabelle für Raumgewicht). Vor dem Beladen von Getreide und rieselfähigem Schüttgut sind die mitgelieferten Spannseile anzubringen und das vordere Gitter muss komplett abgeklappt werden, damit es nicht mit dem Spannseil kollidiert

   The loading height of the trailer varies with different goods (see attached table for volumetric weight). Before loading grain and other free-flowing materials, the supplied tension cables must be attached and the front grid must be folded down fully so that it does not collide with the cables.



4. Der Abschiebewagen ist serienmäßig mit einem verstellbaren Achsaggregat ausgestattet. Die Achse muss vom Kunden je nach Zugfahrzeug durch Achsverschiebung auf die richtige Stützlast eingestellt werden.

   The trailer features an adjustable axle assembly as standard. Depending on the towing vehicle, the customer must adjust the axle to the correct drawbar load.



5. Wenn das Fahrzeug im beladenen Zustand abgestellt wird, darf die Stützlast max. 2.000 kg betragen, da der Stützfuß nur auf dieses Gewicht ausgelegt ist.

   If the trailer is parked when loaded, the drawbar load must not exceed 2000 kg since the supporting foot is designed for this maximum weight.



6. ACHTUNG:
   Lenkachse bei Straßenfahrten über 15 km/h sperren!
   Lenkachse bei Rückwärtsfahrten sperren!

   ATTENTION:
   The steering axle must be locked at speeds over 15 km/h and when reversing.
   Lock the steering axle when reversing!

   Bei Zwangslenkung muss der Kunde Halterungen für Steuerungszylinder selbst montieren (diese werden nicht mitgeliefert). Anschließend müssen die Steuerungszylinder vom Kunden eingestellt und justiert werden, möglicherweise muss die Lenkung mit Handpumpe nachgestellt werden (siehe Zeichnung).
   If the trailer is equipped with forced steering, the customer is responsible for fitting brackets for the steering cylinders (these are not included in the delivery). The steering cylinders must then be set and adjusted by the customer. If necessary, the pressure has to be re-adjusted with a hand pump (see drawing).

7. **Eine Probefahrt ist unbedingt erforderlich!**

   A test drive is essential!

15.4 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	**2.47105**	Acre	acres
Volume flow rate	Litres per minute	l/min	**0.2642**	US gallons per minute	gpm
	Cubic metres per hour	m³/h	**4.4029**		
Force	Newton	N	**0.2248**	Pound-force	lbf
Length	Millimetre	mm	**0.03937**	Inch	in.
	Metre	m	**3.2808**	Foot	ft.
Power	Kilowatt	kW	**1.3410**	Horse power	hp
Pressure	Kilopascal	kPa	**0.1450**	Pounds per square inch	psi
	Megapascal	MPa	**145.0377**		
	Bar (non-SI)	bar	**14.5038**		
Torque	Newton metre	Nm	**0.7376**	Pound-foot	ft·lbf
			8.8507	Pound-inch	n·lbf
Temperature	Degrees Celsius	°C	**°C x 1.8 + 32**	Degrees Fahrenheit	°F
Speed	Metres per minute	m/min	**3.2808**	Feet per minute	ft/min
	Metres per second	m/s	**3.2808**	Feet per second	ft/s
	Kilometres per hour	km/h	**0.6215**	Miles per hour	mph
Volume	Litre	L	**0.2642**	US gallon	US gal.
	Millilitre	ml	**0.0338**	US ounce	US oz.
	Cubic centimetre	cm³	**0.0610**	Cubic inch	in³
Weight	Kilogramme	kg	**2.2046**	Pound	lbs

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