Translation of original operating instructions

Fliegl AGRARTECHNIK

ULW

Operating instructions

CE

ULW transfer trailer

We are Fliegl.

from model year 04/2019

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 transfer trailer.

Fliegl machines and attachments are manufactured with care under continuous monitoring.
The Fliegl transfer 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 transfer 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 transfer 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 transfer 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.

Contents

Legal notices

1. When the transfer 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 transfer 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 transfer trailer.

Identification

Machine identification data

Manufacturer:	**Fliegl Agrartechnik GmbH**
Product:	**ULW transfer trailer**
Type:	**ULW 20, ULW 25, ULW 30, ULW 35, ULW 40, ULW 45**
Serial number:	**F**XXXXX

Manufacturer details

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

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Formal details of operating instructions

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Creation date:	02/05/2016
Last revision:	05/07/2019

Language of original operating instructions: German
(Translation of original 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: Transfer trailer

Type: ULW 20; ULW 25; ULW 30; ULW 35; ULW 40; ULW 45

Project designation:	Fliegl - ULW
Commercial name:	Fliegl ULW transfer trailer (VARIO)
Function:	Transfer trailer, work machine

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,

05/07/2019 Date

Fliegl Agrartechnik GmbH
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1. User instructions

This manual provides information about the

- Structure
- Function
- Operation
- Maintenance
- Accessory parts

of the transfer 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 transfer 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 Purpose of this document

These operating instructions:

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

1.2 Locations in the operating instructions

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

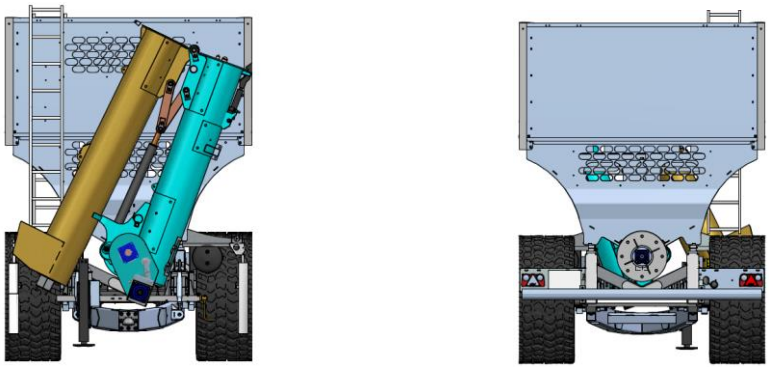


Fig. 1: Locations in the documentation

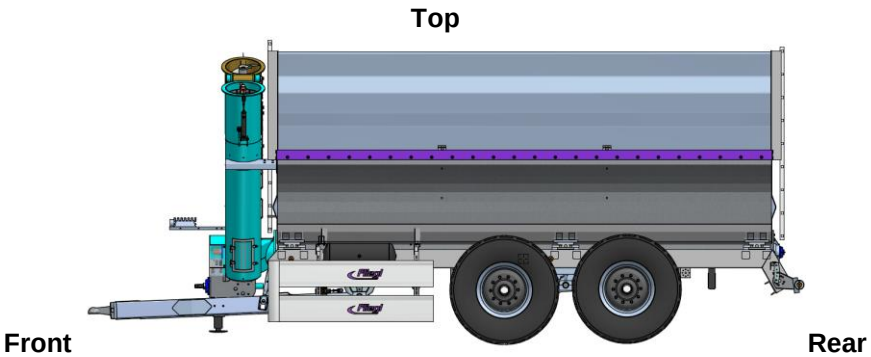


Fig. 2: Main views of the ULW transfer trailer (ULW 30 tandem shown)

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

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

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

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

2. Basic safety instructions

Failure to observe the safety instructions and warnings can pose a risk to persons, property and the environment.

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 licence 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***.)

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.

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 600 rpm.
- The PTO must be started up as the rpm increases.
- 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 maintenance intervals stipulated in this manual.
- In addition to this manual, the operating instructions included for third-party components must be observed.
- Upon first-time start-up and when different wheel and tyre combinations are used, the spacing between the tyres and frame is to be checked on vehicles with a steering axle, and adjusted as necessary.
- Note the permitted axle load, support load, total weight and maximum speed.

Notes on driving with the transfer trailer (ULW)

- 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 debris.

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

Notes on coupling and uncoupling the ULW

- 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 ULW

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

- Park the transfer 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 hydraulic supporting foot. Lower the mechanical supporting stand and secure it.
- When parking the trailer, the drive shaft must be deposited correctly or secured with a chain.

Handling the mech. supporting stand

- Couple the ULW to the tractor (coupling height can be adjusted slightly via the hydr. ULW 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.

Danger!
The ULW 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 ULW must only be used to transport grain, compound feed and pourable fertiliser.
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 the safety position
- All safety instructions in the operating instructions are observed and complied with, including the information in the chapter "Basic safety instructions" as well as the specific instructions in the individual chapters

The operating instructions form part of the machine and must remain with the machine at all times. The machine must only be operated following appropriate instruction and in strict compliance with these operating instructions.
Any use of the machine not described in the operating instructions can result in serious injury or death and may also lead to machine and property damage.
Unauthorised changes to the machine can have a negative impact on the machine properties or impair its correct function. Unauthorised changes will therefore release the manufacturer from any resulting liability.
Designated use also includes compliance with the operating, maintenance, cleaning and repair instructions prescribed by the manufacturer.

2.2 Reasonably foreseeable misuse

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

Caution when reversing:
Because the area behind the transfer 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.

Important!
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 8.

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 required driver's license.

2.9 Qualification of specialist personnel

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

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

2.10 Personal protective equipment

The operating company must provide the following personal protective equipment.

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

Attention!
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

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

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

2.11.4 Technical limits

If the technical limits of the machine are not maintained, this can lead to machine damage. This can result in accidents involving personal injury.
Compliance with the following technical limits is particularly important from a safety perspective:

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

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

The following protective devices are installed on the trailer:

- Service brake system
- Parking brake (PB)
- Wheel chocks (x2)
- Ladder (standard/optional)

2.12.3 In case of faulty protective devices

Defective safety equipment can lead to dangerous situations. Therefore:

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

2.12.4 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:

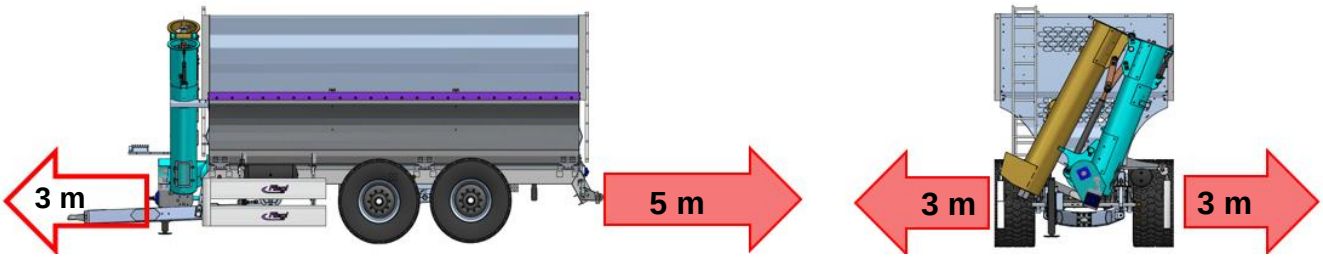


Fig. 4: Danger zone

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

2.14.1 Safety distance from overhead lines

RISK OF DEATH! Always maintain the safety distances.

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

2.15 Machine identification

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

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 for bolt and wheel nut check**
		**Company 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 	CE identification number Indicates conformity with applicable EU directives related to the product, which also require a CE marking. (Located on type plate.) Type plate to specifically identify the machine

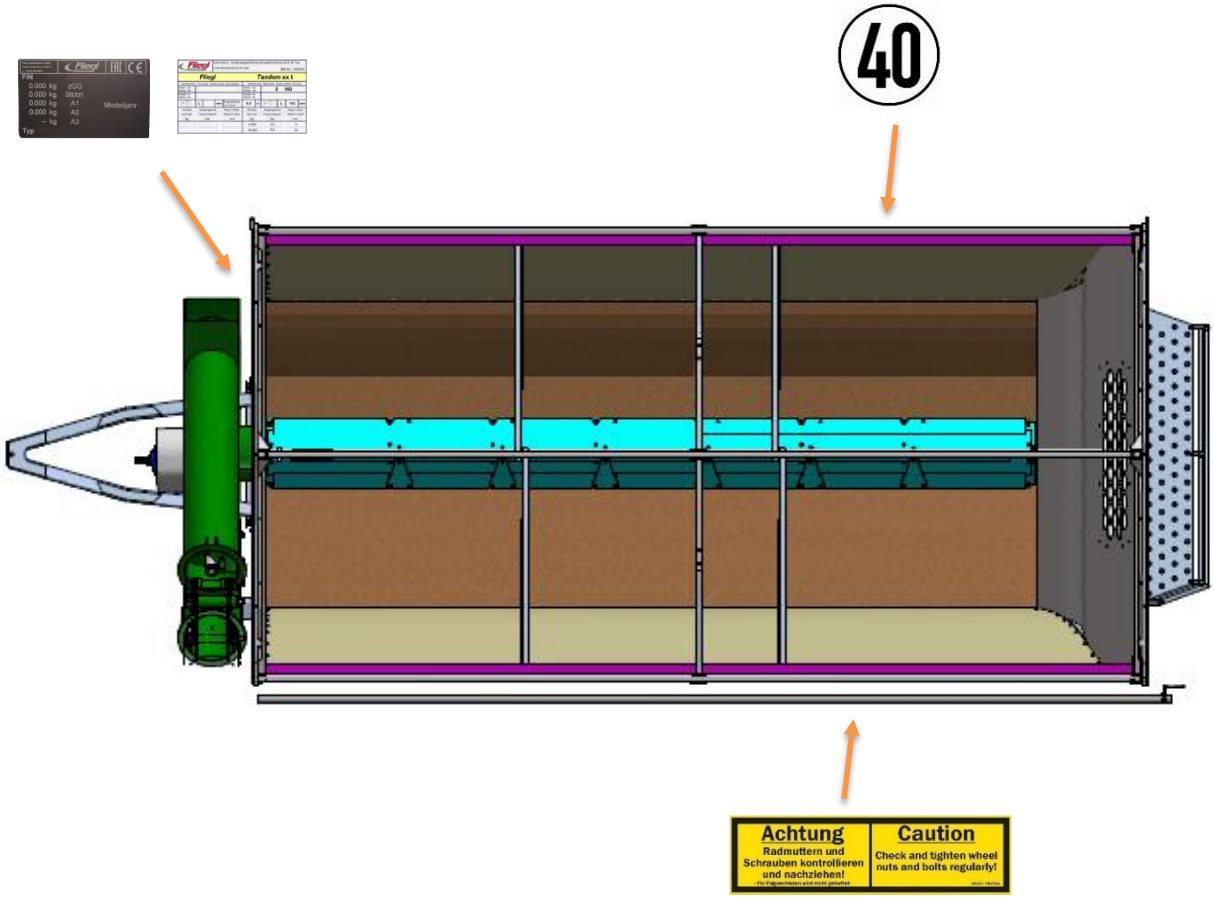


Fig. 5: Warnings and safety instructions affixed to the machine (ULW 30 shown)

3. Description of the machine

This section gives a complete overview of the layout and function of the machine.
If possible, read it at the machine. That is the best way for you to familiarise yourself with the machine.

3.1 Applications

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

3.2 Design variants

Standard versions:

ULW 20	*Single-axle*	*Gross vehicle weight 12,500 kg*
ULW 25 VARIO	*Single-axle*	*Gross vehicle weight 12,500 kg*
ULW 25 VARIO	*Tandem*	*Gross vehicle weight 20,000 kg*
ULW 30 VARIO	*Tandem*	*Gross vehicle weight 20,000 kg*
ULW 40 VARIO	*Tridem*	*Gross vehicle weight 29,000 kg*
ULW 45 VARIO	*Tridem*	*Gross vehicle weight 29,000 kg*

3.3 Functional description

The transfer trailer is a centre-axle trailer and is used to transfer the load to a different transport vehicle.

Loading the machine

The trailer is loaded from above:
using an external working machine
(wheel, telescopic, front loader, combine harvester etc.)

Unloading the machine

At the unloading point:
Following completed transport:

1. *The drive shaft is activated*
2. *Operation of the longitudinal and inclined screw conveyors begins*
3. *The load is transported from the longitudinal to the inclined screw conveyor*
4. *The load is emptied by the inclined screw conveyor via the discharge tube*

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:

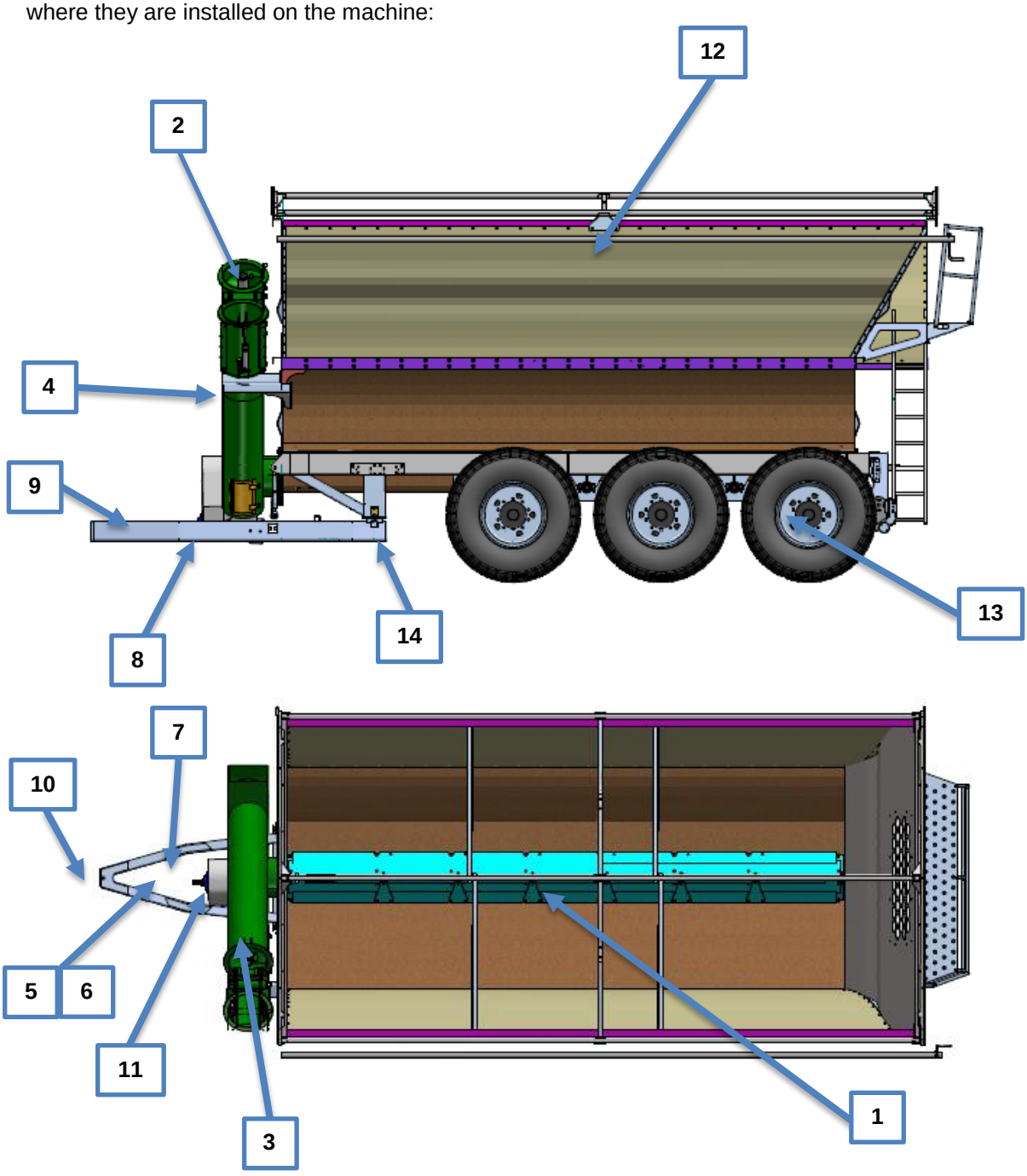


Fig. 6: Layout and components

3.5 Assemblies and components

Item no.	Title
1	Longitudinal screw conveyor
2	Inclined screw conveyor
3	Discharge tube
4	Hydraulic cylinders
5	Compressed air connections
6	Hydraulic connector
7	Hose holder
8	Supporting mechanism
9	Draw gear
10	Flange coupling
11	Drive shaft attachment
12	Body
13	Axle assembly
14	Parking brake

Item 1 – longitudinal screw conveyor

The longitudinal screw conveyor is located in the floor. It transports the load in the body to the inclined screw conveyor.

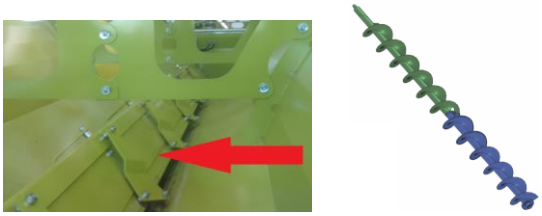


Fig. 7: Assembly – item 1

Item 2 – Inclined screw conveyor

The inclined screw conveyor transports the load out of the transfer trailer via the discharge tube.

Fig. 8: Assembly – item 2

Item 3 – hydraulic cylinder

The discharge tube is extended and retracted via a dual-action hydraulic cylinder. This cylinder is operated by an additional hydraulic cylinder with the following connections:

- Extend discharge cylinder
- Retract discharge cylinder

Fig. 9: Assembly – item 3

Item 4 – discharge tube

The load is transferred to a different transport vehicle via this tube.


Fig. 10: Assembly – item 4

Item 5 – compressed air connections

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

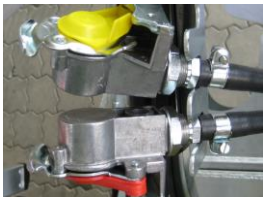


Fig. 11: Assembly – item 5

Item 6 – hydraulic connectors

Individual hydraulic connections are provided for all hydraulic functions.
A description of the coloured markings is provided in section 7.1.3.


Fig. 12: Assembly – item 6

Item 7 – hose holder

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

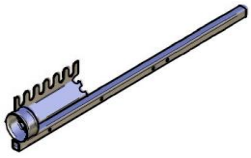


Fig. 13: Assembly – item 7

Item 8 – supporting mechanism

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


Fig. 14: Assembly – item 8

Item 9 – draw gear

An adjustable drawbar for bottom attachment is fitted by default.

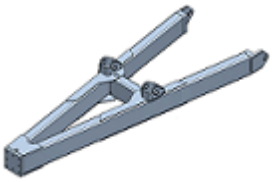


Fig. 15: Assembly – item 9

Item 10 – flange coupling

Flange couplings are available in different standards and designs.

Fig. 16: Assembly – item 10

Item 11 – through drive

The through drive powers the longitudinal screw conveyor as well as the main screw conveyor via an angle gear.

Fig. 17: Assembly – item 11

Item 12 – body

The height and length of the side walls and the bridge width are type-specific. The bridge is self-supporting and thus forms the main frame of the vehicle.

Fig. 18: Assembly – item 12

Item 13 – axle assembly

Different axle assemblies are available for the ASW.

- Single-axle
- Tandem
- Tridem

Fig. 19: Assembly – item 13

Item 14 – parking brake

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

- Spindle brake

Fig. 20: Assembly – item 14

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

3.6 Dimensions and weights

Type:	ULW 20 single-axle	VARIO ULW 25 single-axle	VARIO ULW 25 tandem	VARIO ULW 30 tandem	VARIO ULW 40 tridem	VARIO ULW 45 tridem
Container dimension						
Length	6,000	6,000	6,000	6,000	6,900	6,970
Width	2,500	2,500	2,500	3,000	3,500	3,550
Load-over height [1)]	4,400	-	4,300	4,300	4,300	4,300
Screw conveyor ∅	300	400	400	400	400	400

All dimensions are indicated in mm and include a tolerance of 5%
[1)] The determined dimensions are dependent on the fitted tyres

Type	Drawbar load	Total weight (in the field and on non-public roads [at 25 km/h])	Gross vehicle weight
ULW 20 Single-axle	2,500	16,000	12,500
VARIO ULW 25 Single-axle	2,500	16,000	12,500
VARIO ULW 25 Tandem	2,000	-	20,000
VARIO ULW 30 Tandem	2,000	26,000	20,000
VARIO ULW 40 Tridem	2,000	34,000	29,000
VARIO ULW 45 Tridem	2,000	34,000	29,000

All weights are indicated in kg and include a tolerance of 5%.

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 moving off, ensure that perfect visibility exists on and around the towing vehicle and of the machine itself.

Before travelling on public roads, ensure that:

- The machine is fully and correctly coupled to the tractor
- All safety devices are locked and secured
- The tyres are free of cuts and cracks and have the correct tyre pressure
- The discharge tube is retracted
- The machine is free of harvest residue, dirt and debris
- The lighting system functions flawlessly
- The brakes function flawlessly
- The cables and lines are routed such that they do not stretch or come into contact with the 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 bottom attachment position on the trailer.
For possible drawbar eye types, refer to section 8.1.

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.

Procedure:

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

12 V plug connection for lighting
(7-pin connector, ISO 1724 type N)

Fig. 21: Power supply

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

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

A hydraulic oil supply and control by the towing vehicle are required for all work functions. The tractor must have at least one single-action control valve with free return in order to start the tipping process.

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.

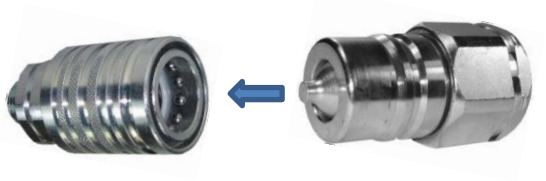


Fig. 24: Hydraulic connections

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 drawbar.**
- **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 24 of these operating instructions.**
- **Also comply with the instructions in the relevant sections and in the appendix of these operating instructions.**

5.2 Check before start-up

The points below will facilitate trailer start-up.
For more detailed information, refer to the relevant sections in the operating instructions.
Check to ensure that all safety devices (covers, panels etc.) are in proper condition and are attached to the trailer in protective position.

- Check the cargo space for loose parts lying inside.
- Check the condition of the screw conveyors.
- Lubricate the trailer according to the lubrication schedule.
- Check the hydraulic lines 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, electrical and brake connections**
- **Connect the PTO**

6.1 Draw gear

6.1.1 drawbar, bottom hitch

Objective

Adjustment of the drawbar height. The drawbar is preconfigured for bottom attachment by the manufacturer.
Depending on the towing vehicle, a slight adjustment of the drawbar height may be required.
This is done by adjusting the height with the hydraulic supporting foot.
Keep the trailer as horizontal as possible.

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
Drawbar	M30 – 8.8	1400

6.1.2 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.

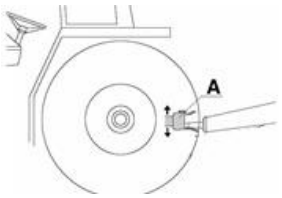


Fig. 25: Setting up the trailer coupling on the towing vehicle

6.1.3 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. 26: Ball head coupling

Maintenance of the ball head coupling:

- Grease the contact surfaces at the coupling point.
- Ensure that the mounting bolts are securely fastened.
- Replace loose screws 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.

6.1.4 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.
On TANDEM models, the last axle is forced.
On TRIDEM models, the first and last axles are forced.
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. 27: 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 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 6.1.2).

Prerequisites
Hitch the trailer to the towing vehicle (tractor) via the flange coupling.
Installation as described in section 6.1.2; 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 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 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

See next page

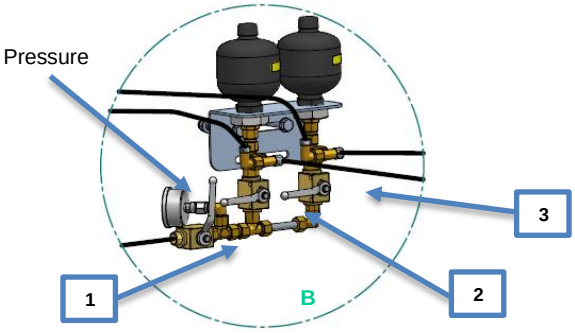


Fig. 28: Forced steering valves (tandem)

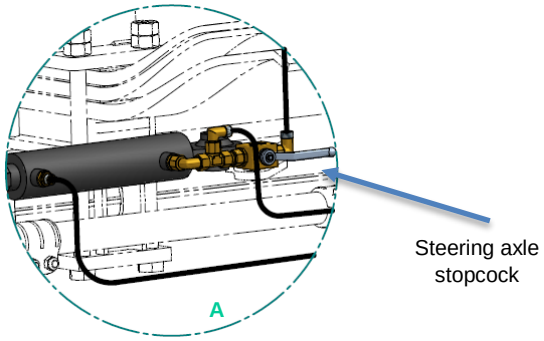


Fig. 29: Steering axle with forced steering connection

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

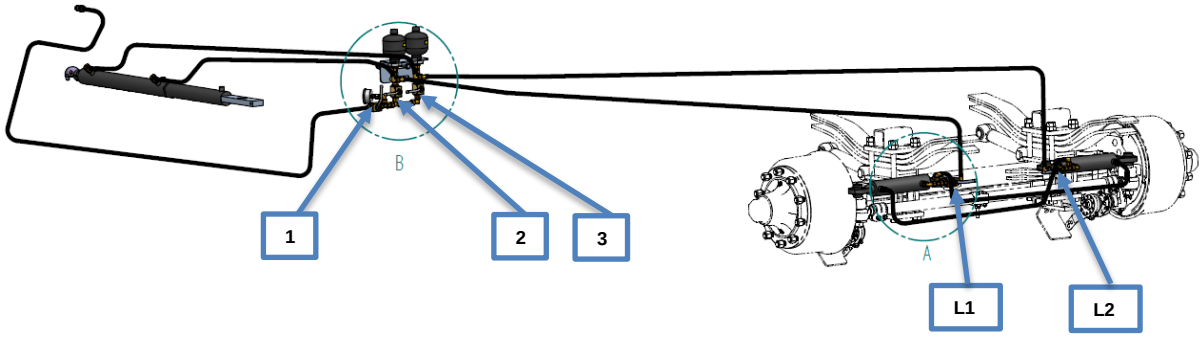


Fig. 30: Tandem steering axle

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

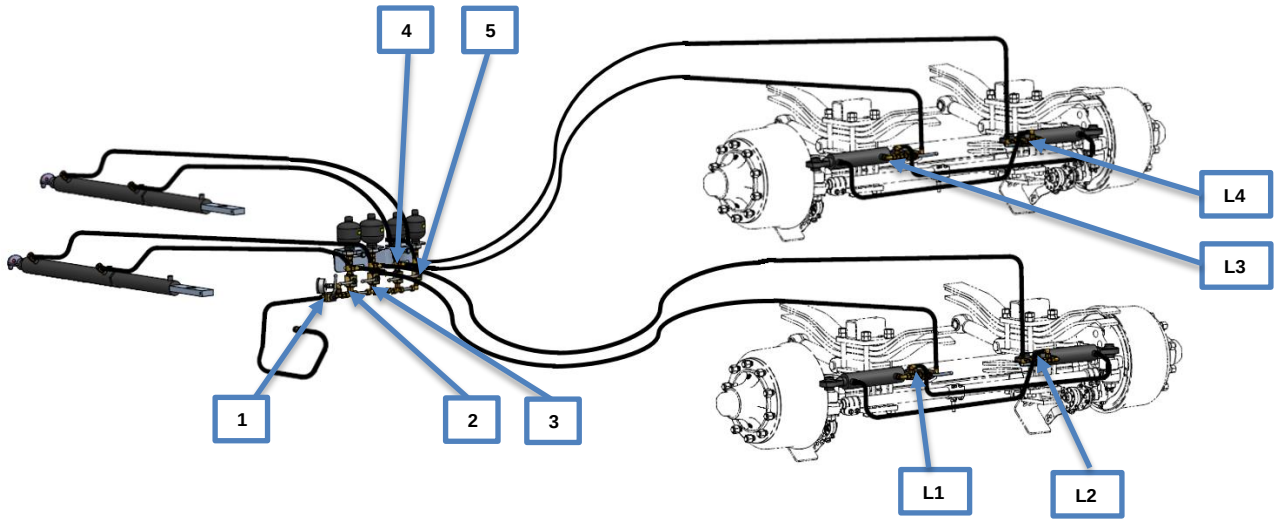


Fig. 31: Tridem steering axle

L1 = steering axle stopcock L2 = steering axle stopcock
L3 = steering axle stopcock L4 = steering axle stopcock
The 4 stopcocks (L1, L2, 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.

Tandem

1st axle = rigid
2nd axle = steered

Tridem

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

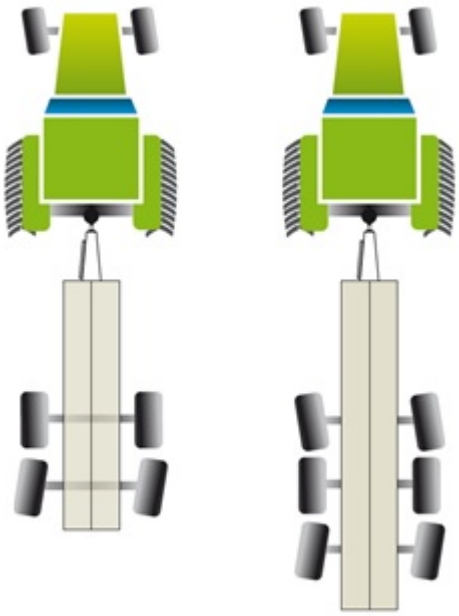


Fig. 32: Steering angle

- 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 Compressed air brake system

6.3.1 Compressed air brake system with manual control valve

For every use (driving operation), the brake force must be set according to the trailer load.
Conditions for operation
- **Compressed air brake connection (dual line brake system) on tractor**

Selecting the operating mode, adjusting the trailer load status

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.

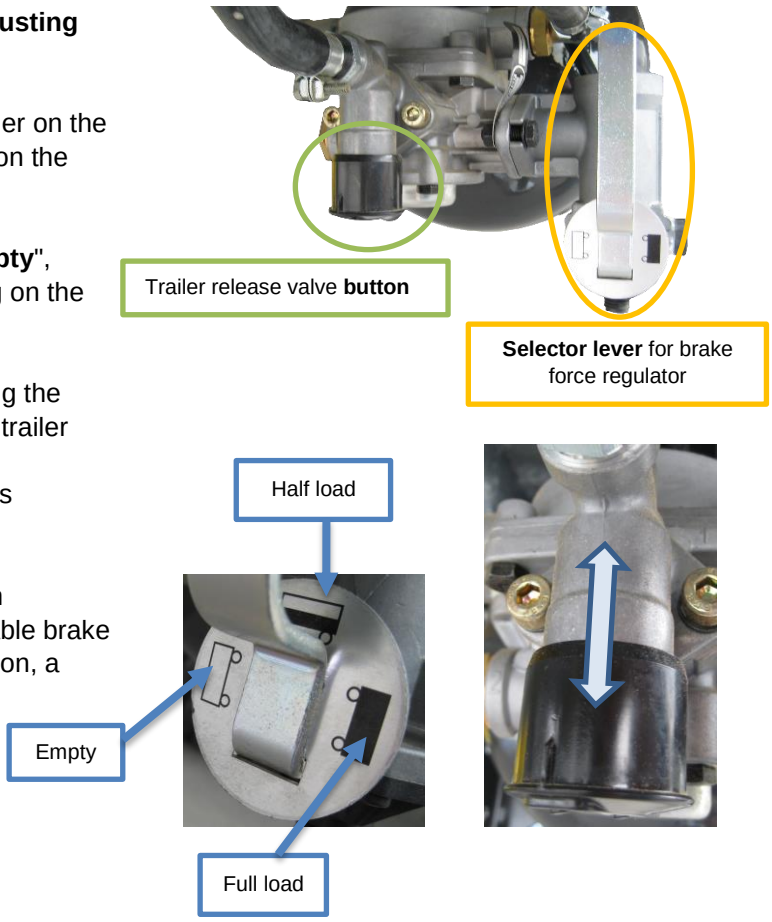


Fig. 33: Manual brake force adjustment

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.

6.3.2 Compressed air brake system with ALB, brake force regulator

For every use (driving operation), the brake force must be set according to the trailer load.
Conditions for operation
- **Compressed air brake connection (dual line brake system) on tractor**

Selecting the operating mode, adjusting the trailer load status

"**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.

Trailer release valve **button**

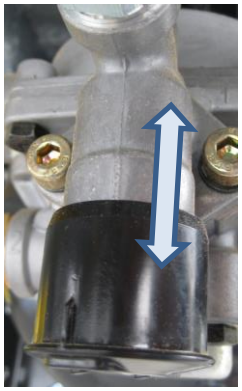


Fig. 34: Manual brake force adjustment

6.4 Hydraulic brake (optional)

This option is not available for trailer application in Germany.

6.4.1 Hydraulic 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. 35: Plug-in coupling of hydraulic trailer brake

6.4.2 Hydraulic brake 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. 36: 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.

6.5 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. 37: Hand brake lever

6.6 Electrical systems

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).

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. 38: 7-pin connector

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. 39: 3-pin connector

ISOBUS control connection (optional)

Procedure:

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

Fig. 40: ISOBUS plug connection

6.7 ISOBUS control

6.7.1 ISOBUS weighing system (optional)

If the ULW is equipped with the ISOBUS weighing system, the weights in the body can be measured immediately and logged for additional processes.

To use the weighing system, the towing vehicle must be prepared for ISOBUS applications. This preparation includes the following:

- ISOBUS socket incl. wiring harness
  Control terminal or signal socket with sensor distributor
- Sensors (if required)

If your towing vehicle is not prepared for ISOBUS, contact your dealer to discuss retrofit options.

Detailed information on system operation is provided in the separate operating instructions for the weighing system.

Control terminal

The ISOBUS weighing system is operated via the tractor terminal or a separate control terminal.

Fig. 41: Control terminal (different model shown)

Weighing sensor

The weighing sensor has an accuracy of +/- 0.1% of the payload or +/- 10 kg. Prompt weighing of the load in the field, even on inclines.

Ensure that the sensor cable is securely fastened and undamaged.

Fig. 42: Weighing sensor

6.8 Converting the discharge tube retainer

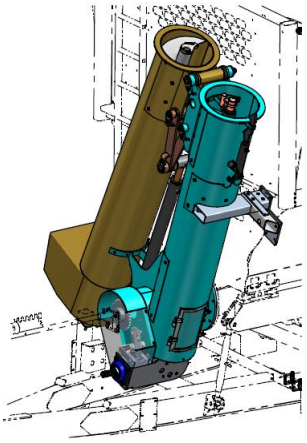


Fig. 43: Retracted (1)

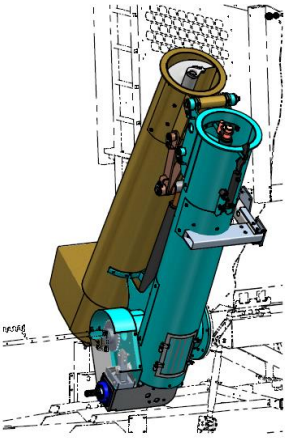


Fig. 44: Extended (2)

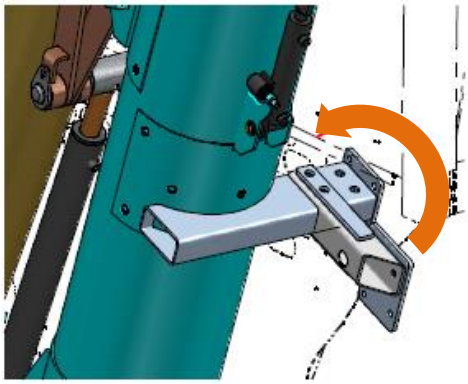


Fig. 45: Retainer position 1

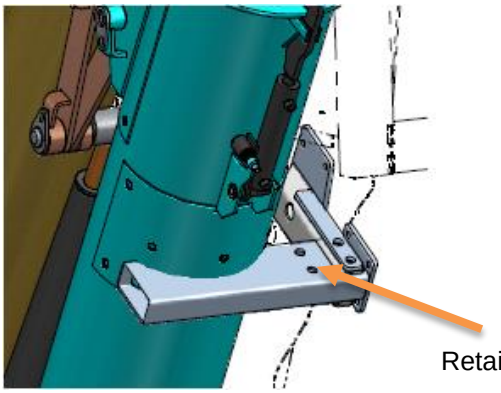


Fig. 46: Retainer position 2

The discharge tube is delivered in position 1.
This ensures a lower transport width. Before start-up, the operator must change the position. To set position 2, the retainer must be detached and rotated by 180° before being screwed back on again.

Where possible, have the conversion work performed by a specialist workshop!

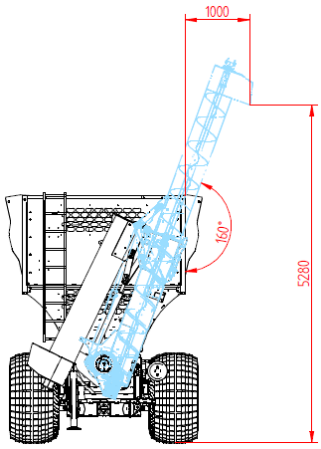


Fig. 47: Position 1

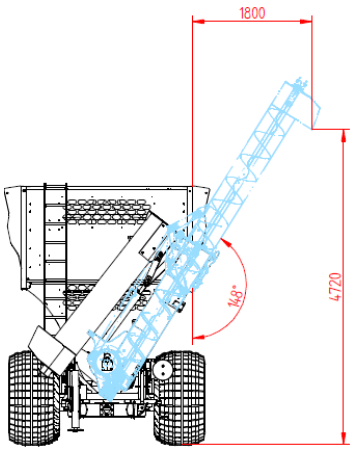


Fig. 48: Position 2

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 Setting up the trailer coupling on the towing vehicle

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

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.

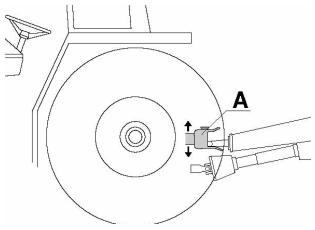


Fig. 49: Setting up the trailer coupling on the towing vehicle

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 ULW.

7.1.3 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 7.1.2.
- 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 and connect the service brake.

Attaching the drive shaft

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

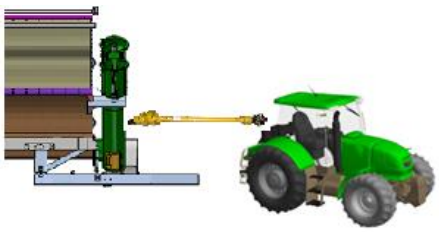


Fig. 50: Drive shaft attachment

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. 51: 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 14.1.**

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.

Hydraulic connections

Connect all hydraulic lines to the towing vehicle in pairs (partially double action).
For labelling to identify connection points, see the markings on the couplings.

① GREEN Slide gate (dosing feeder)

② BLUE Discharge tube hydraulics

③ RED Steering axle

④ GREY Hydraulic supporting foot

[Colour of dust cap]

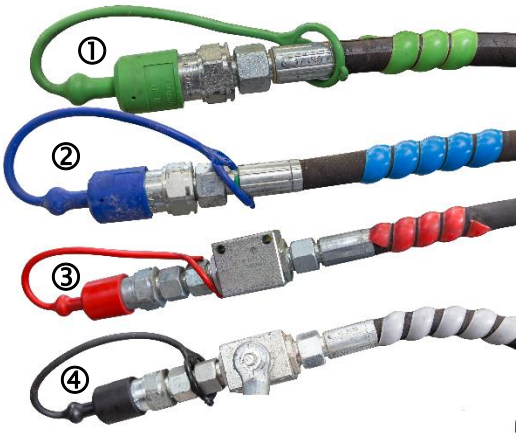


Fig. 52: Hydraulic hose markings

- Check all hydraulic lines for damage and leaks on a daily basis.
- Replace all hydraulic hoses completely every 6 years.

Releasing the parking brake

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

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

  - 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.

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

7.1.4 Electrical and electronic control accessories

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

- Fliegl Weighing System (FWS)
- Fliegl Tracker

7.1.5 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

7.1.6 Uncoupling the trailer

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

7.2 Working with the machine

7.2.1 General safety and operating instructions

The following section contains some general notes on safety and operation for working with the transfer 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 transfer trailer on the supporting mechanism **while it is loaded**.
   Park the transfer trailer so that it is stable. If the ground is soft, increase the size of the support plate of the supporting foot.
5. When parking the trailer, secure it against rolling away (parking brake, wheel chocks).
6. The transfer trailer must only be attached with the designated devices and in compliance with regulations.
   Connect the brake system and check to ensure it is functioning properly.
   Follow the manufacturer's instructions.
7. There is a risk of injury when coupling and uncoupling the transfer trailer to and from the tractor.
   (Danger due to crushing and shearing points when actuating the support gear.)
   Keep children away!
8. When coupling, make sure that the trailer coupling pin is secured.
9. In the area around the tractor three-point linkage, there is a risk of injury at crushing or shearing points.
10. The drive shafts must meet the requirements of the attachment manufacturer.
11. The drive shaft must only be coupled or uncoupled when the tractor engine is switched off.
12. For wide angle drive shafts, make sure the wide angle joint is connected on the tractor side.
13. Ensure that the drive shaft couplings are correctly engaged.
14. Secure the drive shaft with the chain to prevent it turning.
15. **Do not stand on the drive shaft.**
16. When the drive shaft is switched on, avoid driving around tight bends.
17. Before first-time start-up, move all protective devices to the safety position.
18. Before coupling or uncoupling the vehicle, secure it against rolling away using the parking brake and/or wheel chocks.
19. Movable structural parts, such as the discharge tube, must be secured in their end positions.
    Special caution is required when opening and closing these parts.
20. Move all devices to the transport position before driving on public roads.
21. Allow for reduced load on the tractor front axle and loss of steering ability due to the drawbar load of the transfer trailer.
22. There must be no persons in the danger zone when the trailer is being unloaded.

7.2.2 Loading the trailer

The transfer trailer is a centre-axle trailer and is used to transfer the load to a different transport vehicle.

The transfer trailer is filled from above via external work machines (e.g. combine harvester).

Fig. 53: Loading process

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.

Standing on the loading area is prohibited.

7.2.3 Emptying the trailer

1. Drive onto a level surface with the discharge tube retracted.
2. Check the swivel range for objects, persons etc.
3. Fold the inclined screw conveyor into operating position via the hydraulic control valve.
4. Open the hydraulic slide gate to set the dosing feeder to the desired flow rate.
5. Close the dosing feeder.
6. Check the swivel range again.
7. Fold the inclined screw conveyor back in via the hydraulic control valve.

When the transfer procedure has been completed:

1. Allow the longitudinal and inclined screw conveyors to run for at least 3 more minutes so that they are fully emptied.
2. Retract the discharge tube.
3. Open the quick-release fasteners and fold out the service flap (5).
4. Clean the screw conveyors after use.

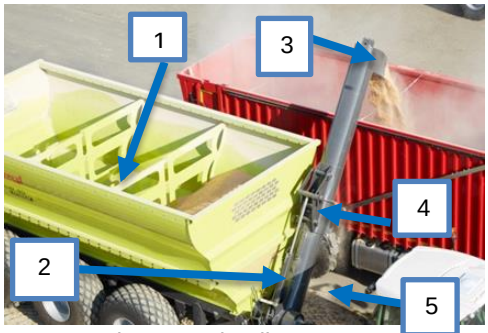


Fig. 54: Unloading process

Function:
Once the seal has been opened, the load slides into the longitudinal screw conveyor (1). It transports the load to the inclined screw conveyor (2).
The inclined screw conveyor transports the load via the discharge tube (3) into the adjacent transport vehicle.
When the overhead loading screw is not in use, the hydraulic cylinder (4) retracts the discharge tube.
The discharge tube is extended and retracted via a dual-action hydraulic cylinder. This cylinder is operated by an additional hydraulic cylinder with the following connections:

- Extend discharge cylinder
- Retract discharge cylinder

There must be no objects or persons within the danger area.
During unloading, there is a risk of injury due to the transferred load.

The main screw conveyor is powered by the towing vehicle via the PTO through drive at a **PTO speed** of around **600 rpm**.
The drive power is transferred from the PTO to the inclined screw conveyor via an angle gear.

Indicator for dosing feeder (slide gate)

This indicator shows the position of the hydraulic slide gate.

Visible = open
Not visible = closed

Important:

The slide gate must be closed in good time so that the truck to be filled is not overloaded. The time required for the inclined screw conveyor to run empty must also be taken into account.
(Approx. 3 min. overrun time)

Fig. 55: Slide gate indicator

An overrun time of 3 minutes should be allowed before retracting the inclined screw conveyor. Otherwise the bearing may extend out of the folding opening.
This also ensures that the transfer trailer is fully emptied and none of the load is lost.

8. Basic equipment (standard, optional)

8.1 Flange couplings

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

Flange couplings		
DIN drawbar eye 40 (Ø 40 mm) 	Ball head K80 (Ø 80 mm) 	Drawbar with swivelling eye (Ø 51 mm) 
Piton-Fix 	Pivoting drawbar eye (50 mm, up to 14 t) 	

8.2 Supporting mechanism

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

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

* Export only

1 **2**

Fig. 56: Supporting mechanism

8.3 Viewing window

The bulkheads feature viewing windows as standard so that the contents of the body can be seen from outside. A ladder is fitted to the rear for this purpose.

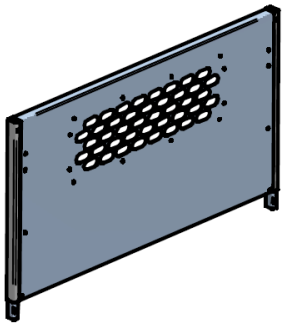


Fig. 57: Viewing window

8.4 Steered trailing axle (optional)

On tandem assemblies, the steered trailing axle is always the second axle; on tridem 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. 58: 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 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. 59: Reversing camera

9.2 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).

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

Fig. 60: Beacon (different model shown)

9.3 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. 61: Control module

9.4 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. 62: Printer

9.5 Universal terminal with colour touchscreen

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

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

Fig. 63: Universal terminal

9.6 Farm-Box, data logger

This is used to record and transfer the values of the Fliegl FWS to the portal. For this purpose, the Farm-Box uploads a task controller (data logger function) as soon as the ignition voltage is activated.
On the Farm-Box itself, the middle LED behind the flap next to the CF card must light up green when the ignition is on and a CF card with the correct software and corresponding licence file must be inserted.
Nothing must be altered on the CF card!
Changes are made only by the manufacturer.
The LED on the top of the Farm-Box indicates the GPS reception and the connection to the server.

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

Fig. 64: Data logger

9.7 Other optional accessories

- Roller cover with platform
- Dosing hose attachment, hose ∅ 150 mm
- Discharge chute, hydraulically adjustable
- Drive shaft

10. Service and maintenance

Secure the parked tractor/trailer combination, secure the vehicle combination, keep the ignition key in a safe place. Read the operating instructions.
Below you will find information on troubleshooting and maintenance of the machine.
Regular maintenance in accordance with the maintenance plan is essential to the efficient use of the machine.

10.1 Customer service

Please contact:

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

Telephone: +49 (0)8631 / 307 - 0
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 **ULW transfer 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
Internet: 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 Manufacturer line
2 Vehicle ID number (VIN)
3 Total weight (axle load)
4 Drawbar load
5 Axle load of 1st axle
6 Axle load of 2nd axle
7 Axle load of 3rd axle
8 Approved type/variant/version

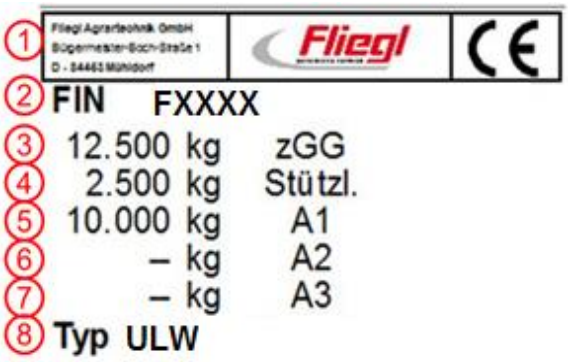


Fig. 65: Breakdown of type plate

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*			x		
Check the brake system and parking brake for correct function		x			
Check the ALB and tensioning chain to ensure they are securely fastened and undamaged			x		
Check the entire compressed air system for function, leaks and secure fastening				x	
Clean the line filters of the brake hoses				x	
Check the freedom of movement of the wheel bearings				x	
Vent the forced steering				x	
Lubricate all lubrication points on the trailer			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			x		
Structure					
Check the tension cable		x			
Ensure that the chassis lock is securely fastened		x			
Check the hydraulic system for leaks[6]		x			
Accessories					
Lubricate the bearings of the PTO through drive			x		x
Lubricate the drive shafts			x		
Check the oil levels of the gear mechanisms				x	

* Every time the brake linings are replaced.

General instructions:

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

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.

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

As a rule, electrical connections must not be cleaned with water or mechanical objects. We recommend that you use compressed air at 6 to 8 bar in combination with an air blow gun.

10.4.3 Corrosion protection

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

Caution: risk of damage!
Road salt is highly aggressive and can damage the corrosion protection.
Therefore, observe the following during winter:

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

To avoid corrosion:

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

10.4.4 Lubrication

Lubricants to use:

Lubricants	Type	Quality
Oils	Hydraulic oil	HLP 68
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.

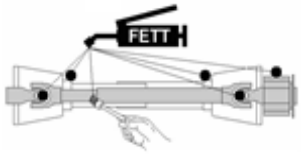


Fig. 66: Lubricating points

Lubrication schedule

The lubrication schedule applies to all Fliegl transfer 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	- Drive shaft bearing - Shaft bearing - Transmission bearing	- Parking brake (on pneumatically operated trailers) - Brake linkage - Spring bolts - Centre bearings - Pivot point of steered trailing axle	- Wheel hub bearings

Lubricating points on transfer trailer

Lubricating points with lubricating nipples	Lubricating points without lubricating nipples
Mounting of the brake camshaft	Actuating device of the parking brake
Mounting of the slack adjusters	Brake rod
Mounting of the PTO	Spring bolts
Cardan joints of the drive shafts	All other movable parts on the chassis and body
Bearings on the screw conveyors	
Bearings on the splined shafts	

Other lubricating points

Centre bearing ULW 30

The centre bearing must be checked for wear and lubricated every 200 operating hours or annually.

Inclined screw conveyor

The overhead loading screw is mounted in sintered metal bushings.
These should be lubricated with a few drops of transmission oil every 3 months.

Lubricating the drive chain of the longitudinal screw conveyor

- Release and unscrew the mounting bolts on the cover.
- Remove old grease from the drive chains and chain pinions.
- Apply new grease to the chains and pinions with a brush.
- Refit the cover.

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]
28 L 26	16 PR	2.20
550/60-22.5	16 PR	3.80
560/60-R22.5	Radial	4.00
600/55-26.5	16 PR	2.40
650/55-R26.5	Radial	4.00
710/50-R26.5	172D	3.60
850/50-R30.5	16 PR	3.60

The numbers in the table may differ depending on the tyre manufacturer.
Not all tyres are suitable for speeds > 40 km/h.
See also: **Equipment and technical data** for the load capacity values of the individual ULW models.

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

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

For more information, refer to section 13.2.

Typical hazards when working with tyres and wheels:

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

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

Physical effects:

- Age
- Wear
- Damage

Improper handling

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

Environmental influences

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

Some of the above tasks depend greatly on the type of use and the ambient conditions.
The cycles indicated above (see 9.2) 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 reservoir:

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

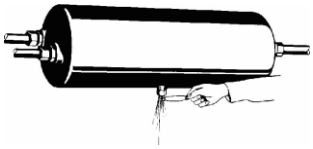


Fig. 67: Reservoir

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

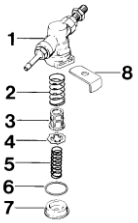


Fig. 68: Individual parts of line filter

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.

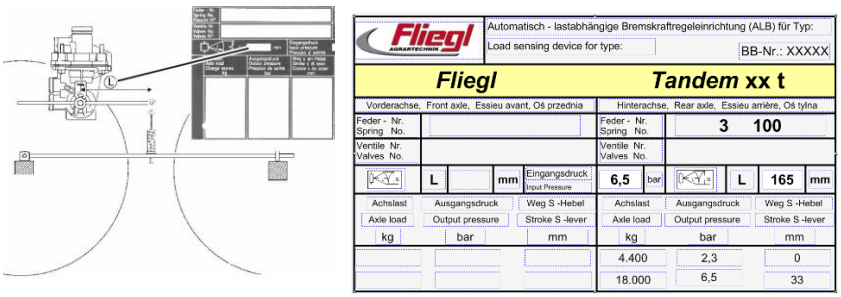


Fig. 69: Setting length on ALB regulator and ALB plate on the vehicle

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
Compressed air brake with manual control valve	Braking effect too low	Identify the cause of lacking brake force
	Braking effect too high	Visit a specialist workshop
Compressed air brake with ALB valve	Braking effect too low	Identify the cause of lacking brake force
	Brake force too high	Visit a specialist workshop
Standard brake – spindle tow	Braking effect too low	Identify the cause of lacking brake force Adjust the cable pull or Visit a specialist workshop
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

Fault / error message	Possible cause(s)	Remedy
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 PTO not connected	Determine the cause Visit a specialist workshop
Low lift and break-out forces	Insufficient oil pressure	Check the tractor hydraulics

Maintenance, repairs and conversion work on the ULW 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 7.1.6. Clean and maintain the machine (see section 10.4).

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

10.6.2 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 transfer trailer thoroughly inside and out, then leave the transfer 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.
4. We recommend covering the trailer with a tarpaulin to protect it against dust etc.
5. Deactivate the pneumatic, hydraulic and electrical supplies to the machine. Protect connections.
6. Lubricate the Fliegl transfer trailer (see lubrication schedule).
7. Thoroughly grease bare piston rods and retract them.

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

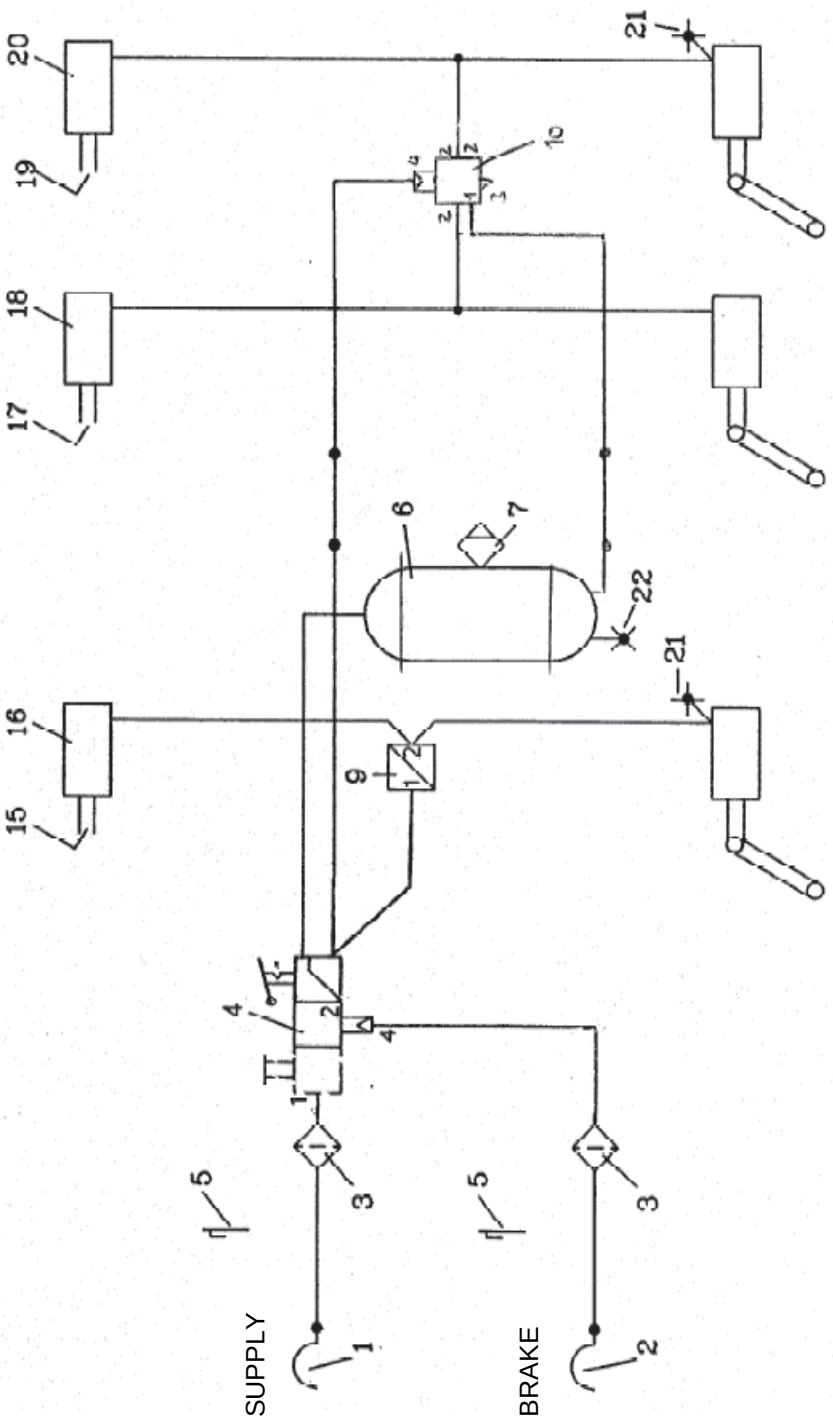
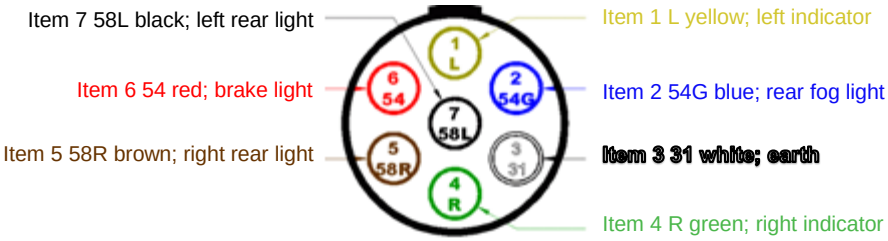


Fig. 70: Compressed air diagram

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 earth wires must not be electrically connected to the trailer.**

12.2 Rear light model

Fig. 71: Rear light

13. Axles

13.1 Assemblies

13.1.1 Gigant tandem assembly

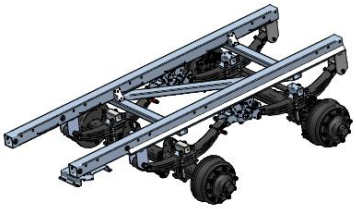


Fig. 72: Gigant assembly

13.1.2 Gigant Plus tandem assembly

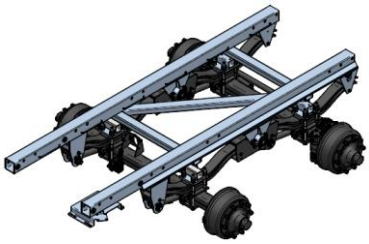


Fig. 73: Gigant Plus tandem

13.1.3 Gigant Plus tridem assembly

Fig. 74: Gigant Plus assembly

13.2 Axle maintenance work

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

Links to maintenance manuals:

BPW: 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.

14. Appendix

14.1 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 commencing work, please read carefully through this information and the operating instructions for the work machine.

Fig. 75: 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.

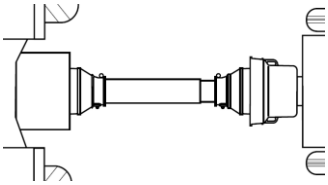


Fig. 76: Drive shaft

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.

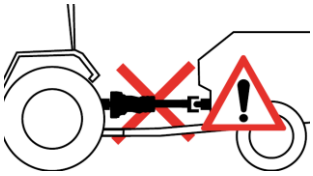


Fig. 77: Drive shaft attachment

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.

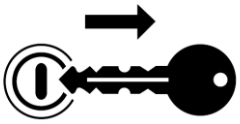


Fig. 78: Ignition

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. 79: Risk of entanglement

Do not lean on the drive shaft or use it as a climbing aid.

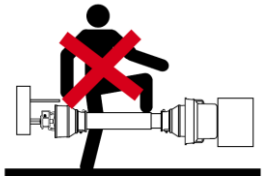


Fig. 80: No standing

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.

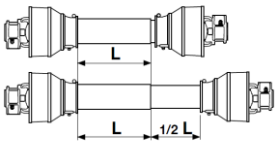


Fig. 81: Drive shaft length

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.

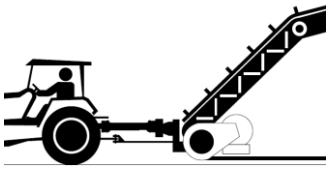


Fig. 82: Stationary machine

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.

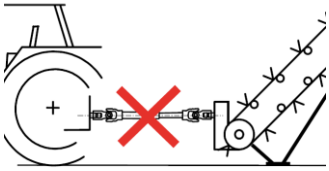


Fig. 83: Operation without protective tube

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".

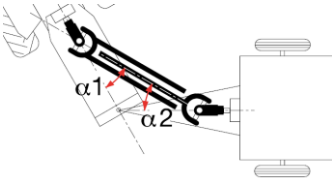


Fig. 84: Stationary machine

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.

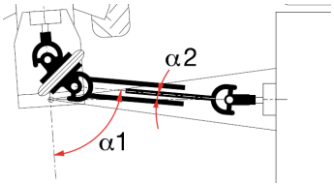


Fig. 85: Stationary machine

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.

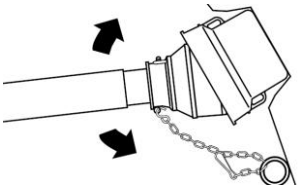


Fig. 86: Stationary machine

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

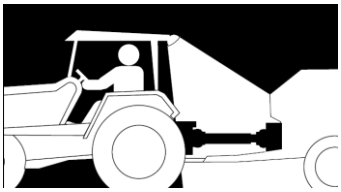


Fig. 87: Night-time use

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.

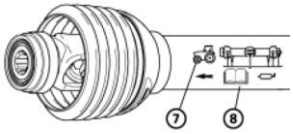


Fig. 88: Labelling

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.

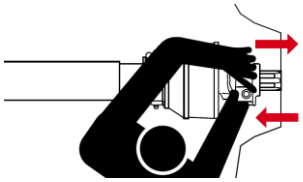


Fig. 89: Checking

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 suitable support.

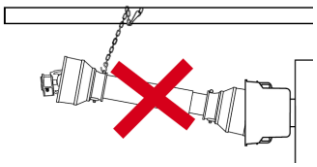


Fig. 90: Handling

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.

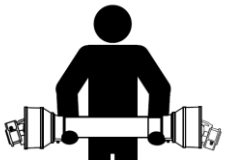


Fig. 91: Transport

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.

14.2 Conversion table

The following table facilitates the conversion of specific units

Variable	SI units (metric)		Factor	Imperial units	
	Unit name	Abbreviation		Unit name	Abbreviation
Area	Hectare	ha	**2.47105**	Acre	acres
Volume flow rate	Litres per minute	l/min	**0.2642**	US gallons per minute	gpm
	Cubic metres per hour	m^3/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	cm^3	**0.0610**	Cubic inch	in^3
Weight	Kilogramme	kg	**2.2046**	Pound	lbs

Index

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