

# Operating instructions

Front loader **ProfiLine**



Type FS, FS rapid emptying, FZ, FZ-L

Status: 12/2018

**Company details****Wilhelm STOLL Maschinenfabrik GmbH**

PO box 1181, 38266 Lengede

Bahnhofstr. 21, 38268 Lengede

Phone: +49 (0) 53 44/20 -0

Fax: +49 (0) 53 44/20 -182

E-mail: [info@stoll-germany.com](mailto:info@stoll-germany.com)

Web: [www.stoll-germany.com](http://www.stoll-germany.com)

**Spare parts order**

Phone: +49 (0) 53 44/20 -144 and -266

**Administration**

Phone: +49 (0) 53 44/20 -145 and -146

Fax: +49 (0) 53 44/20 -183

E-mail: [parts@stoll-germany.com](mailto:parts@stoll-germany.com)

**Copyright**

© Wilhelm STOLL Maschinenfabrik GmbH

Reproduction of these instructions, both completely and in excerpts, is only allowed with approval from Wilhelm STOLL Maschinenfabrik GmbH. Any infringement shall entail full compensation of damages and can be punishable by law.

The original instructions were written in the German language.

Instructions in other languages were translated from German.

## Contents

1	About these operating instructions . . . . .	5
1.1	Documentation overview . . . . .	5
1.2	Use and purpose of the operating instructions. . . . .	6
1.3	Rating plate . . . . .	6
1.4	Validity of the operating Instructions . . . . .	6
1.5	Storage of the documents . . . . .	6
1.6	Other applicable documents . . . . .	7
1.7	Design tools . . . . .	7
1.8	Nomenclature of the footer. . . . .	8
2	Safety . . . . .	9
2.1	Explanation of safety and warning notices. . . . .	9
2.2	Representation and layout of warning notices . . . . .	9
2.3	Danger grading of warning notices . . . . .	9
2.4	EC Conformity . . . . .	9
2.5	Proper use . . . . .	10
2.6	Operational limits . . . . .	10
2.7	Basic safety information . . . . .	11
2.8	Danger zones. . . . .	17
2.9	Safety equipment . . . . .	17
2.10	Adhesive safety label . . . . .	18
2.11	Personnel requirements . . . . .	23
2.12	Behaviour in case of emergency . . . . .	24
2.12.1	Behaviour if the tractor tips or falls over . . . . .	24
2.12.2	Behaviour in case of flashovers from electrical power lines . . . . .	24
3	Structure . . . . .	25
3.1	Structure of FS front loaders . . . . .	25
3.2	Structure of FZ front loaders . . . . .	27
3.3	Equipment variations . . . . .	29
3.4	Attaching it to the tractor . . . . .	30
3.5	Change frame . . . . .	31
3.5.1	Euro change frame . . . . .	31
3.5.2	SMS change frame . . . . .	32
3.5.3	Euro-SMS Combi change frame. . . . .	32
3.5.4	Euro-Alö3 Combi change frame . . . . .	33
3.5.5	Euro-FR Combi change frame . . . . .	33
3.5.6	Skid-steer change frame. . . . .	34
3.5.7	Reinforced Euro change frame (FZ 100) . . . . .	34
3.6	Hydraulic lines . . . . .	35
3.7	Hydraulic couplings . . . . .	35
3.7.1	Plug-in couplings. . . . .	35
3.7.2	Multiple coupling Hydro-Fix. . . . .	36

4	Functions	37
4.1	Implement locking mechanism	37
4.1.1	Mechanical implement locking mechanism	37
4.1.2	Hydraulic implement locking mechanism – Hydro-Lock	39
4.2	Basic functions	40
4.3	Float position	43
4.3.1	Lifting arm float position	44
4.3.2	Implement float position	44
4.4	Indicator for implement position	45
4.5	Parallel motion (FZ, FZ-L)	45
4.6	Rapid traverse emptying (FS) and quick emptying (FZ-L)	46
4.7	Return-To-Level (FZ-L)	47
4.8	Anti-lowering guard	48
4.9	Additional functions	49
4.9.1	Additional control circuits	49
4.9.2	Comfort Drive	51
4.9.3	Lowering throttle	53
4.9.4	Camera system	53
5	Start-up	54
5.1	Initial operation	54
5.2	Check before each start-up	54
5.3	Preparations	55
5.3.1	Preparations on the tractor	55
5.3.2	Ballasting	56
5.4	Adjusting the front loader locking mechanism	58
5.4.1	Adjusting the FS and FZ 8 to 50 front loader locking mechanism	58
5.4.2	Adjusting the "Double locking mechanism" FZ 50 to 100 front loader locking mechanism	60
5.5	Mounting the front loader	62
5.6	Aligning the front loader for mounting	64
6	Operation	65
6.1	Operating elements	65
6.1.1	Basic controls with levers	65
6.1.2	Tractor's own operating lever	67
6.1.3	STOLL Base Control	68
6.1.4	STOLL Pro Control	70
6.1.5	STOLL Trac Control	73
6.1.6	Switch/changeover switch	74
6.1.7	Comfort hydraulic system	75
6.2	Operating the parking supports	76
6.3	Operating the hydraulic couplings	77
6.3.1	Operating the plug-in coupling	77
6.3.2	Operating Hydro-Fix	78
6.4	Operating the implement locking mechanism	79
6.4.1	Operating the mechanical implement locking mechanism on Euro, SMS and Combi change frames	79
6.4.2	Operating the mechanical implement locking mechanism on skid-steer change frames	81
6.4.3	Operating the hydraulic implement locking mechanism	82



6.5	Picking up and putting down the implement . . . . .	83
6.5.1	Picking up implements with mechanical implement locking mechanism on Euro, SMS and Combi change frames . . . . .	83
6.5.2	Picking up implements with mechanical implement locking mechanism on skid-steer change frames . . . . .	85
6.5.3	Picking up implements with a hydraulic implement locking mechanism . . . . .	87
6.5.4	Putting down the implement . . . . .	88
6.6	Levelling in reverse . . . . .	89
6.7	Driving on roads . . . . .	90
6.7.1	Activating and deactivating the road operation lock . . . . .	91
6.7.2	Passing through low clearances . . . . .	91
6.8	Parking the tractor with the front loader . . . . .	92
7	Troubleshooting . . . . .	93
8	Servicing . . . . .	96
8.1	Cleaning and care . . . . .	97
8.1.1	Lubrication points . . . . .	97
8.1.2	Lubrication schedule . . . . .	99
8.2	Service . . . . .	100
8.2.1	Service schedule . . . . .	100
8.2.2	Service instructions for front loader mountings . . . . .	101
8.2.3	Service instructions for front loader locking mechanism . . . . .	101
8.2.4	Service instructions for Comfort Drive . . . . .	102
8.2.5	Service instructions for the hydraulic lines . . . . .	103
8.2.6	Service instructions for oil changes . . . . .	103
8.3	Repairs . . . . .	104
9	Decommissioning . . . . .	105
9.1	Temporary decommissioning . . . . .	105
9.2	Recommissioning . . . . .	107
9.3	Final decommissioning and disposal . . . . .	107
10	Spare parts and customer service . . . . .	108
10.1	Spare parts . . . . .	108
10.2	Customer service . . . . .	108
11	Technical specifications . . . . .	109
11.1	Dimensions and weights . . . . .	109
11.2	Noise emissions . . . . .	109
11.3	Tightening torque for screws . . . . .	110
11.4	Hydraulic diagram . . . . .	111
11.4.1	Hydraulic diagram FS and FS-rapid emptying . . . . .	111
11.4.2	Hydraulics diagram FZ and FZ-L . . . . .	112
11.5	Electric circuit diagram . . . . .	113
11.6	Arrangement of the hydraulic valves for additional functions . . . . .	114
12	Declaration of Conformity . . . . .	115
	Index . . . . .	117

## 1 About these operating instructions

### 1.1 Documentation overview

There are various instructions and technical documentation for the front loader, mounting kit and accessories. Most documents are available in multiple languages.

If a set of instructions is missing or required in a different language:

- Order the instructions through a dealer.
- Download instructions free of charge from the Internet at [www.stoll-germany.com](http://www.stoll-germany.com).

#### Installation instructions for the front loader mounting kit



The installation of the mounting kit as well as the hydraulic and electric equipment may only be performed by an authorised specialised workshop.

The installation instructions describe how to install the front loader mounting kit and the hydraulic and electrical equipment up to the initial start-up of the front loader. They are intended for the specialist workshop.

The installation instructions have been specially compiled for this tractor model. They do not contain any information that is already included in the operating instructions.

The installation instructions contain information on spare parts for the tractor-specific mounting parts and equipment.

#### Operating instructions of the front loader

These operating instructions describe the safe use of the front loader from the initial operation to its disposal. They are intended for the operator and the user of the front loader.

The operating instructions are compiled specifically for the front loader series, they can therefore only take tractor-specific equipment into account to a limited extent.

#### Spare parts list

The spare parts list of the front loader lists all the information required for ordering spare parts, the front loader series and their options. Special adaptations for the tractor are not taken into account.

In addition, spare parts lists are available for front loader implements.

#### Operating instructions for front loader implements

The operating instructions describe the implements available for the front loader series.

#### Other documents

In addition to the above instruction manuals, there may be installation and operating instructions as well as other Technical Information that deal with special additional equipment and extensions, which are not included in the other documentation.



When you pass on the front loader or the tractor with a front loader attached, please also hand over all the relevant documents. The next owner needs the information.

## 1.2 Use and purpose of the operating instructions

The present operating instructions contain important information on the safe operation and for faultless, proper and economical operation of front loaders from Wilhelm STOLL Maschinenfabrik GmbH. It is intended for the operator and user of the front loader and should help to prevent risks, damage and downtimes as well as ensure and increase the service life of the front loader.

Before start-up of the front loader, the operating instructions must be read and understood.

For better readability, Wilhelm STOLL Maschinenfabrik GmbH will be called "STOLL" in the following.

The operating instructions are compiled specifically for the front loader series, they can therefore only take tractor-specific equipment into account to a limited extent.

## 1.3 Rating plate

The front loader is identified with a rating plate that is located on the inside of the left bar at the rear or on the cross tube of the front loader.

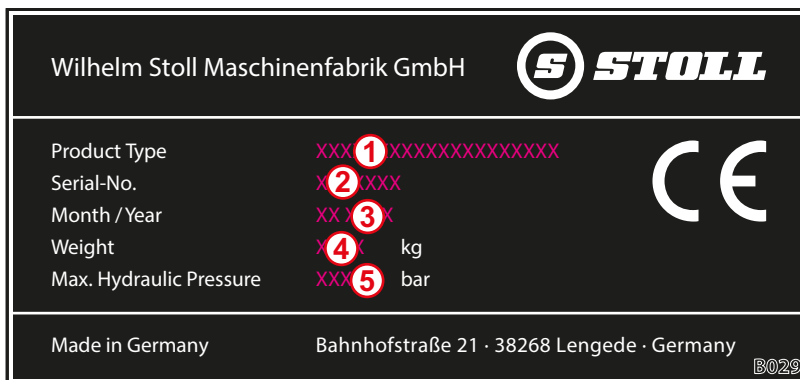


Fig. 1 Rating plate on the front loader

### Legend

- 1 Type of front loader (e.g. ProfiLine FZ 20 lifting arm, Solid 38-20)
- 2 Serial number
- 3 Year of manufacture
- 4 Weight
- 5 Permissible hydraulic pressure

## 1.4 Validity of the operating Instructions

The operating instructions are valid only for the STOLL front loader ProfiLine, called "front loader" in the following or "FS" or "FZ" as the special versions. The front loader type can be found on the rating plate.

The operating instructions covers all of the components and functions of the model.

## 1.5 Storage of the documents

The operating instructions are a part of the machine. The entire documentation, consisting of these operating instructions as well as all other additional instructions supplied, must always be kept accessible, safe and dry on or in the vehicle. When lending or selling the front loader, the entire documentation must also be handed over.

## 1.6 Other applicable documents

In conjunction with these operating instructions, the following additional documents also apply:

- Operating instructions of the tractor
- Operating instructions for the respective implements
- Installation instructions for the respective mounting kit and front loader additional equipment

When handling the front loader and for all service work, please also observe:

- The recognised technical regulations for safe and professional work,
- The legal regulations for accident prevention,
- The legal regulations for health and environmental protection,
- The national regulations that apply in the country of the operator / user of the front loader,
- The specifications that are relevant for the status of the technology,
- The road traffic regulations.

## 1.7 Design tools

The operating instructions contain the following different symbols and markings in the text:



Warning symbol that is used for warning notices and is graduated based on the danger  
(see 2 *Safety*)



---

Additional information and tips



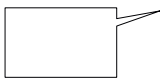

---

- List points
- ➔ Requirement for a sequence of actions
- ✂ Required tools
- (1) Numbered action step
- ✓ Result of an action or sequence of actions
- Unnumbered action step

Moreover, stylised drawings are used. For better understanding, some of the figures are exemplary, simplified or with dismantled parts for better representation and explanation.

➤ Please observe the following:

- Dismounting is not always absolutely required for the respective description.
- No different equipment variations are shown in the figures, unless otherwise specified.
- The associated descriptive text always applies to the figures.
- The following representation rules and elements apply:

Representation	Meaning
	Elements represented in yellow highlight the components for the respective operating situation.
	Item numbers designate assemblies or components. In each figure, there is always an explanatory legend for the item numbers.
	Magnifying glasses serve to focus on individual parts and details.
	Arrows indicate a direction of movement or action to be performed.

## 1.8 Nomenclature of the footer

The footer consists of the following parameters:

1234567	A12XYZ	0000001234	DE	123
①	②	③	④	⑤

Fig. 2 Nomenclature of the footer

### Legend

- 1 Document number (order number)
- 2 Type of instructions
- 3 Internal system number
- 4 Language identifier
- 5 Version

## 2 Safety

### 2.1 Explanation of safety and warning notices

The basic safety information comprises instructions that always apply for safe operation or to maintain the safe condition of the front loader.

The action-related warning notices warn against residual dangers and are placed in front of dangerous action sequences.

### 2.2 Representation and layout of warning notices

Warning notices are action-related and are designed according to the following principle:

#### **DANGER**

##### **Type and source of danger!**

Explanation of the type and source of danger.

- ▶ Measures to prevent the danger.

### 2.3 Danger grading of warning notices

Warning notices are graded according to their level of danger and are represented as follows with the corresponding signal words and warning symbols:

#### **DANGER**

Immediate lethal danger or serious injuries.

#### **WARNING**

Possible lethal danger or serious injuries.

#### **CAUTION**

Possible slight injuries.

#### **NOTICE**

Damage to the implement or the surroundings.

### 2.4 EC Conformity

STOLL front loaders comply with Machine Directive 2006/42/EC.

## 2.5 Proper use

The ProfiLine front loader is a mounted implement for agricultural and forestry tractors and is designed and intended solely for:

- Mounting on tractors with the front loader mounting kit approved by STOLL (see *3.4 Attaching it to the tractor*),
- Use with work implements specified by STOLL, which are suitable for the respective loading work (see *6.5 Picking up and putting down the implement* and operating instructions for the implement),
- Use and operation within the defined limits (see *11 Technical specifications*),
- Control from the driver's seat.

The front loader may only be operated when it is in perfect condition. If faults impair safety, these must be promptly repaired by an authorised specialist workshop.

The front loader must not be used in work processes and with implements that require the presence of people close to the load when the front loader is in the raised position! This kind of work is only permitted if the front loader is equipped with an anti-lowering guard (*4.8 Anti-lowering guard*).

The front loader and its implements must not be operated simultaneously with other hydraulic equipment on the tractor.

Proper use also includes reading and observing the operating instructions, the associated additional instructions, the other applicable documents as well as the safety information. To ensure operational safety, prescribed maintenance work as well as intervals and conditions for care and service must also be observed. Any use other or beyond those described in the manual is considered as improper use.

### Foreseeable misuse

Avoid the following:

- Exceeding of the permissible axle load and the permissible total weight of the tractor
- Use outside of the conditions and prerequisites that are specified in the technical manuals and documents
- Transport of persons
- Transport of loads that are not intended for use with front loaders
- Transport of loads in road traffic
- Transport of unsecured loads (e.g. stone pallets)

## 2.6 Operational limits

- The following operating conditions and requirements on the operational environment must be observed:
- If applicable, temperature range for proper operation of the tractor (see operating instructions of the tractor)
- Sufficient load capacity of the tires and the front axle of the tractor

## 2.7 Basic safety information

The basic safety information comprises all safety measures grouped by theme and is applicable at all times. In addition, the information is presented as warning notices at the corresponding positions in these operating instructions.

### Basic dangers



Mortal danger exists when persons are lifted or carried with the front loader. The front loader is not equipped with the necessary safety equipment to be used as a work cage.

- It is forbidden to lift or transport people with the front loader.

### Mechanical dangers



There is a risk of crushing and impact of the upper and lower limbs due to projecting or protruding frame parts and moving components of the machine.

- Personnel must be instructed in the proper use of the machine and in the location and types of danger.
- Instruct persons to exit the danger and movement areas of the machine.
- Wear suitable protective gear, if necessary, when performing service tasks.



There is a lethal risk of crushing and injury due to accidental movements of the tractor, the front loader, and the implements.

- Instruct unauthorised persons to exit the danger and action area of the machine.
- Assistance from a second person for loading activities should only be allowed when the front loader is lowered, provided that an anti-lowering guard is not installed.
- For loading work as well as when mounting and dismounting the front loader, ensure that the tractor is standing on level and solid ground.
- The front loader may only be operated from the driver's seat of the tractor. Operating elements outside of the tractor must not affect the front loader! In particular, the operating elements of the front linkage must not affect the front loader!
- The front loader must only be operated by one person.

There is a lethal risk of injury due to exceeding of the maximum permissible load or with improper use of the front loader resulting in breaking of the front loader or its components.

- Observe the load limits specified in the technical data.
- When levelling or pushing snow, do not drive faster than 10 km/h.
- Work only with mounted and locked implement.
- Observe the load capacity of the tyres and the front axle of the tractor.



### Hydraulic dangers



There is a risk of injury due to escaping hydraulic fluids under high pressure.

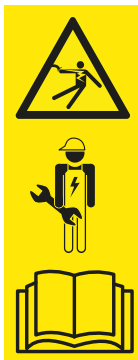
- Observe the safety stickers on the machine.
- Check the hydraulic couplings and lines for leaks before uncoupling.
- On tractors without a closed driver's cab, mount tubes with splash guards.



There is a risk of crushing when machine parts move uncontrollably due to entrapped air in the hydraulic system.

- Before performing any work on the hydraulic system, depressurize the system.
- Clean the hydraulic couplings and lines before coupling.
- Change the hydraulic fluid regularly according to the service schedule.

### Electrical dangers



There is lethal danger due to power surges when touching live machine parts, e.g. due to short circuits in the on-board network of the tractor.

- Installation and service tasks on the electrical system should only be performed by an electrician.
- Observe the operating instructions of the tractor.



There is lethal danger due to collision of the raised front loader with high-voltage lines.

- Do not raise the front loader higher than 4 m when driving on roads.
- Keep a safe distance away from electrical lines.
- If you do not know the rated voltage, stay at least 4 m away from electrical lines.

### Danger due to emissions



With long-lasting normal operation of the machine, hearing damage can be caused by the noise level of the tractor and the hydraulic system.

- Always wear personal hearing protection.
- Observe special regulations for road operation and for operating machines in open spaces.

### Dangers during packaging and transport



There is a risk of injury due to crushing, impacts or pinching if the front loader tips over or falls from the lifting gear.

- During all preparatory work, always ensure a secure stand of the machine.
- Assisting persons must be instructed to exit the immediate danger area under the front loader.



There is a risk of accidents during transport of the front loader if it is not correctly loaded and secured.

- The front loader must be correctly secured and transported.

### Dangers during assembly for initial operation



There is a risk of injury when lifting and handling heavy machine parts as well as bulky components of the front loader.

- Heavy and bulky machine parts may only be lifted with the assistance of a second person.
- Avoid back injuries by lifting correctly.

### Dangers when mounting and dismounting the front loader



There is a risk of injury when the front loader tips over during mounting or dismounting or when the parked front loader tips over due to a lack of stability.

- Ensure the stability of the front loader and the tractor.
- Observe the instructions and sequence in these operating instructions for proper mounting and dismounting of the front loader.
- Check the proper locking of the front loader.



There is a risk of crushing of limbs when operating the parking supports to park the front loader, especially on uneven ground.

- Observe the instructions and sequence in these operating instructions for proper operation of the parking supports.

### Dangers when picking up and putting down implements



There is a risk of serious injury and lethal danger due to implements falling down or uncontrolled lowering of the front loader when unsuitable implements are used or if the used implements are overloaded.

- Check that the implements are suitable before use.
- Check that the implement is locked correctly by repeatedly putting the implement down on the ground.
- Perform a visual check on the locking device.
- Only perform the hydraulic locking of the implement up to a height of 1.5 m.
- Check the proper functioning of the implements one time without load before beginning work.

### Dangers during excavation work



There is lethal danger and a risk of explosion during excavation work due to collision with cables buried in the ground.

- Before performing excavation work, ensure that there are no electric cables in the ground.
- Before performing excavation work, ensure that there are no gas lines in the ground.

### Dangers during loading work



There is a risk of serious injury and mortal danger when loading and transporting loads, if the front loader is operated from one side, the load is raised too far over the driver's seat or if unsuitable implements are used.

- If not equipped, check for retrofitting a cab and/or a FOPS (falling objects protection structure) / ROPS (roll-over protection structure) within the framework of work safety regulations.
- If there is no cab or safety equipment, never lift loads over the driver's seat.
- Only use suitable implements, which prevent e.g. rolling back and falling on the driver's seat.

## Dangers when operating the front loader



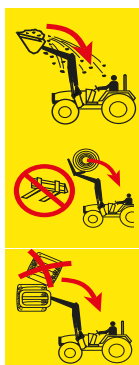
There is a risk of serious injury or lethal danger due to tipping of the tractor when working on slopes, when going around bends, when the load on the rear axle is too low, and when driving into the bulk to be lifted at a skewed angle.

The risk increases when the front loaders are raised up high because of the higher centre of gravity.

- Drive carefully when working on slopes. Never travel with a raised load across a slope.
- Ensure that the ground is level enough.
- When driving in curves, reduce the speed and lower the load.
- Never start driving abruptly with the front loader raised high and fully loaded.
- Observe and comply with the maximum load of the tractor.
- Always use sufficient counterweights at the rear of the tractor.
- In case of instability or tipping, lower the front loader and remain in the driver's cab.
- Drive towards the load in a straight line and do not steer while driving into the load.
- Use the safety belts.
- Connect the brake pedals.
- Switch off the front axle suspension.
- On tractors with adjustable track width: set the maximum possible track width.

When driving on roads, there is a risk of serious injury and lethal danger for the operator as well as for other road users if the tractor and the front loader are not correctly prepared and operated for road traffic.

- Only drive on roads without a load.
- Before driving on roads, switch off the hydraulic system and lock it.
- Raise the front loader.

**Dangers due to falling loads**

There is mortal danger due to raised loads falling down on the driver's seat. There is a particularly high risk when lifting pallets or bales above the driver's cab and when working on slopes. Even the standard protection systems (roll-over protection structure ROPS, falling objects protective structures FOPS) do not provide fully adequate protection.

- When working on slopes, reduce the implement filling and lower the load.
- Check the inclination of the implement. Do not scoop too far with the implement.
- Use implements that are designed such that they prevent loads from falling onto the driver's seat.
- Only use the appropriate implements when loading piece goods (e.g. bale grabber for bales or pallet fork for pallets).
- Lift pallets or bales one at a time. Never stack several loads on top of each other, since the top load could fall down on the driver's seat.
- Compensate for the increased angle on front loaders without parallel motion when lifting by "dumping" with the implement.
- Do not operate the front loader without parallel motion while driving in reverse.
- On tractors without a cab or 4-post roll-over protection structure, do not lift large load items, in particular bales, any higher than the pivot point of the lifting arm.
- Watch the load as you are lifting. Do not lift the load when reversing.

**Dangers during maintenance**

Maintenance work carried out incorrectly (care and cleaning, service, repairs) impair the safety of the front loader.

- Check the front loader regularly for defects.
- Check mounting parts (brackets) regularly for damage (cracks).
- Care and cleaning work must be carried out correctly.
- Only have repair work performed by authorised qualified personnel.

## 2.8 Danger zones

On and around the front loader, there are the following areas with increased risk to safety of the operator or safety of other persons:

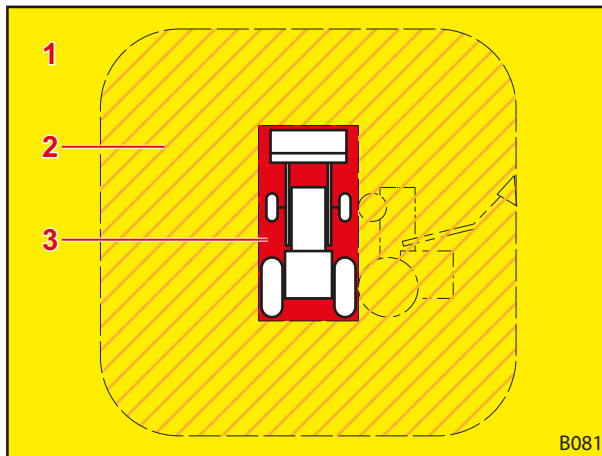


Fig. 3 Top view (from above)

### Legend

- 1 Work area (yellow)
- 2 Outer danger zones (hatched in orange)
- 3 Inner danger zones (red)

Danger zone	Description	Danger
Work area	Overall possible movement area of the tractor incl. the front loader during loading work.	<ul style="list-style-type: none"> <li>Standing in the working area represents a risk.</li> </ul>
Outer danger zone	Overall field of action of the tractor and front loader as well as the area in which the tractor or front loader could tip over in case of accident: <ul style="list-style-type: none"> <li>On the sides (left and right): height of the tractor with the front loader raised as far as it goes (incl. implement)</li> <li>Front and rear: half the height of the tractor with the front loader raised as far as it goes (incl. implement)</li> </ul>	<ul style="list-style-type: none"> <li>When the tractor tips over or when loads fall down, people can be seriously injured.</li> </ul>
Inner danger zone	Area on and around the tractor and front loader, especially between the wheels of the tractor, directly in front of and behind the tractor as well as on and under the front loader.	<ul style="list-style-type: none"> <li>Persons can be pinched in between the wheels of the tractor.</li> <li>Persons can be overseen by the tractor driver and run over.</li> <li>Moving machine parts can move uncontrollably and thereby crush and injure people.</li> </ul>

- Observe the danger zones and instruct unauthorised persons out of these areas.

## 2.9 Safety equipment

Depending on the equipment, the front loader has the following protective and safety equipment:

Protective/safety equipment	Function
Safety stickers	Safety stickers warns against hazards at danger points (see 2.10 Adhesive safety label).
Anti-lowering guard	The anti-lowering guard protects against accidental lowering of the front loader during work that requires another person in the working or danger zone of the front loader (see 4.8 Anti-lowering guard).

## 2.10 Adhesive safety label

Safety stickers warn of hazards at danger points and are an important part of the safety equipment of the front loader.

- Clean safety stickers if they are soiled.
- Replace damaged or illegible safety stickers (see 10.1 Spare parts).
- If necessary, equip new spare parts with the corresponding safety stickers.

### Position of the safety sticker on the front loader

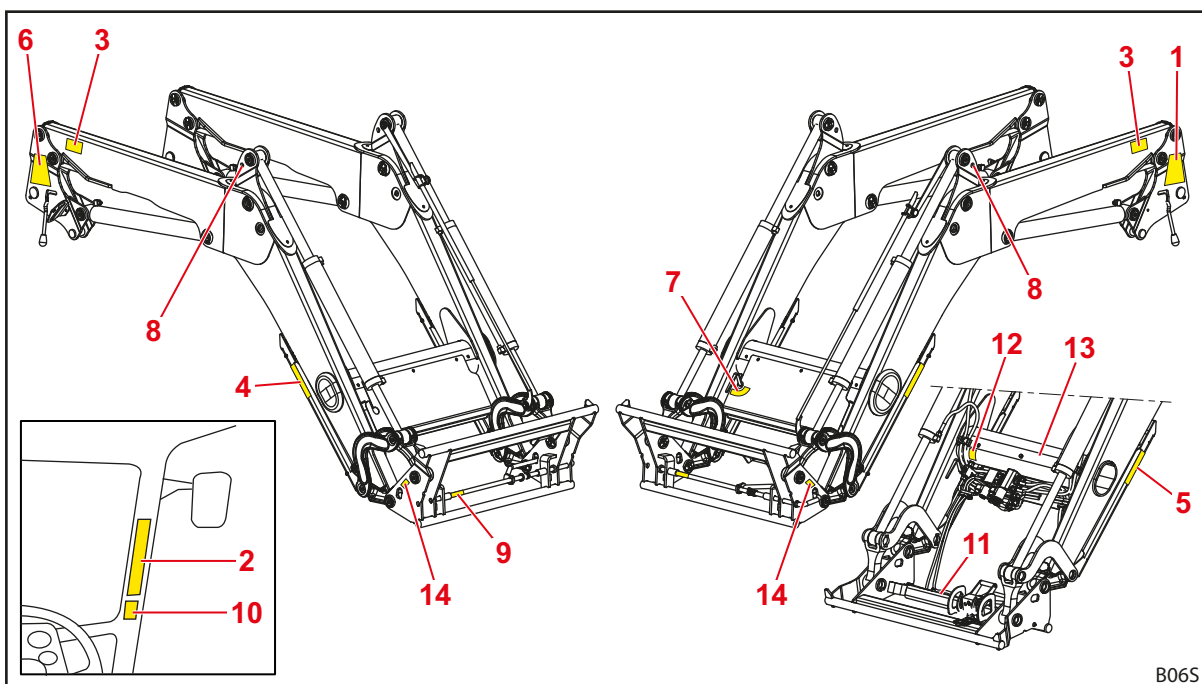



Fig. 4 Front loader FZ (exemplary figure)

### Legend

- 1 Safety instructions on the left pillar
- 2 Safety instructions in the tractor driver's cab
- 3 Safety instructions on the left and right lifting arm
- 4 Safety instructions on the right parking support
- 5 Safety instructions on the left parking support
- 6 Mounting and dismounting instructions for the front loader on the right pillar
- 7 Information on the operation of Comfort-Drive on the cross tube
- 8 Information for crane transport above, below or next to the hole for the hook (on the deviation triangle on FZ front loaders, on the frame on FS front loaders)
- 9 Sticker for safe manual implement locking, on the locking plug
- 10 Safety instructions for hydraulic implement locking, in the driver's cab (optional)
- 11 Safety instructions for hydraulic implement locking, on the cover plate (optional)
- 12 Safety instructions for pressure oil under the casing on the cross tube (optional)
- 13 Safety instruction for pressure accumulator on the accumulator on the cross tube (optional)
- 14 Safety instructions for working zone of the front loader lifting arm on the left and right of the change frame

## Description of the safety sticker

 The numbering corresponds to the positions on the front loader (see *Position of the safety sticker on the front loader*).

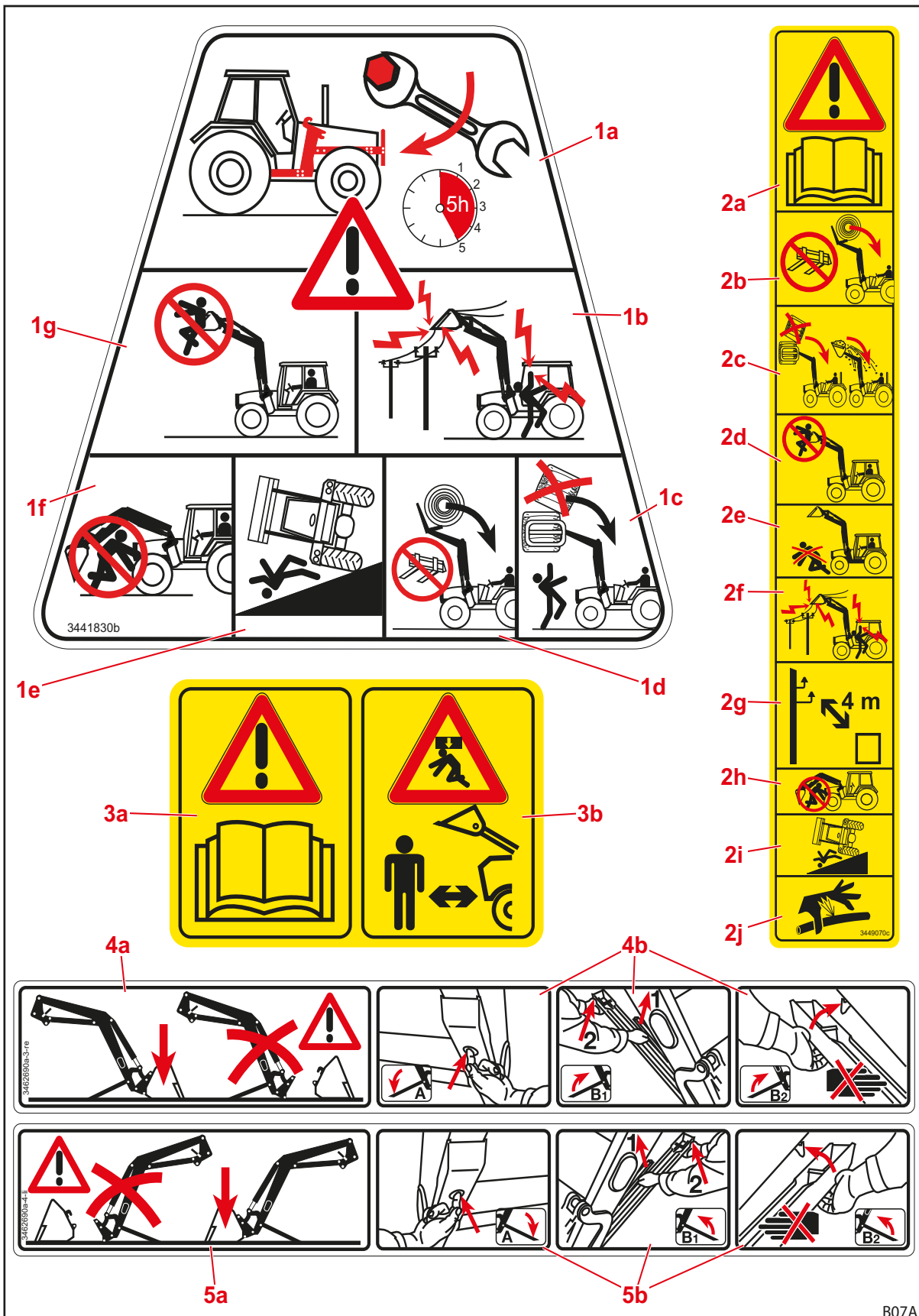


Fig. 5 Safety sticker position 1-5



Position	Description
1a	Re-tighten all the fixing screws on the mounting kit after the first 5 hours of operation.
1b	Keep a safe distance away from electrical lines.
1c	Do not stack several loads on top of each other.
1d	Only use suitable implement to prevent the load from falling down.
1e	Increased risk of tilting when the front loader is raised.
1f	Do not stand under the raised front loader.
1g	Do not lift or transport persons with the front loader.
2a	Observe the operating instructions.
2b	Only use suitable implement to prevent the load from falling down.
2c	Do not stack several loads on top of each other. Check the inclination of the implement.
2d	Do not lift or transport persons with the front loader.
2e	Do not stand in the working area of the front loader.
2f	Keep a safe distance away from electrical lines.
2g	Keep a distance of at least 4 m from electrical high-voltage lines.
2h	Do not stand under the raised front loader.
2i	Increased risk of tilting when the front loader is raised.
2j	Be careful of hydraulic oil under high pressure.
3a	Observe the operating instructions.
3b	Do not stand in the working area of the front loader. Possible danger due to loads falling down.
4a	Only park the front loader with attached implement with a minimum weight of 70 kg.
4b	Procedure for unfolding the parking supports.
5a	Only park the front loader with attached implement with a minimum weight of 70 kg.
5b	Procedure for unfolding the parking supports.

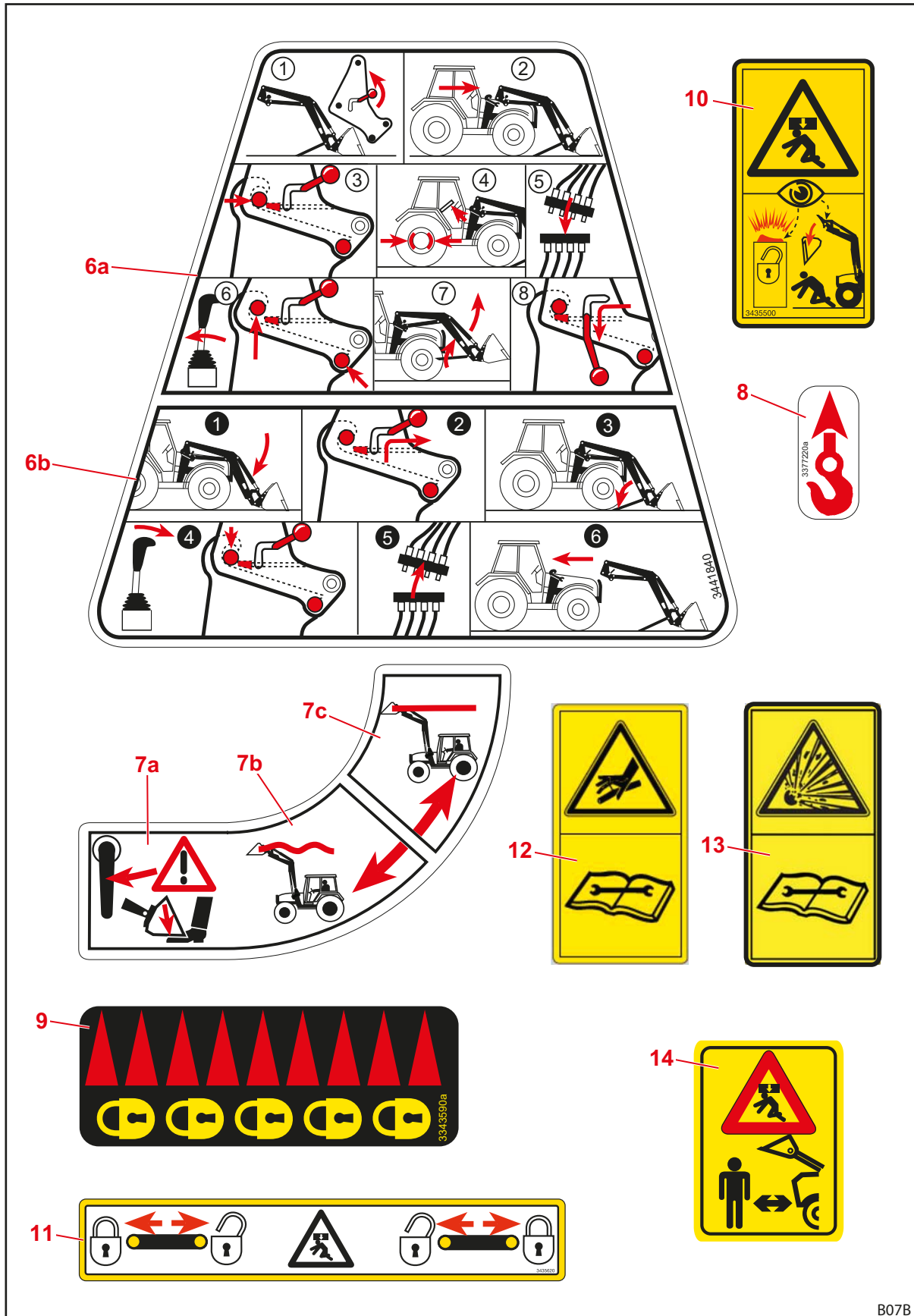


Fig. 6 Safety sticker position 6-14

B07B

Position	Description
6a	Instructions for mounting of the front loader.
6b	Instructions for dismounting of the front loader.
7a	The front loader is lowered when the Comfort Drive is switched on.
7b	Lever position to switch on the Comfort Drive.
7c	Lever position to switch off the Comfort Drive.
8	Mounting points for crane transport of the front loader.
9	Identification of the locked position of the mechanical implement locking mechanism.
10	Be careful with using the hydraulic implement locking mechanism when persons are standing around the front loader.
11	Pin position for the hydraulic implement locking mechanism.
12	The hydraulic system is under oil pressure. Parts can only be removed or repaired after the pressure has been relieved according to the instructions in the installation instructions or in the tractor operating instructions.
13	The pressure accumulator is under pressure from the gas and oil. Parts should only be removed and repaired according to the instructions in the installation instructions.
14	Do not stand in the working area of the front loader. Possible danger due to loads falling down.

## 2.11 Personnel requirements

In the operating instructions, a distinction is made between the following persons:

- Operators
- Qualified personnel
- Specialised tradesmen

All person groups must have read and understood the operating instructions. The table lists the other respective qualifications and responsibilities.

Personnel	Qualification/responsibility
Operators	<ul style="list-style-type: none"> <li>• are responsible for the proper operation of the front loader</li> <li>• instruct qualified personnel on how to handle the front loader</li> <li>• ensure regular inspection and service of the front loader in a specialised workshop</li> </ul>
Qualified personnel	<ul style="list-style-type: none"> <li>• are responsible for the proper operation of the front loader</li> <li>• are physically able to control the front loader and the tractor</li> <li>• ensure regular service of the front loader</li> <li>• know the relevant road traffic regulations</li> <li>• are in possession of the prescribed driving license</li> <li>• are familiar with driving tractors safely</li> </ul>
Specialised tradesmen	<ul style="list-style-type: none"> <li>• perform maintenance work (service and repairs)</li> <li>• have a recognised training certificate or specialised knowledge that is required to observe the existing specifications, regulations, and directives</li> </ul>



Work on electrical components of the machine may only be performed by an electrician according to the electro-technical regulations.  
Welding work may only be performed in an authorised workshop.

## **2.12 Behaviour in case of emergency**

- Initiate the following measures to avoid further damage in cases of emergency:
  - (1) Secure the accident site correctly.
  - (2) Provide first aid (if necessary).
  - (3) Call rescue workers, describe the situation briefly and concisely. Wait for feedback.
  - (4) Inform the employer or operator.

### **2.12.1 Behaviour if the tractor tips or falls over**

- If the tractor tips or falls over with the front loader, observe the following instructions:
  - (1) Lower the load.
  - (2) Stay in the driver's cab until professional help arrives.

### **2.12.2 Behaviour in case of flashovers from electrical power lines**

In the vicinity of electrical power lines, flashovers can happen quickly that cause high electrical voltage on the outside of the tractor. This results in large voltage differences on the ground around the machine.

In the case of a flashover:

- Do not exit the driver's cab.
- Do not touch any metal parts.
- There must be no connection to the earth.
- Warn any persons standing around against coming closer.
- Have the power switched off.
- Wait for professional rescue workers.

If it is still necessary to exit the driver's cab, e.g. due to the threat of fire:

- Jump away from the tractor and be sure not to touch it.
- Take small steps to move away from the tractor.

### 3 Structure

#### 3.1 Structure of FS front loaders

FS front loaders are composed of the following main components:

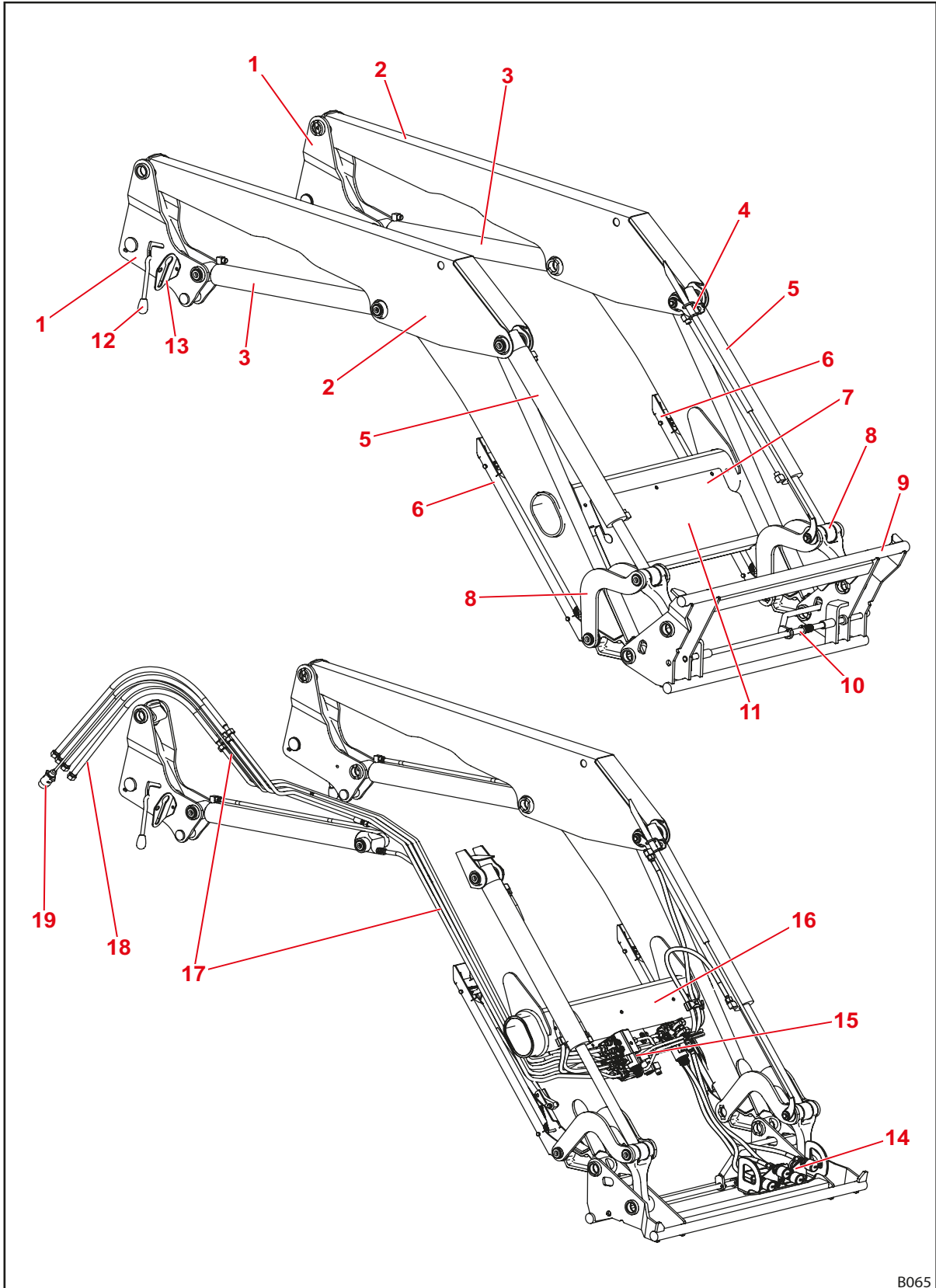


Fig. 7 FS front loader

B065

**Legend**

- 1 Pillars (drive-in system)
- 2 Lifting arm (base frame)
- 3 Lifting cylinder: hydraulic cylinder for lifting and lowering
- 4 Upper support for the implement position indicator
- 5 Implement cylinders: hydraulic cylinders for dumping and scooping (differential cylinders)
- 6 Parking supports
- 7 Rating plate
- 8 Lever mechanism dumping/scooping
- 9 Euro change frame (implement support)
- 10 Implement locking mechanism
- 11 Cap for hydraulic and electrical distribution and additional equipment
- 12 Front loader locking mechanism
- 13 Coupling holder
- 14 Hydraulic couplings for the 3rd and 4th control circuit (optional)
- 15 Hydraulic and electrical distribution valves for additional equipment
- 16 Cross tube
- 17 Hydraulic tubes
- 18 Hydraulic hoses to the tractor (interface on the mounting part)
- 19 Connection cable (optional, multiple versions possible)



Sizes, see *11 Technical specifications*.

---

### 3.2 Structure of FZ front loaders

FZ front loaders are additionally equipped with parallel motion and are composed of the following main components:

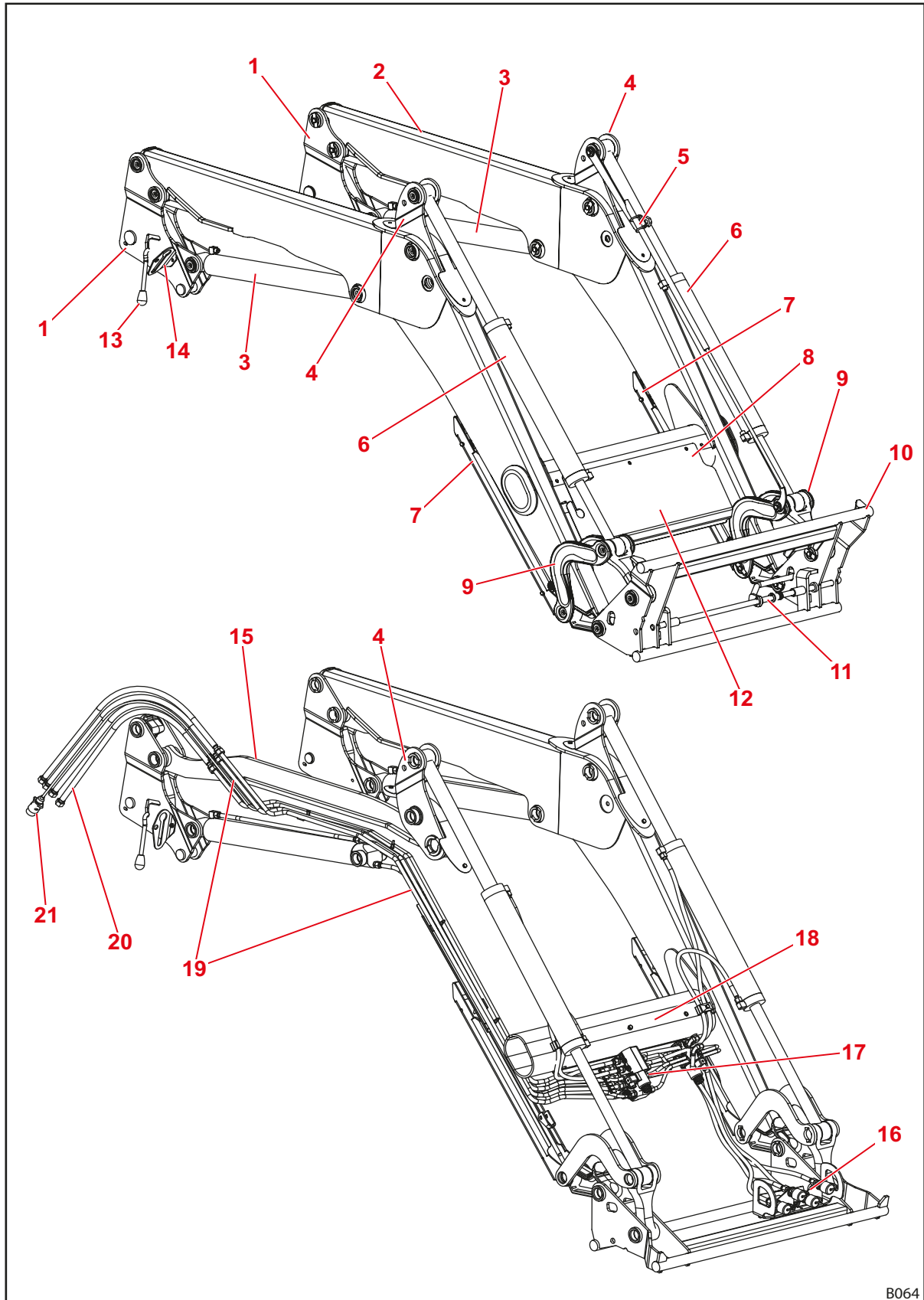


Fig. 8 FZ front loader



**Legend**

- 1 Pillars (drive-in system)
- 2 Lifting arm (base frame)
- 3 Lifting cylinder: hydraulic cylinder for lifting and lowering
- 4 Deviation triangle of the parallel motion
- 5 Indicator for implement position
- 6 Implement cylinder: hydraulic cylinder for dumping and scooping (synchronised cylinder)
- 7 Parking supports
- 8 Rating plate
- 9 Lever mechanism dumping/scooping
- 10 Euro change frame (implement support)
- 11 Implement locking mechanism
- 12 Cap for hydraulic and electrical distribution and additional equipment
- 13 Front loader locking mechanism
- 14 Coupling holder
- 15 Control rod of the parallel motion
- 16 Hydraulic couplings for the 3rd and 4th control circuit (optional)
- 17 Hydraulic and electrical distribution valves for additional equipment
- 18 Cross tube
- 19 Hydraulic tubes
- 20 Hydraulic hoses to the tractor (interface on the mounting part)
- 21 Connection cable (optional, multiple versions possible)



Sizes, see *11 Technical specifications*.

---

### 3.3 Equipment variations

The table shows the different equipment variations for FS and FZ front loaders:

Equipment	Front loader			
	FS	FS-rapid emptying	FZ	FZ-L
<b>Basic equipment</b>				
Parallel motion (mechanical)	—	—	●	●
<b>Change frame</b>				
Euro	●	●	●	●
SMS	○	○	○	○
Skid-Steer	○	○	○	○
Euro-MX combi-frame	○	○	○	○
Euro-SMS combi-frame	○	○	○	○
Euro-Alö Type 3 combi-frame	○	○	○	○
<b>Implement locking mechanism</b>				
mechanical	●	●	●	●
hydraulic	○	○	○	○ <sup>1</sup>
<b>Hydraulic and electrical couplings</b>				
4 Plug-in couplings	●	●	●	●
7-pin electrical plug connection	○	●	○	●
Hydro-Fix multiple hydraulic coupling	○	○	○	○
Hydro-Fix multiple coupling for hydraulic and electric	○	○	○	○
Tractor-specific multi-coupler	(○)	(○)	(○)	(○)
<b>Additional functions</b>				
Comfort Drive (mechanical operation)	○	○	○	○ <sup>1</sup>
Comfort Drive (electrical operation)	○	○	○	○
3rd control circuit <sup>2</sup>	○	○	○	○ <sup>1</sup>
4th control circuit <sup>2</sup>	○	○	○	○
Rapid emptying	—	●	—	—
Quick emptying	—	—	—	●
Return To Level	—	—	—	●
Camera system	○	○	○	○ <sup>1</sup>

● = Series, ○ = Optional, — = not available, () = not for all tractors

<sup>1</sup> Standard equipment on FZ 100

<sup>2</sup> Alternatively with screw couplings, plug-in couplings or multiple couplings

### 3.4 Attaching it to the tractor

The front loader is attached to the tractor using the mounting kit for tractors. The mounting kit consists of the following components:

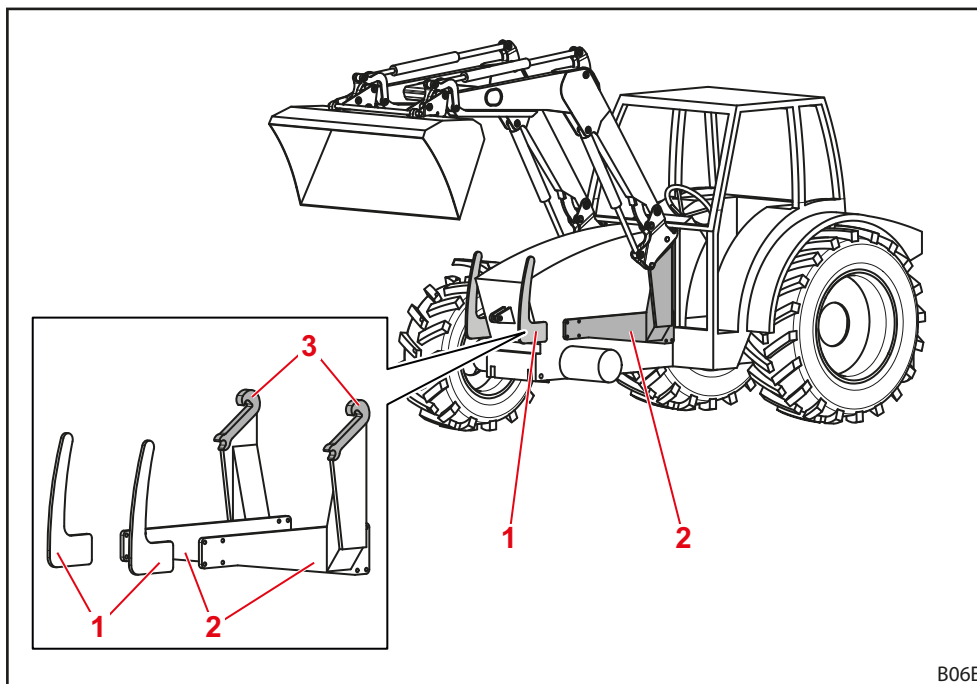


Fig. 9 Mounting kit for tractors

#### Legend

- 1 Front guard left and right
- 2 Mounting parts left and right
- 3 Mountings/catch hooks

The components remain permanently mounted on the tractor. They can look different depending on the tractor model.

- Observe the installation instructions for the mounting kit.
- Observe the regulations for the registration of the changed empty weight in the vehicle documents for the tractor.



The front loader can only be mounted on the tractor if the associated mounting kit is already installed. Only an authorized specialist workshop is allowed to install the mounting kit on the tractor.

### 3.5 Change frame

The change frame is a fixed component of the front loader. The different types are designed and adapted for the mounting of standardised implements of this type.

As a matter of principle, the following change frames are available for FS and FZ 8 to 80.1 front loaders:

- Euro change frame
- SMS change frame
- Euro-SMS Combi change frame
- Euro-Alö3 Combi change frame
- Euro-FR Combi change frame
- Skid-steer change frame

The basic equipment of the change frames includes a mechanical implement locking mechanism, however, a hydraulic implement locking mechanism can be installed as an option (see 4.1 *Implement locking mechanism*).

For FZ 100 front loaders, there is a reinforced Euro change frame, which is always equipped with hydraulic implement locking.



The change frames will be presented without implements in the following.

#### 3.5.1 Euro change frame

These change frames are installed on FS and FZ 8 to 80.1 front loaders.

They are intended for mounting implements complying with the Euro standard.

The implement cylinder serves to swivel the change frame around its pivot point.

On the support, the couplings for a 3rd and 4th control circuit can be installed as an option (see 4.9.1 *Additional control circuits*).

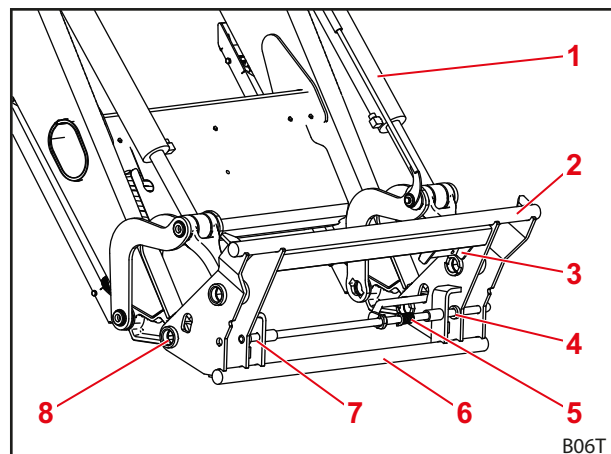


Fig. 10 Euro change frame

#### Legend

- 1 Implement cylinder
- 2 Upper cross bar
- 3 Support with hydraulic couplings for the 3rd/4th control circuit
- 4 Mounting on the left
- 5 Spring
- 6 Lower cross bar
- 7 Mounting on the right
- 8 Pivot point

### 3.5.2 SMS change frame

These change frames are installed on FS and FZ 8 to 80.1 front loaders.

The implement is hinged on the top cross bar and is secured with the locking mechanism.

Its function is similar to that of the Euro change frame.

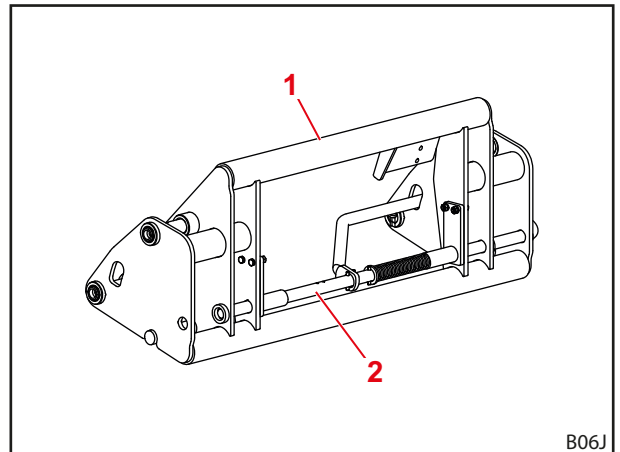


Fig. 11 SMS change frame

#### Legend

- 1 Upper cross bar
- 2 Locking mechanism

### 3.5.3 Euro-SMS Combi change frame

These change frames are installed on FS and FZ 8 to 80.1 front loaders.

They are intended for mounting implements complying with the Euro standard as well as the SMS standard.

Euro implements are hinged onto the outer pins. SMS implements are hinged onto the cross bar.

The function is the same as for Euro and SMS change frames.

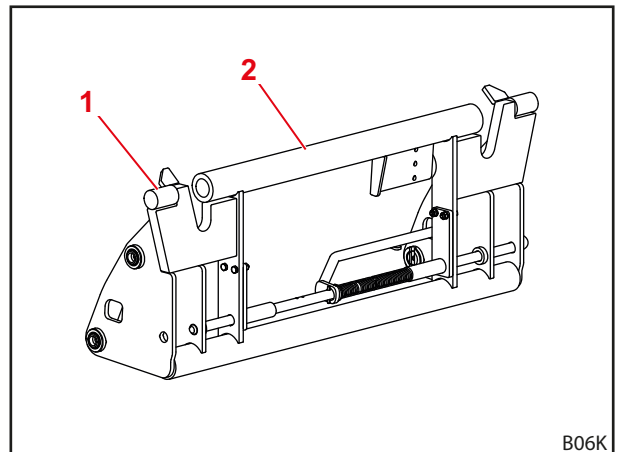


Fig. 12 Euro-SMS Combi change frame

#### Legend

- 1 Outer pin
- 2 Cross bar

### 3.5.4 Euro-Alö3 Combi change frame

These change frames are installed on FS and FZ 8 to 80.1 front loaders.

They are intended for mounting implements complying with the Euro standard as well as the Alö3 standard.

Euro implements are hinged onto the outer pins. Alö3 implements are hinged onto the inner pin.

The function is the same as for Euro change frames.

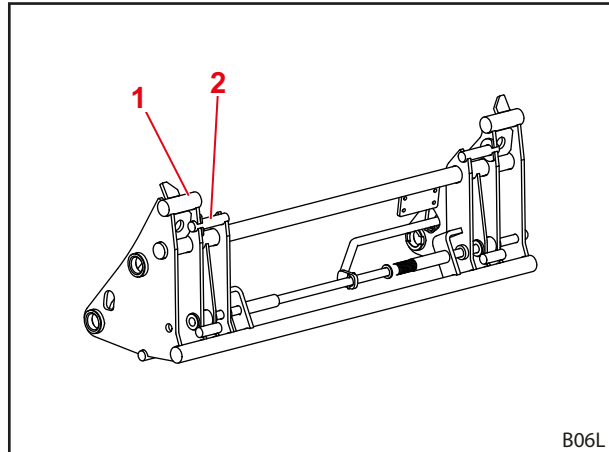


Fig. 13 Euro-Alö3 Combi change frame

#### Legend

- 1 Outer pin
- 2 Inner pin

### 3.5.5 Euro-FR Combi change frame

These change frames are installed on FS and FZ 8 to 80.1 front loaders.

They are intended for mounting implements complying with the Euro standard as well as the FR standard.

For the use of FR implements, both supports must be mounted on the outside of the change frame and locked with linch pins. The mountings are attached to the support when using Euro implements.

The function is the same as for Euro change frames.

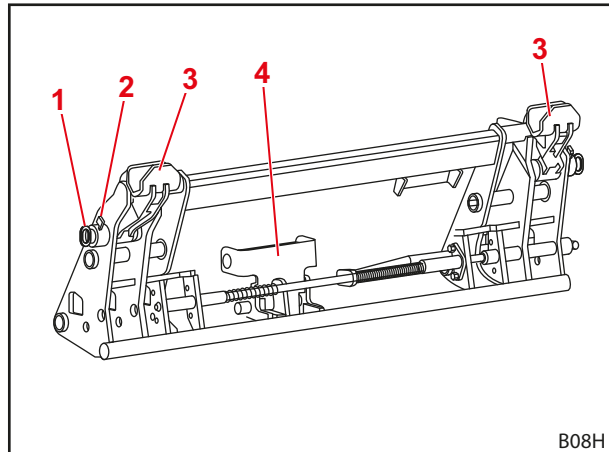


Fig. 14 Euro-FR Combi change frame

#### Legend

- 1 Pin
- 2 Linch pin
- 3 Mounting
- 4 Support for mounting

### 3.5.6 Skid-steer change frame

These change frames are installed on FS and FZ 8 to 20 front loaders.

They are intended for mounting implements complying with the skid-steer standard.

The implement is attached to the locking hooks using the lever.

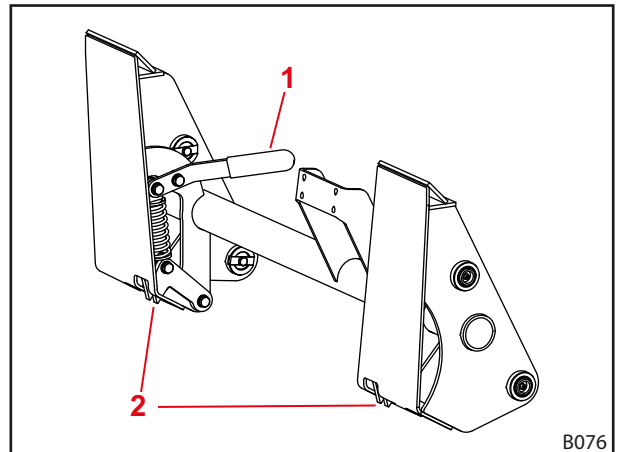


Fig. 15 Skid-steer change frame

#### Legend

- 1 Lever
- 2 Locking hooks

### 3.5.7 Reinforced Euro change frame (FZ 100)

The structure of this change frame is similar to the FS and FZ 8 to 80.1 Euro change frame. However, they are designed for higher loads and are always equipped with a hydraulic implement locking mechanism (see 4.1.2 *Hydraulic implement locking mechanism – Hydro-Lock*).

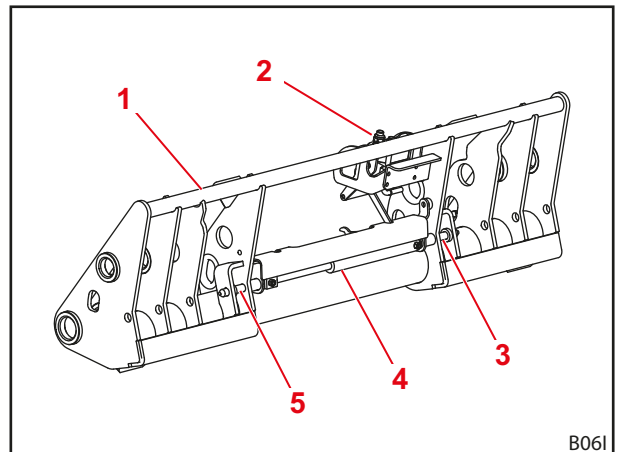


Fig. 16 Reinforced Euro change frame (FZ 100)

#### Legend

- 1 Upper cross bar
- 2 Support with hydraulic couplings for the 3rd/4th control circuit
- 3 Locking pins (left)
- 4 Hydraulic cylinder for the implement locking mechanism
- 5 Locking pins (right)

### 3.6 Hydraulic lines

#### ⚠ CAUTION

**There is a risk of injury due to escaping hydraulic fluids!**

If the hydraulic lines are not depressurized before the coupling procedures, oil can spray out and injure the skin or other body parts (e.g. eyes).

- ▶ Always depressurize the hydraulic system before any coupling procedures.
- ▶ Clean the couplings on a regular basis.

The tractor and front loader are connected with 4 hydraulic lines, which can be found in the right pillar of the front loader.

Hydraulic line	Colour of the protective cap	Description
A1	yellow	Lifting function
A2	blue	Scooping function
B1	green	Lowering function
B2	red	Dumping function

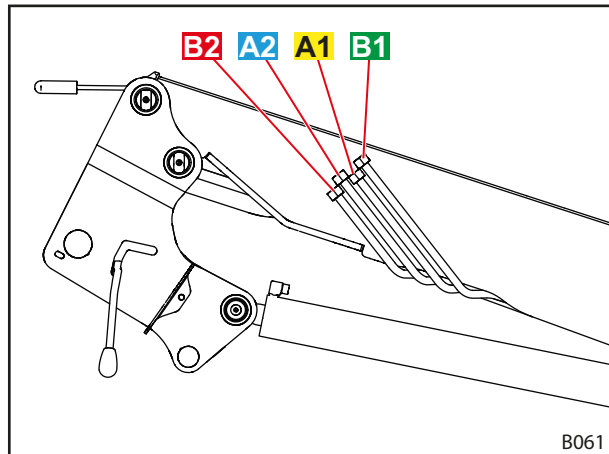


Fig. 17 Hydraulic lines

### 3.7 Hydraulic couplings

#### 3.7.1 Plug-in couplings

The plugs of the plug-in couplings are located on the hydraulic lines of the front loader.

The couplings can be found on the right-side mounting part for the tractor. They are connected to the hydraulic valve either directly or with hose lines.

Plugs and couplings are equipped with coloured caps to facilitate assignment.



Promptly replace damaged or missing labels (e.g. caps).

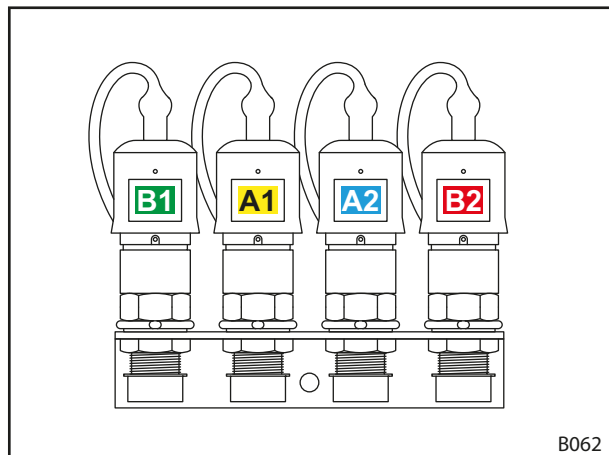


Fig. 18 Plug-in couplings connected



### 3.7.2 Multiple coupling Hydro-Fix

As an option, the front loader can be equipped with the Hydro-Fix coupling. This enables simultaneous connection of all hydraulic lines with the couplings.

The Hydro-Fix upper part is located on the hydraulic lines of the front loader. The Hydro-Fix lower part is located on the right-side mounting part for the tractor.

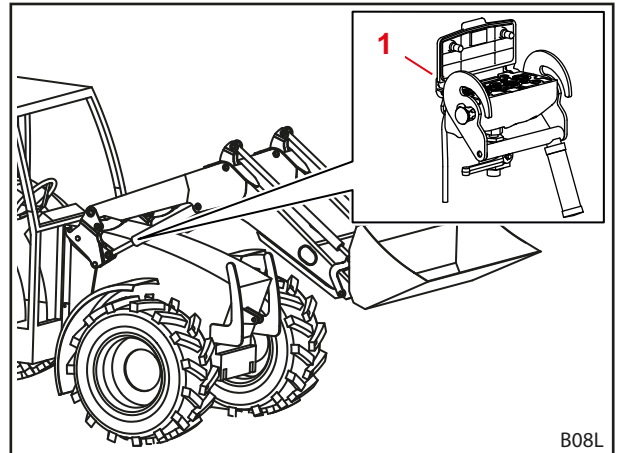


Fig. 19 Hydro-Fix: Position on the front loader

#### Legend

- 1 Hydro-Fix lower part

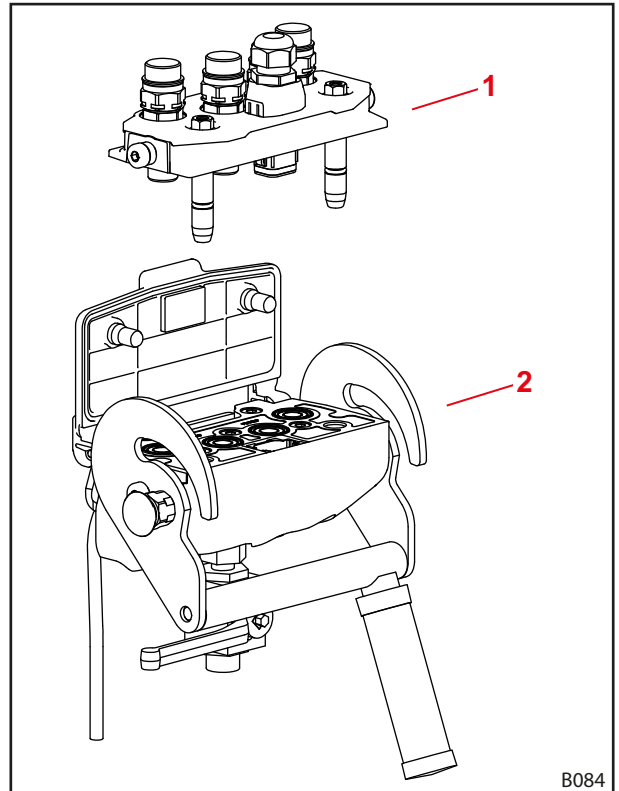


Fig. 20 Hydro-Fix

#### Legend

- 1 Hydro-Fix upper part  
2 Hydro-Fix lower part

## 4 Functions

### 4.1 Implement locking mechanism

#### 4.1.1 Mechanical implement locking mechanism

**Euro, SMS and Combi change frames**

**⚠ WARNING**

**Risk of injury due to implements falling down!**

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

**⚠ CAUTION**

**Risk of crushing due to spring tension!**

There is spring tension on the handle of the implement locking mechanism, which closes the locking mechanism when the handle is lifted. Improper use can lead to injury to hands and fingers.

- ▶ Always operate the handle with one hand and grab it in the middle.

The mechanical implement locking mechanism on Euro, SMS and Combi change frames is actuated manually.

The implement is hinged with its hooks on the top cross bar on the change frame.

Below, the implement rests on the bottom cross bar. Both eyelets of the implement project into the mountings of the change frame.

The locking mechanism is held open by the stop. When lifting the handle, the locking mechanism is closed by the spring, as the front loader pin is pushed through the eyelets of the implement.

When scooping, the handle is lifted by a guide piece on the lifting arm, and the locking mechanism closes automatically.



Do not raise the front load higher than 1.5 m until proper locking of the implement locking mechanism has been checked!

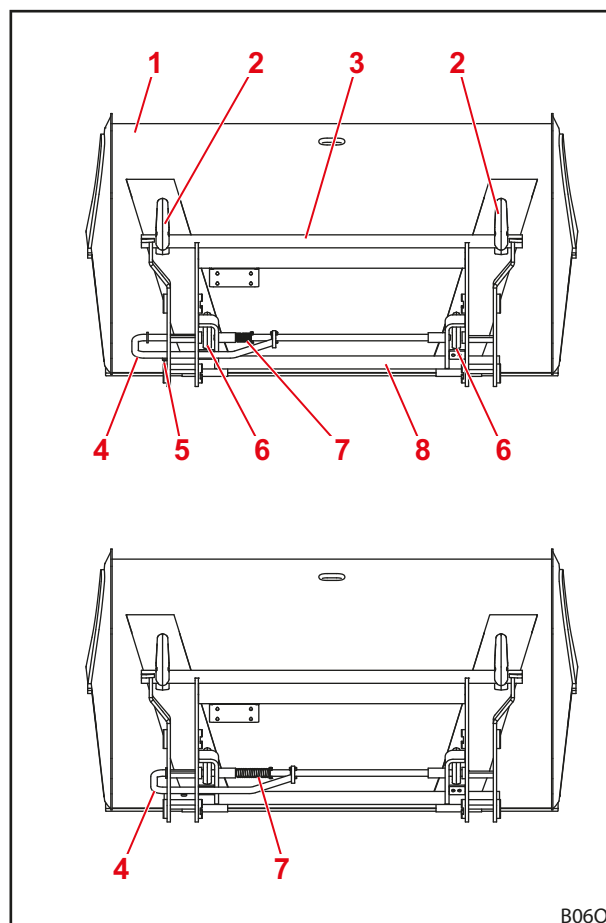


Fig. 21 Open (top) and closed (bottom) locking mechanism

## Legend

- 1 Implement
- 2 Hook
- 3 Upper cross bar
- 4 Handle
- 5 Stop
- 6 Eyelet
- 7 Spring
- 8 Lower cross bar

## Skid-steer change frame

### ⚠ WARNING

#### Risk of injury due to implements falling down!

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

### ⚠ CAUTION

#### Risk of crushing due to spring tension!

There is spring tension on the handle of the implement locking mechanism, which closes the locking mechanism when the handle is lifted. Improper use can lead to injury to hands and fingers.

- ▶ Always operate the handle with one hand and grab it in the middle.

The mechanical implement locking mechanism on skid-steer change frames is actuated manually.

To attach implements, the edge of the mounting surfaces is pushed into the mounting on the implement. As soon as the implement is resting on the change frame, the locking mechanism is closed with the lever. The locking hooks then engage with the lug on the implement.

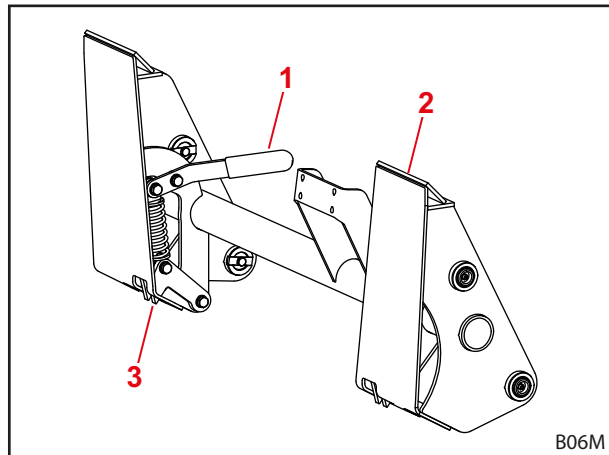


Fig. 22 Mechanical implement locking mechanism on skid-steer change frames

#### Legend

- 1 Lever
- 2 Mounting surface
- 3 Locking hooks

## 4.1.2 Hydraulic implement locking mechanism – Hydro-Lock

### ⚠ WARNING

#### Risk of injury due to implements falling down!

If not installed or operated correctly, the implement can fall down. This can cause serious injury to persons standing in the surrounding area.

- ▶ The hydraulic implement locking mechanism must only be installed by a specialist workshop.
- ▶ Only use switches that are approved by STOLL.
- ▶ Set the implement on the ground or on a safe support before using the implement locking function.

As an option, the front loader can be equipped with a hydraulic implement locking mechanism. It attaches the implement to the change frame via 2 pins activated by a hydraulic cylinder.

## 4.2 Basic functions

### **⚠ DANGER**

#### **Lethal danger due to loads falling down from front loaders without parallel motion!**

On front loaders without parallel motion, the implement tilts to the rear when lifting. As a result, the load can fall on the driver and cause lethal injuries.

- ▶ Watch the load as you are lifting. Do not lift the load when reversing.
- ▶ Compensate for the increased angle on front loaders without parallel motion when lifting by “dumping” with the implement.

### **⚠ WARNING**

#### **Risk of injury and material damage caused by falling loads or lowering front loader!**

With dumping implements that are long or protrude far to the front, the centre of gravity can shift and cause the pressure relief valve of the front loader to open by itself. As a result, the front loader dumps or lowers uncontrollably and can lead to serious injuries and damage.

- ▶ Observe the maximum load of the front loader (see 11 *Technical specifications*).
- ▶ Always use sufficient counterweights at the rear of the tractor (see 5.3.2 *Ballasting*).
- ▶ During loading work, instruct persons to exit the working area (see 2.8 *Danger zones*).

The front loader has 4 basic functions that are required to move the lifting arms and the implement.

#### **Lifting**

The 2 lifting cylinders are extended and thus raise the lifting arm and the implement.

Without parallel motion, the angle between the lifting arm and the implement remains constant so that the implement changes its orientation.

With parallel motion, the angle between the lifting arm and the implement changes so that the implement maintains its original orientation.



To move the implement, see 4.5 *Parallel motion (FZ, FZ-L)*.

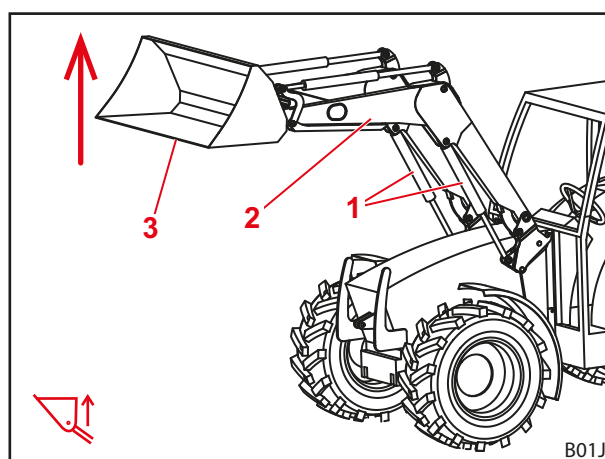


Fig. 23 Lifting function

#### **Legend**

- 1 Lifting cylinders on the left and right
- 2 Lifting arm
- 3 Implement

### Lowering

The 2 lifting cylinders are retracted and thus lower the lifting arm and the implement.

Without parallel motion, the angle between the lifting arm and the implement remains constant so that the implement changes its orientation.

With parallel motion, the angle between the lifting arm and the implement changes so that the implement maintains its original orientation.



To move the implement, see 4.5 *Parallel motion (FZ, FZ-L)*.

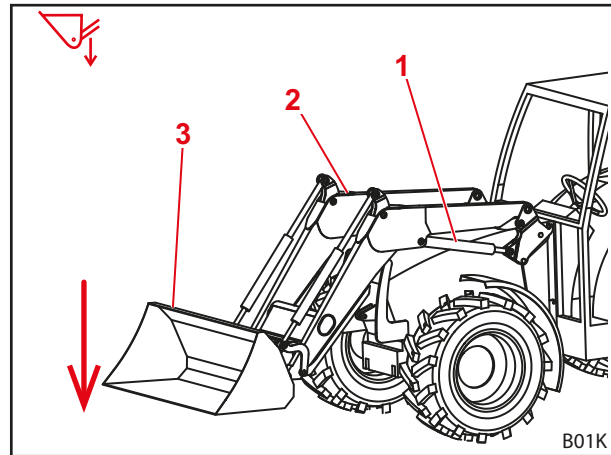


Fig. 24 Lowering function

### Legend

- 1 Lifting cylinder, left
- 2 Lifting arm
- 3 Implement

### Scooping

The 2 implement cylinders are retracted and thus swivel the implement upwards. The implement scoops.

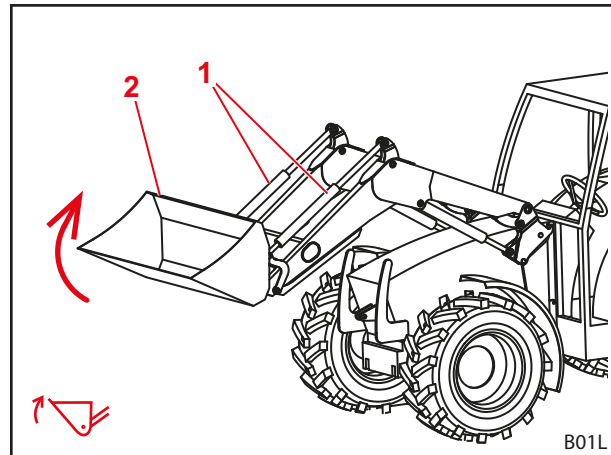


Fig. 25 Scooping function

### Legend

- 1 Implement cylinders on the left and right
- 2 Implement

## Dumping

The 2 implement cylinders are extended and thus swivel the implement downwards. The load is dumped out.

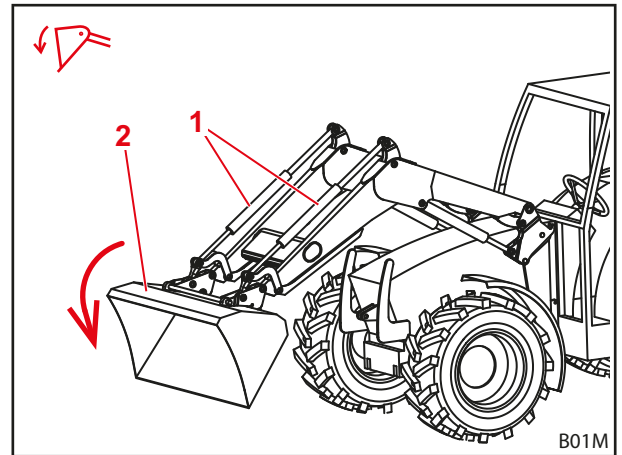


Fig. 26 Dumping function

### Legend

- 1 Implement cylinders on the left and right
- 2 Implement

### 4.3 Float position

#### **WARNING**

##### **Possible risk of injury due to unexpected movement!**

If the front loader is not completely lowered, a vacuum may form in the hydraulic cylinders during the float position. This causes uncontrolled lowering of the front loader at a later time. This can cause persons to be injured or crushed.

- ▶ Only use the float position when the front loader is completely lowered.
- ▶ Do not use the float position with implements that require the presence of other persons!
- ▶ Only use the float position if nobody is in the danger zone.
- ▶ Do not scoop while in float position.

#### **WARNING**

##### **Possible risk of injury due to unexpected movement!**

On FZ-RTL front loaders, the front loader may "sag" during quick emptying if it had previously scooped when the float position was switched on. This can cause persons to be injured or crushed.

- ▶ Do not use the float position with implements that require the presence of other persons!
- ▶ Only use the float position if nobody is in the danger zone.
- ▶ Do not scoop while in float position.

#### **WARNING**

##### **Possible risk of injury due to the implement tipping over!**

On FS front loaders, the float position for the implement may not be activated for the *scooping* and *dumping* functions. This could cause the implement to tip over unintentionally to the rear. This may result in serious accidents.

- ▶ The activation of the float position must be ruled out through the assembly on FS front loaders. If this is not the case, work with the front loader must be stopped immediately and the specialist workshop must be contacted, to have the float position deactivated for the *scooping* and *dumping* functions. The front loader may only be used again when the float position has been deactivated for the *scooping* and *dumping* functions.

The float position is used to improve ground adaptation, since the implement can then follow the ground contours and "floats" on it.



#### 4.3.1 Lifting arm float position

For the float position of the lifting arms, the hydraulic cylinders are depressurized, i.e., they are open towards the tank. The front loader lies on the ground through the pressure of its own weight.

*Activating the lifting arm float position:*

- (1) Fully lower the front loader.
  - (2) Move the operating lever all the way to the front until it engages (see 6.1 *Operating elements*).
- ✓ The float position is activated.

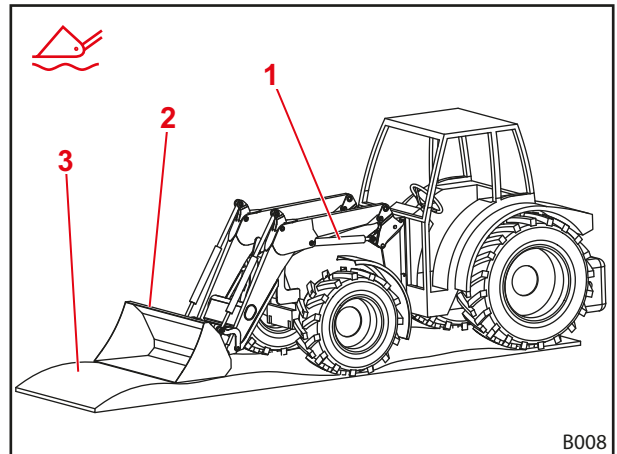


Fig. 27 Front loader in float position

##### **Legend**

- 1 Hydraulic cylinder
- 2 Implement
- 3 Ground

#### 4.3.2 Implement float position

For the implement float position, the front loader must be equipped with Hydac valves as well as parallel motion and must have a STOLL Pro Control operating element. The float position for the implement must be explicitly activated in STOLL Pro Control during the installation.

*Activating the implement float position:*

- (1) Lower the front loader close to the ground.
  - (2) Move the operating lever to the right and press button T2 (green) (see 6.1.4 *STOLL Pro Control*).
- ✓ The float position is activated.

#### 4.4 Indicator for implement position

The indicator for the implement position is located on the left implement cylinder. It allows the horizontal position of the implement to be read from the driver's seat.

The rod is attached on the lower bearing pin and runs through the tube, which is attached to the upper bearing pin with the support. When dumping or scooping, the rod moves in the tube. When the implement is in horizontal position, the rod and the tube are flush.

*Setting of the indicator:*

- (1) Position the implement horizontally.
- (2) Lower the front loader to the ground.
- (3) Switch off the tractor.
  - Apply the parking brake.
  - Stop the engine.
- (4) Loosen the clamping screw.
- (5) Push the tube into the support until the top end of the tube is flush with the rod.
- (6) Tighten the clamping screw.
- ✓ The indicator is set.

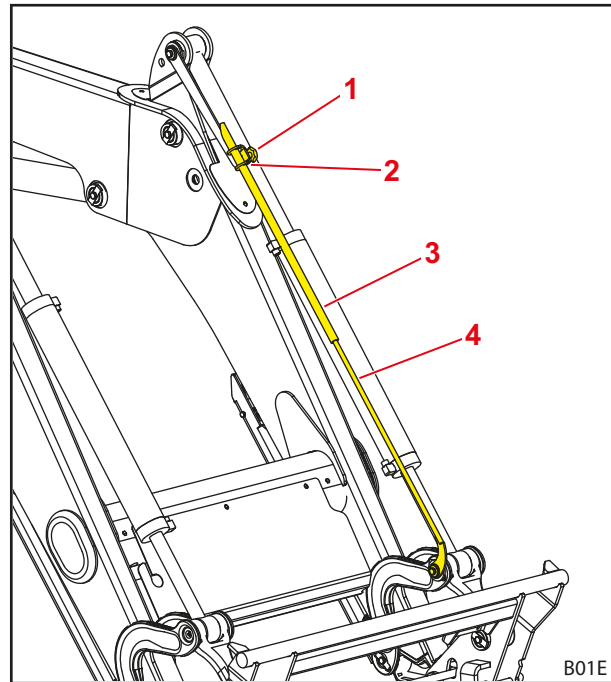


Fig. 28 Indicator for implement position

##### Legend

- 1 Clamping screw
- 2 Holder
- 3 Tube
- 4 Rod

#### 4.5 Parallel motion (FZ, FZ-L)

With the parallel motion, the guide linkage ensures constant orientation/inclination of the implement.

The function is particularly suitable for loading pallets and stacking bales.



The function can only be executed when the implement is horizontal or in scooping position.

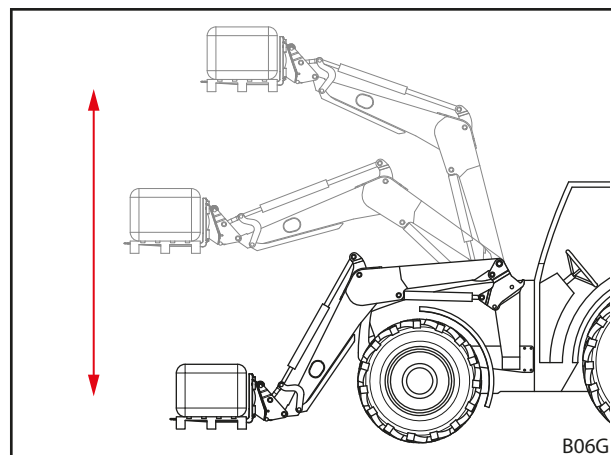


Fig. 29 Parallel motion

#### 4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)

##### **⚠ CAUTION**

##### **Possible risk of accidents due to improper use of the rapid emptying!**

If the rapid emptying is actuated outside of a dumping process, it can cause a strong pressure drop in the hydraulic system. The resulting imprecise and uncontrolled working behaviour of the front loader can cause accidents.

- ▶ Only use the rapid emptying during dumping processes.

##### **⚠ CAUTION**

##### **Risk of accident due to improper use of the rapid and quick emptying!**

Use of the rapid or quick emptying on implements with hydraulic functions can cause damage to the hydraulic lines. This increases the risk of accidents.

- ▶ Only use the rapid or quick emptying with implements that do not have hydraulic functions.

##### **Rapid emptying (FS rapid emptying)**

An additional valve on the implement cylinder ensures faster dumping of the implement during the rapid emptying.

In this case, the hydraulic fluid is diverted from the scooping side of the implement cylinder to the dumping side, so that the pump is relieved.

- See 6.1 *Operating elements* for how to operate the rapid emptying.

##### **Quick emptying (FZ-L)**

With quick emptying, an additional valve on the implement cylinder causes the load to be dumped immediately.

The valve establishes a connection between the scooping side and the dumping side of the implement. The dumping process starts when pressing the button and is accelerated by the implement's own weight and that of the load.



When the button is actuated, the implement dumps the load immediately without hydraulic actuation.

- See 6.1 *Operating elements* for how to operate the quick emptying.

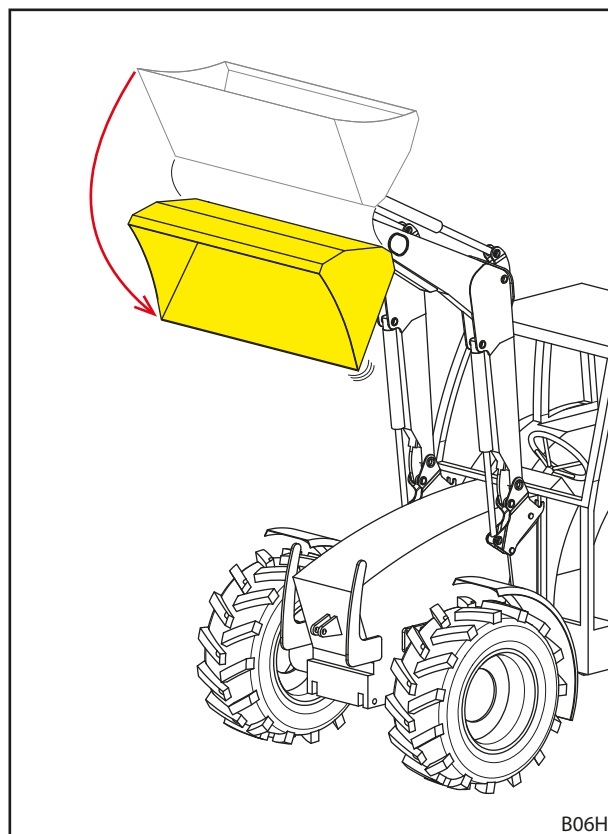


Fig. 30 Rapid or quick emptying

## 4.7 Return-To-Level (FZ-L)

### ⚠ WARNING

#### Possible risk of injury due to uncontrolled lowering!

Actuation of the RTL button while dumping causes the front loader to be lowered. Moreover, when dumping with insufficient fluid supply, a vacuum can form in the implement cylinder, which also causes lowering of the front loader. This can cause injury to persons standing in the surrounding area.

- ▶ Only press the RTL button when lowering the front loader.
- ▶ Throttle the oil flow as little as possible.
- ▶ If necessary, increase the idling speed.

The return-to-level sensor is located on the indicator on the left implement cylinder. It enables automatic lowering of the front loader to its pre-set position by pressing a button. This mainly facilitates loading work that involve repetitive movement.

To do so, an additional valve on the implement cylinder diverts the hydraulic fluid flowing out while lowering. The sensor monitors the position of the implement and emits the signal for closing the valve as soon as the implement has reached its pre-set position.

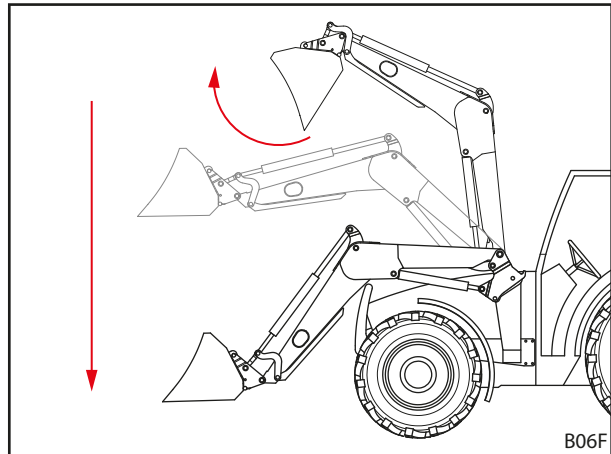


Fig. 31 Return-to-level function

*Setting the return-to-level position:*

- (1) Position the implement horizontally.
  - (2) Lower the front loader to the ground.
  - (3) Switch off the tractor.
    - Apply the parking brake.
    - Stop the engine.
  - (4) Loosen the clamping screw.
  - (5) Push the tube in the support until there is a space of about 10 mm between the top end of the rod and the top edge of the sensor.
  - (6) Tighten the clamping screw.
  - (7) Switch on the tractor.
  - (8) Lift and dump the front loader.
  - (9) Slowly lower the front loader and press the RTL button at the same time (see 6.1 *Operating elements*).
  - (10) Check the position of the implement.
    - If necessary, push the tube up or down.
- ✓ The return-to-level position is set.

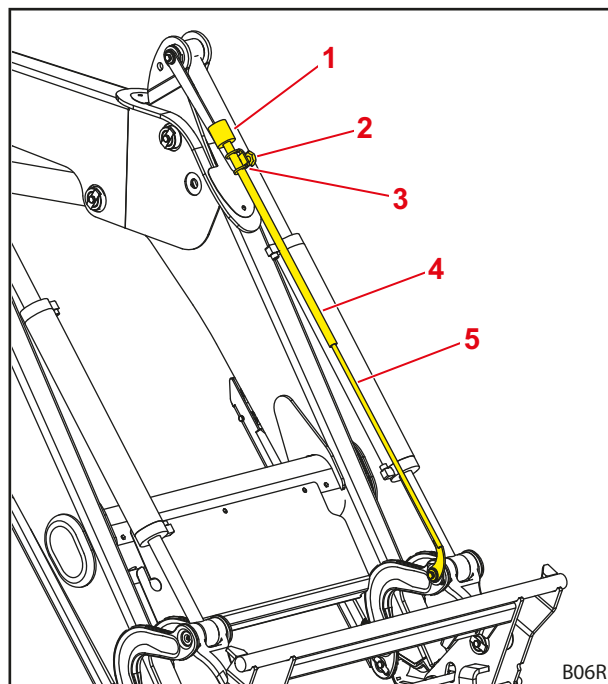


Fig. 32 Return-to-level sensor on the indicator

**Legend**

- 1 Sensor
- 2 Clamping screw
- 3 Holder
- 4 Tube
- 5 Rod

## 4.8 Anti-lowering guard

**⚠ WARNING**

**Risk of injury and accident due to implement tipping off!**

The anti-lowering guard only prevents the front loader from lowering, however, it does not prevent accidental dumping of the implement. Persons whose presence is required near the load can be injured by the load falling down.

- ▶ Do not move the front loader as long as people are standing in the danger zone.
- ▶ Only start the lifting operation after everybody has left the danger zone.

The anti-lowering guard in compliance with EN 12525/A1 prevents sudden lowering of the front loader. It is used when working with a raised front loader if the presence of persons is required in the machine's working area.

The anti-lowering guard is not suitable for use with work cages that are used to transport people.

The operating state of the anti-lowering guard is shown by the lamp on the switch box. If the lamp is on, the anti-lowering guard is activated. If the lamp is off, the anti-lowering guard is deactivated. In this case, there may not be any one standing in the working area of the front loader (see 2.8 *Danger zones*). When the anti-lowering guard is activated, the *lifting* function is possible and the *lowering* function is locked.

## 4.9 Additional functions

### 4.9.1 Additional control circuits

#### **WARNING**

##### **Risk of injury due to unexpected movement of the front loader or implement!**

If there is an electrical malfunction, operating elements can be temporarily or permanently out of function. As a result, it is possible that an unintended function is triggered instead of the selected implement functions (see *3rd control circuit* and *4th control circuit*). The triggering of unwanted functions can lead to unexpected movement of the front loader or implement and cause serious injuries.

- ▶ Before use, check all of the front loader functions without a load.
- ▶ In case of malfunction, stop working with the front loader immediately and contact the specialist workshop.

For hydraulic functions of the implement, additional control circuits must be installed. The corresponding hydraulic couplings are located on the change frame and are available as plug-in, screw-in or multiple couplings.

#### **3rd control circuit**

With a switch valve for the 3rd control circuit, hydraulic implement functions are enabled, e.g. the actuation of a top loading grip.

- To operate the 3rd control circuit, see 6.1.6 *Switch/changeover switch*.

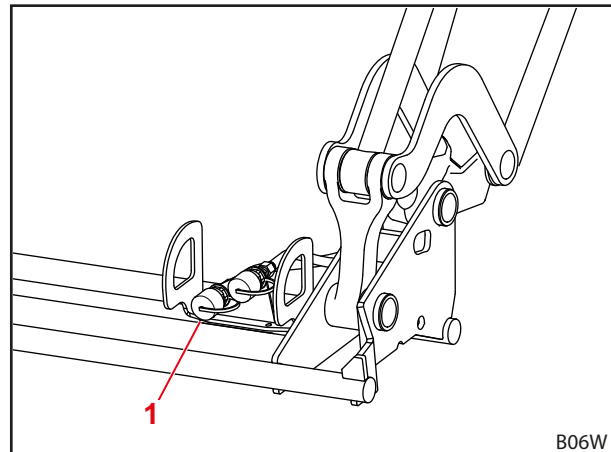


Fig. 33 Additional 3rd control circuit

#### **Legend**

- 1 Screw or plug-in coupling for the 3rd control circuit

#### 4th control circuit

With a switch valve for the 4th control circuit, additional hydraulic implement functions are enabled.

- To operate the 4th control circuit, see 6.1.6 *Switch/changeover switch*.
- To operate the multiple coupling, see 3.7.2 *Multiple coupling Hydro-Fix*.

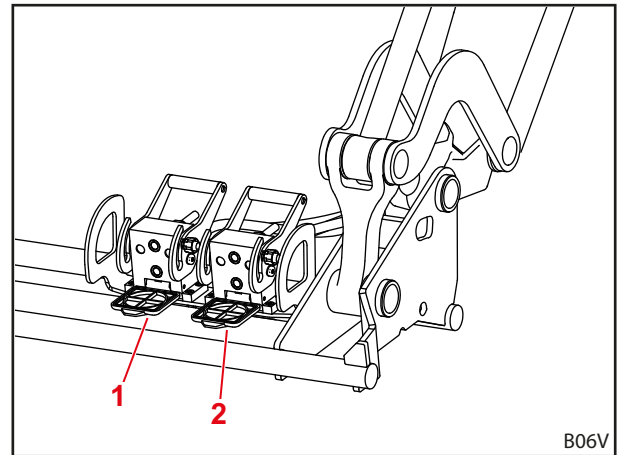


Fig. 34 Additional 4th control circuit

#### Legend

- 1 Multiple coupling for 4th control circuit
- 2 Multiple coupling for 3rd control circuit



Mark the hydraulic couplings on the front loader and implements appropriately to avoid confusion.



Promptly replace damaged or lost labels (e.g. coloured caps).

#### 4.9.2 Comfort Drive

##### **⚠ WARNING**

##### **Possible risk of crushing!**

The front loader is lowered when the Comfort Drive is switched on.

- ▶ Before switching on the Comfort Drive, lower the front loader completely to the ground.

##### **NOTICE**

##### **Possible material damage due to overloading!**

The Comfort Drive can be overloaded when working with heavy loads (e.g. excavation) and with the pallet fork, resulting in damage.

- ▶ Switch the Comfort Drive off for heavy load work and when working with the pallet fork.

The Comfort Drive function enables smoother and more comfortable driving with a mounted front loader during transport and when driving on roads. There is a piston accumulator for this purpose in the cross tube, which absorbs impact loads caused by driving on uneven ground.



To achieve optimal function of the Comfort Drive, lower the front loader again a little bit after lifting.

#### **Gas-hydraulic Comfort Drive**

The gas-hydraulic Comfort Drive is operated by hand. The shut-off valve is located on the cross tube of the front loader for this purpose.

Lever position	Function
Vertical	Comfort Drive on
Horizontal	Comfort Drive off

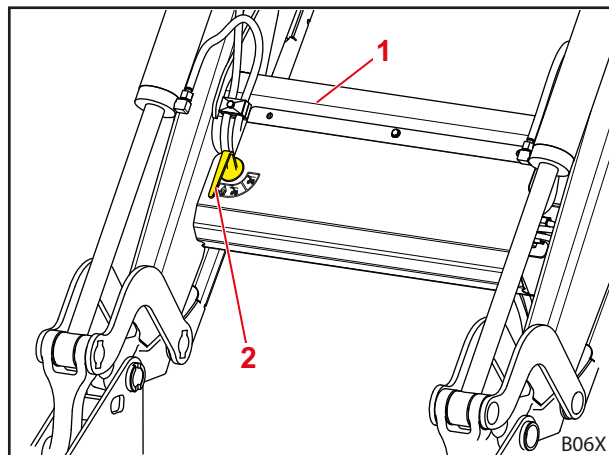


Fig. 35 Manually actuated Comfort Drive

##### **Legend**

- 1 Cross tube
- 2 Shut-off valve on the valve



## Electro-hydraulic Comfort Drive

### **WARNING**

#### Possible risk of crushing!

Comfort Drive is also activated by switching off the ignition or disconnecting the electrical supply. The front loader can lower slightly in the process and cause personal injury.

- ▶ Completely lower the front loader before switching off the ignition or disconnecting the electrical supply of the front loader.

### **WARNING**

#### Risk of injury and accident due to the front loader lowering!

Accidental actuation of the Comfort Drive switch while driving can cause the front loader to lower, and if the lifting height is too low (less than 1 m) the front loader can touch down on the ground. This can cause accidents and people can be severely injured.

- ▶ Make sure that the front loader is raised high enough while driving (at least 1 m).

The electro-hydraulic Comfort Drive is actuated with a switch in the driver's cab.

As a standard, the electro-hydraulic valve is open here, i.e. it is active when there is no voltage at the valve.

Indicator light	Description
ON	Comfort Drive on
OFF	Comfort Drive off



The electro-hydraulic Comfort Drive can also be operated with STOLL Pro Control (see 6.1.4 STOLL Pro Control).

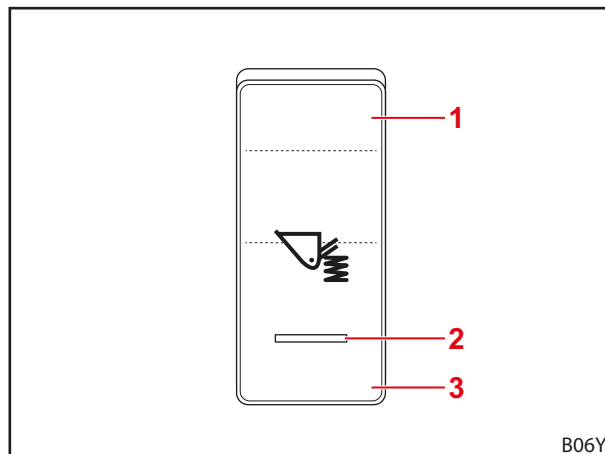


Fig. 36 Switch-operated Comfort Drive

#### Legend

- 1 Switch position ON
- 2 Indicator light
- 3 Switch position OFF

### 4.9.3 Lowering throttle

#### **⚠ WARNING**

##### **Possible material damage due to overloading!**

The front loader can be lowered unevenly and be distorted when the two lowering throttles are not adjusted in the same way, and can cause personal injury.

- ▶ Set both lowering throttles to the same values.

The lowering throttle is used to set the lowering speed of the front loader. There is one lowering throttle on each side of the lifting arm. Each lowering throttle is adjusted with the rotary knob. There are numbers on the rotary knob to enable more precise adjustment.

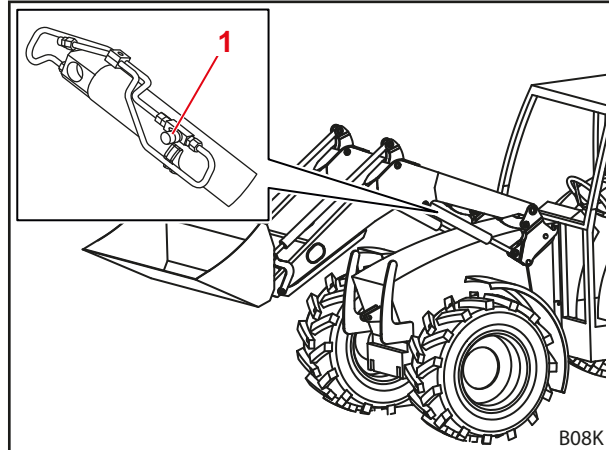


Fig. 37 Lowering throttle

#### **Legend**

- 1 Rotary knob

### 4.9.4 Camera system

#### **NOTICE**

##### **Material damage due to loss of suction force!**

Due to a natural loss of vacuum, the suction holder can lose suction force and fall off. This can damage the camera system.

- ▶ Detach the suction holder at regular intervals and fix it in place again.

#### **NOTICE**

##### **Material damage due to adhesion!**

If the suction holder is in contact with the window for too long, it can firmly adhere to the window and damaged it.

- ▶ Detach the suction holder at regular intervals and fix it in place again.

The camera system consists of a monitor, a camera and the corresponding cable sets. It enables more precise work with the front loader and the mounted implements.

- Observe the supplied documentation for the camera system.

## 5 Start-up

### 5.1 Initial operation

The initial operation is executed at a specialised workshop. This also includes mounting of the front loader as well as a functional check.

- Obtain instruction from the specialised workshop and ask questions if necessary.
- Read the operating instructions before initial use.
- After the first 5 hours of operation, have a specialised workshop re-tighten all of the mounting screws.
- Check all of the front loader functions without a load.

### 5.2 Check before each start-up

- Before each start-up, check all of the points on the checklist.
- Fix any observed defects in a safe position and location.
- Only use the front loader if proper and safe operation is ensured.

	Checks	See also	Completed
<b>Before mounting the front loader</b>			
	Are the safety labels on the tractor and on the front loader complete and in order?	Section 2.10 Adhesive safety label	
	Are the brake pedals connected?	Section 5.3.1 Preparations on the tractor	
	Hydraulic oil: Is there enough oil?	Operating instructions of the tractor	
	Is the front axle turned off?		
	Is the shut-off valve of the front power lift closed?		
	Is the pressure of the tires sufficient for operating the front loader?		
	Is the correct counterweight mounted on the rear?	Section 5.3.2 Ballasting	
	Are the fixing screws of the mounting parts tightened?	Section 5.1 Initial operation	
	Are the mountings (bearings and sliding surfaces) on the mounting parts clean, free from paint, and greased?	Section 8.1.1 Lubrication points	
	Are the front loader locking mechanisms lubricated?	Section 8.1.1 Lubrication points	
<b>During mounting</b>			
	Are the hydraulic lines connected correctly?	Section 6.3 Operating the hydraulic couplings	
	Is the electric cable of the front loader connected?		
	Are the front loader locking mechanisms positioned correctly?	Section 5.4.1 Adjusting the FS and FZ 8 to 50 front loader locking mechanism,  Section 5.4.2 Adjusting the "Double locking mechanism" FZ 50 to 100 front loader locking mechanism	

	Checks	See also	Completed
<b>After mounting</b>			
	Are the parking supports folded away and secured?	Section 6.2 <i>Operating the parking supports</i>	
	Is the front loader locking mechanism locked properly?	Section 8.2.3 <i>Service instructions for front loader locking mechanism</i>	
	Is the locking mechanism for the implement locked properly?	Section 4.1 <i>Implement locking mechanism</i>	
	Mudguards adjusted for front loader operation?		
	Functional test carried out? (Basic functions and additional functions)	Section 6.1 <i>Operating elements</i>	

## 5.3 Preparations

### 5.3.1 Preparations on the tractor

#### NOTICE

#### Material damage due to divided brakes on the tractor!

When the front loader is mounted, one-sided braking can lead to serious damage.

- Couple the brake pedal in the tractor before using the front loader.

The divided brake pedal serve to support the steering of the tractor and can brake the respective wheels on each side. Therefore, for example, small turning radii can be achieved when driving on roads. When the front loader is mounted, it is recommended to couple the brake pedals before start-up.

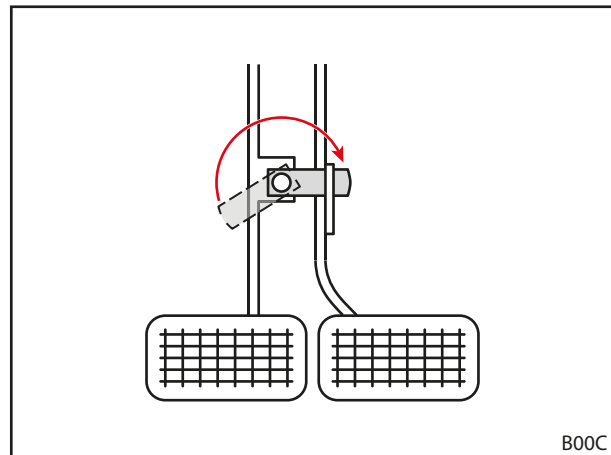


Fig. 38 Coupling the brake pedals

### 5.3.2 Ballasting

#### **WARNING**

##### **Serious injury due to the machine falling over!**

When working with the front loader without rear counterweights, the tractor can tip over and cause injury to the driver and persons in the surroundings. Moreover, there is the risk of overloading the front axle of the tractor.

- For front loader work, always use sufficient counterweight at the rear of the tractor.

The proper ballasting of the tractor is very important to achieve sufficient stability. This stability is influenced by the centre of gravity of the loaded tractor / front loader combination, the geometrical conditions, the weight, the arrangement of the implement and the load in the implement, the track width and wheel base of the tractor, acceleration and braking processes as well as the road conditions, to name a few. A significant measure to increase the stability is the addition of counterweights or rear weights, which is strongly recommended for all front loader work. If operation with a rear weight is not possible, the stability can be increased with appropriate ballasting on the rear wheels (wheel weights) or with liquid in the tyres.

To determine the require weight for ballasting, the following conditions apply:

When the front loader is fully loaded with the implement in the most forward position, the rear axle must carry min. 20 % of the total weight (sum of the weight of the tractor, the front loader, the implement, the load and the counterweight) (see Fig. 39). This ensures stability and braking efficacy.

When the front loader is raised without an implement, the front axle must carry min. 20 % of the total weight (see Fig. 40). This ensures the steering capacity while driving.

- Observe the operating instructions of the tractor as well as the permissible axle loads for the front and rear axles.

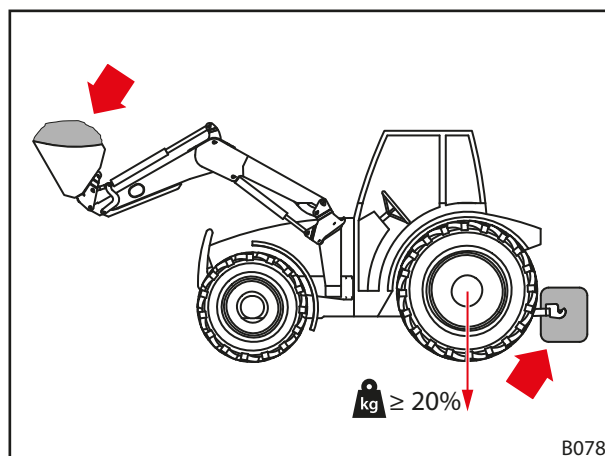


Fig. 39 Load for front loader work

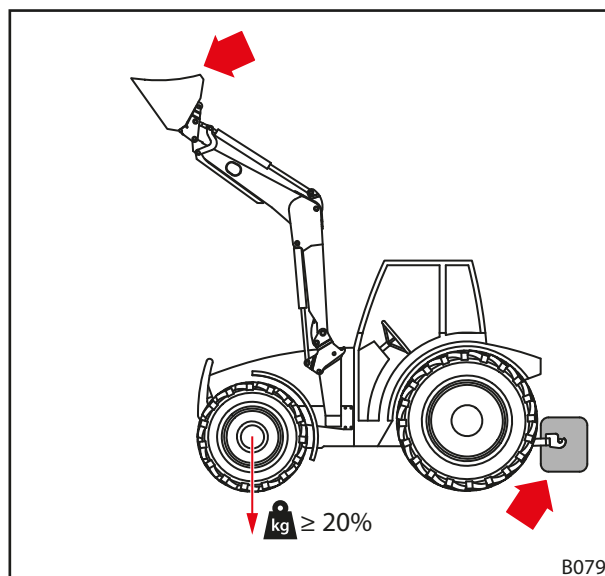


Fig. 40 Load for driving on roads

The formula to precisely determine the rear weight is specified in DIN EN 12525:2000-A2:

$$\frac{G \cdot l_2 + M(l_1 + l_2) - N \cdot b}{l_2} \geq \frac{P + N + M}{5}$$

- P** Weight of the tractor in kg  
(incl. front loader and change frame without counterweight)
- M** Weight of the counterweight in kg
- N** Weight of the implement in kg  
(incl. the maximum permissible load of the implement)

Remark: The maximum permissible load is the maximum load that can be safely lifted by the hydraulic system. This can be limited by the shape or the density of the load. If several different implements are used, the most unfavourable case should be taken for the calculation.

- G** Rear axle load in kg  
(incl. front loader and change frame with the maximum ranges without counterweight)
- b** The distance between the centre of gravity of the load in the implement and the centre of the front axle with the maximum range in mm
- $l_1$**  Distance between the centre of gravity of the counterweight and the centre of the rear axle in mm
- $l_2$**  Wheel base of the tractor in mm



Observe the respective current version of DIN EN 12525.

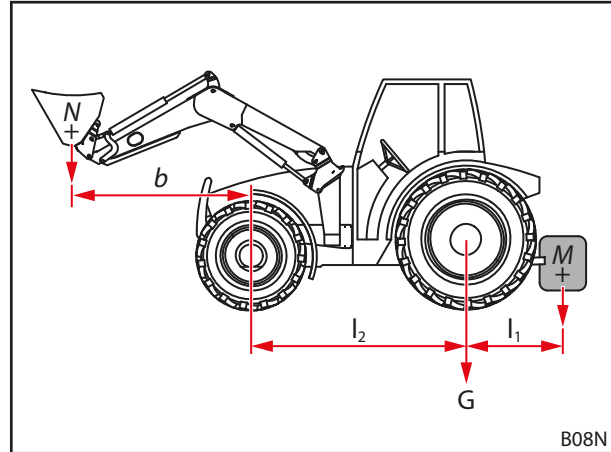


Fig. 41 Calculation of the static stability

## 5.4 Adjusting the front loader locking mechanism

### ⚠ CAUTION

**Possible injuries and material damage caused by incorrectly adjusted front loader locking mechanism!**

Improper adjustment of the front loader locking mechanism can cause movement of the front loader in the mountings and damage them. This can cause the front loader to fall down and injure persons in the surrounding or cause material damage.

- ▶ Always check the front loader locking mechanism when mounting and dismounting.
- ▶ Check the front loader locking mechanism regularly and readjust if necessary.
- ▶ On new front loaders, re-tighten the locking mechanism after the first hours of operation in order to compensate for any loosening caused by smoothing of the surfaces.

### 5.4.1 Adjusting the FS and FZ 8 to 50 front loader locking mechanism

*Adjusting the front loader locking mechanism:*

- ✖ Open-ended spanner 24 mm WAF
- ✖ Ratchet  $\frac{1}{2}$ " with extension, joint and socket wrench (nut) 24 mm

- (1) Completely open the front loader locking mechanism.
  - Move the lever upwards.

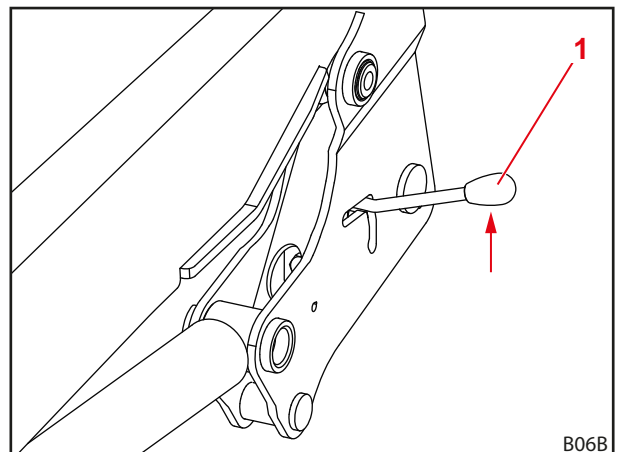


Fig. 42 Opening the front loader locking mechanism

#### Legend

- 1 Lever

- (2) Guide the open-ended spanner through the guide slot of the lever.

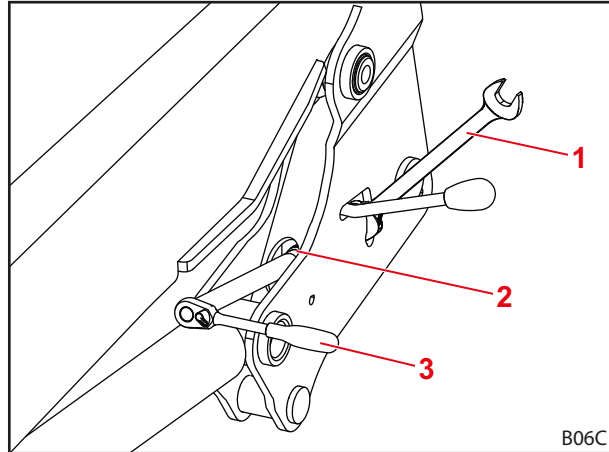


Fig. 43 Attaching the implement

**Legend**

- 1 Open-ended spanner
- 2 Guide slot
- 3 Ratchet

- (3) Loosen the locknut.
- (4) Adjust the clamping wedge with the screw.
- (5) Tighten the locknut.
- (6) Check the front loader locking mechanism.
  - Close and open the front loader locking mechanism.
  - Use the required manual force.
  - If necessary, readjust the front loader locking mechanism.
- ✓ The front loader locking mechanism is adjusted.

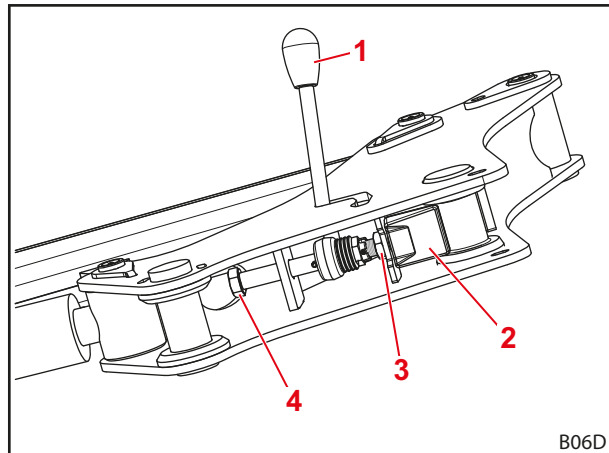


Fig. 44 View of the front loader locking mechanism from below

**Legend**

- 1 Lever
- 2 Clamping wedge
- 3 Locknut
- 4 Screw



#### 5.4.2 Adjusting the "Double locking mechanism" FZ 50 to 100 front loader locking mechanism



On the FZ 50 front loader, the double locking mechanism is installed as an option.

*Adjusting the front loader locking mechanism:*

- ✂ Open-ended spanner 30 mm WAF
- ✂ Ratchet ½" with extension, joint and socket wrench (nut) 30 mm

- (1) Open the front loader locking mechanism.
  - Move the lever upwards.

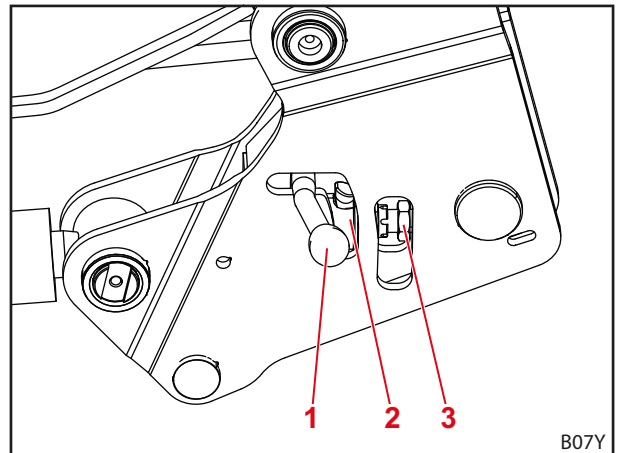


Fig. 45 Opening the front loader locking mechanism

##### Legend

- 1 Lever
- 2 Turning lock
- 3 Locknut

- (2) Loosen the locknut with the open-ended spanner.

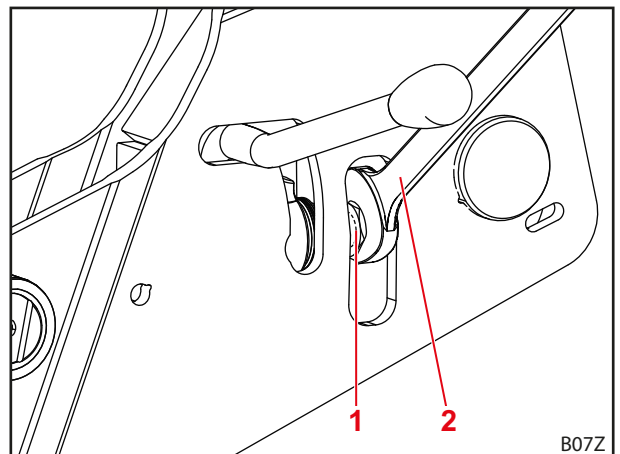


Fig. 46 Attaching the implement

##### Legend

- 1 Locknut
- 2 Open-ended spanner

- (3) Close the front loader locking mechanism.
  - Push the lever down.
- (4) Guide the socket wrench through the grommet to the screw.

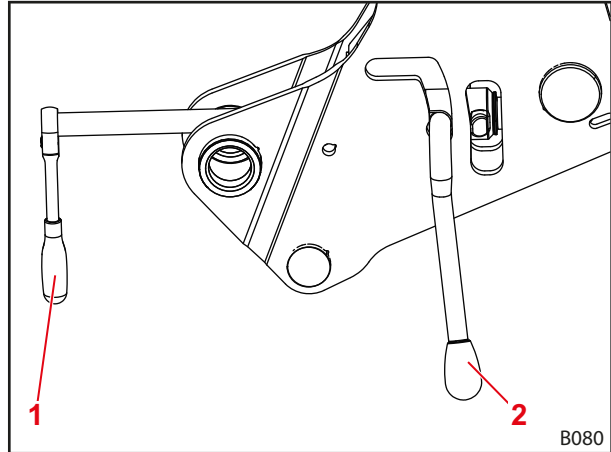


Fig. 47 Guiding the socket wrench through to the screw

**Legend**

- 1 Socket wrench
- 2 Lever

- (5) Unscrew the screw.
  - Observe the disc spring.
- (6) When the disc spring is at maximum tension (no more gap to the turning lock), turn it back by  $\frac{1}{4}$  turn to relieve the tension.

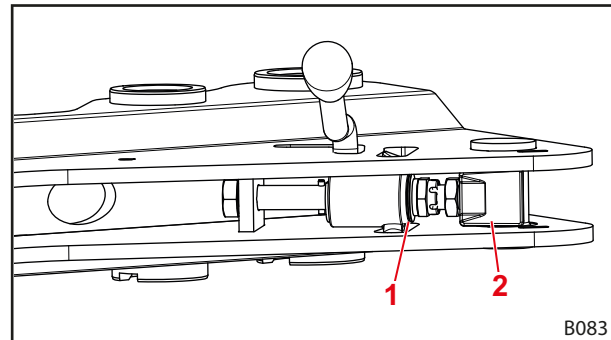


Fig. 48 View of the front loader locking mechanism from below

**Legend**

- 1 Turning lock
- 2 Screw

- (7) Open the front loader locking mechanism.
- (8) Tighten the locknut.
- (9) Close the front loader locking mechanism.
  - ✓ The front loader locking mechanism is adjusted.

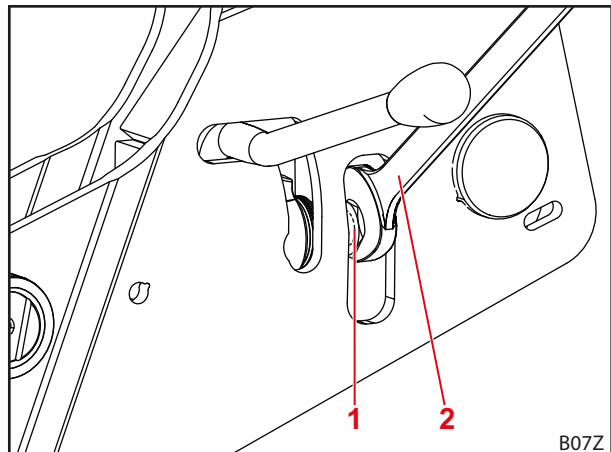


Fig. 49 Tightening the locknut

**Legend**

- 1 Locknut
- 2 Open-ended spanner

## 5.5 Mounting the front loader

### **⚠ WARNING**

#### **Risk of injury due to uncontrolled movements!**

Uncontrolled movements of the front loader can cause injury to persons assisting in the surrounding area.

- ▶ Only mount the front loader when nobody is standing in the danger area (see 2.8 *Danger zones*).
- ▶ Before exiting the driver's cab, switch off the tractor and depressurize the hydraulic system.

### **⚠ WARNING**

#### **Risk of injury and accident when the front loader is not locked correctly!**

When the front loader locking mechanism is not adjusted correctly, the front loader can slip out of the mounting and cause accidents or personal injury.

- ▶ Make sure that the front loader locking mechanism is adjusted correctly.

*Mounting the front loader:*

- (1) Open the front loader locking mechanism.

- Push both locking levers up.

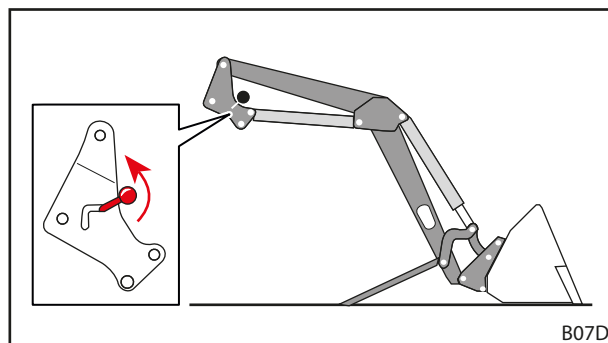


Fig. 50 Opening the front loader locking mechanism

- (2) Slowly drive the tractor centrally in the lifting arm.

- Ensure that the two locking pins touch the slide rails and the catch hooks.

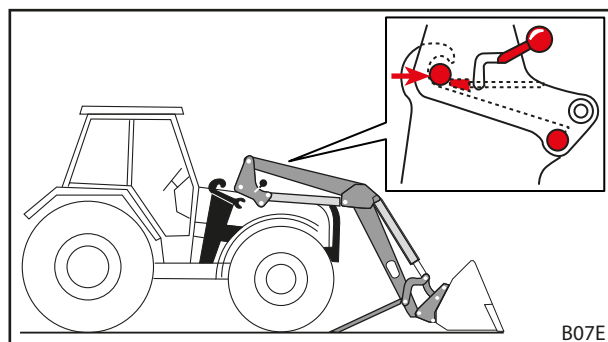


Fig. 51 Driving the tractor into the lifting arm



If it is not possible to fully drive the tractor up to the lifting arm, the front loader must be aligned for mounting (see 5.6 *Aligning the front loader for mounting*).

- (3) Switch off the tractor.
  - Apply the parking brake.
  - Stop the engine.
  - Depressurize the hydraulic system. To do so, move all of the operating levers to the end position.
- (4) Connect the hydraulic lines of the front loader (see 6.3 *Operating the hydraulic couplings*).
- (5) Connect the electric cables.
- (6) Start the tractor.
- (7) Lock the front loader pins in the front loader mountings.
  - Use the *lifting* function until the front loader pins are locked in the mountings.
- (8) Close the front loader locking mechanism.
  - Use the *lifting* function until the front loader is just above the ground.
  - Apply the parking brake.
  - Stop the engine.
  - Shift both locking levers downwards.
- (9) Fold in the parking supports.
  - Fold in both parking supports (see 6.2 *Operating the parking supports*).
- ✓ The front loader is mounted and ready for operation.

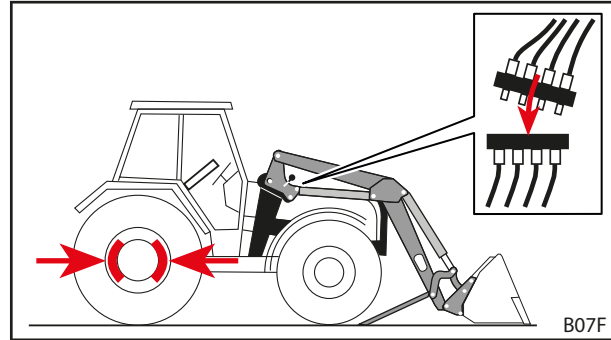


Fig. 52 Switching off the tractor and connecting the hydraulic lines

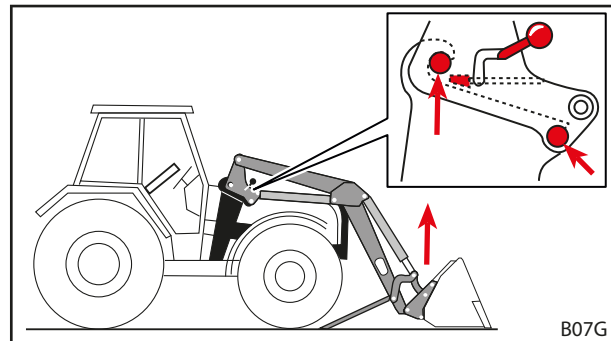


Fig. 53 Locking the pins in the front loader mountings

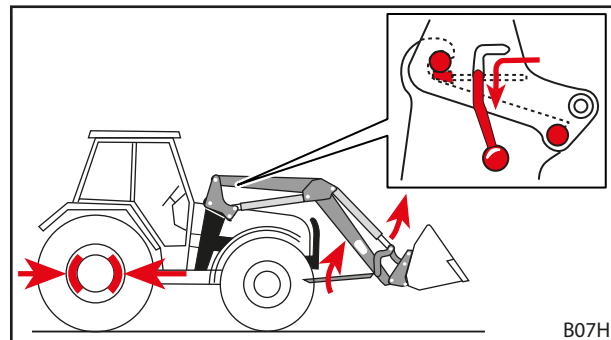


Fig. 54 Folding in the parking supports and closing the front loader locking mechanism

## 5.6 Aligning the front loader for mounting

### **WARNING**

#### **Risk of injury and accident when the front loader is not locked correctly!**

When the front loader locking mechanism is not adjusted correctly, the front loader can slip out of the mounting and cause accidents or personal injury.

- ▶ Make sure that the front loader locking mechanism is adjusted correctly.

### **NOTICE**

#### **Material damage due to abrupt operation!**

When aligning the front loader, abrupt movements can cause damage to the front loader and the mountings.

- ▶ Before mounting the front loader, check that the operating lever moves smoothly.
- ▶ Make sure that the tractor and front loader are operated gently.

If the front loader is being mounted for the first time or if it was previously used with a different tractor, the front loader pillars can be too high or too low for mounting. In this case, the front loader has to be aligned for mounting.

#### *Aligning and mounting the front loader:*

- (1) Release the front loader locking mechanism.
  - Push both locking levers up.
- (2) Slowly drive the tractor centrally in the lifting arm.
  - Drive the tractor forwards until the mountings are as close as possible to the front loader pillars.
- (3) Switch off the tractor.
  - Apply the parking brake.
  - Stop the engine.
  - Depressurize the hydraulic system.
- (4) Connect the hydraulic lines.
- (5) Connect the electric cables.
- (6) Start the tractor.
- (7) Align the front loader pillars.
  - Use the *lifting*, *lowering*, *dumping* and *scooping* functions until the front loader pillars are at the right height.
- (8) Drive the tractor forwards until the two locking pins touch the slide rails and the catch hooks.
  - ✓ The front loader is aligned for mounting on the tractor.
- (9) Close the front loader locking mechanism.
  - Use the *lifting* function until the front loader is just above the ground.
  - Apply the parking brake.
  - Stop the engine.
  - Shift both locking levers downwards.
- (10) Fold in the parking supports.
  - Fold in both parking supports (see 6.2 *Operating the parking supports*).
  - ✓ The front loader is mounted and ready for operation.

## 6 Operation

### 6.1 Operating elements

#### 6.1.1 Basic controls with levers

##### **WARNING**

##### **Possible risk of injury due to uncontrolled movement of the front loader!**

If the control unit was not actuated for a longer period of time, there may be e.g. temperature differences between the hydraulic fluid and the control unit. This can cause the control valves to jam and the front loader moves uncontrollably. This may result in serious accidents.

- ▶ At ambient temperatures lower than 10 °C and when the front loader is not used for longer than 15 minutes, always first actuate the *scooping* and *dumping* functions at a standstill to warm up the control unit.
- ▶ Only use the *lifting* and *lowering* functions after the warm-up phase.

##### **WARNING**

##### **Possible risk of injury due to the implement tipping over!**

On FS front loaders, the float position for the implement may not be activated for the *scooping* and *dumping* functions. This could cause the implement to tip over unintentionally to the rear. This may result in serious accidents.

- ▶ The activation of the float position must be ruled out through the assembly on FS front loaders. If this is not the case, work with the front loader must be stopped immediately and the specialist workshop must be contacted, to have the float position deactivated for the *scooping* and *dumping* functions. The front loader may only be used again when the float position has been deactivated for the *scooping* and *dumping* functions.

Depending on the equipment of the tractor, different operating levers can be installed for the front loader. In most cases, it is a cross lever or a joystick. On some tractors, there are 2 operating levers for the control of the front loader.

The figures show a top view of the assignment for one operating lever (see Fig. 55) and 2 operating levers (see Fig. 56).

**i** The symbols marked in red are also found on the operating lever in the tractor. If they are missing, you must affix such symbols according to DIN EN 12525 to clearly mark each function.

Setting	Assignment
0	Zero setting
A	Dumping
B	Scooping
C	Lifting
D	Lowering
S	Float position

**i** The float position is the only position of the lever in which it may latch in.

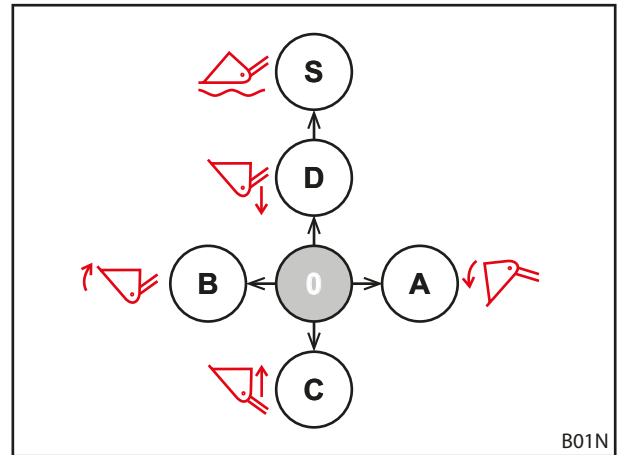


Fig. 55 Assignment with one operating lever

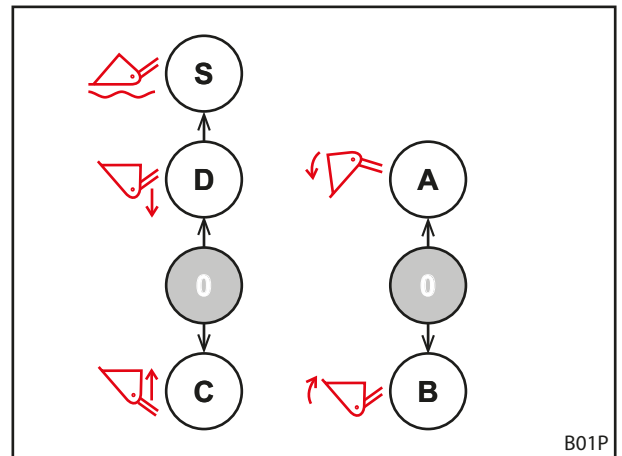


Fig. 56 Assignment with 2 operating levers

## 6.1.2 Tractor's own operating lever

### ⚠ WARNING

#### Risk of injury due to unexpected movement of the front loader!

The front loader can move unexpectedly as a result of unintentional actuation of the operating lever or by programmed sequences. This can cause injury to persons in the surrounding area.

- ▶ Lock the operating lever in the zero setting when the front loader is not in use.
- ▶ If it is not possible to lock the operating lever, close the shut-off valve in the *lifting* hydraulic line.
- ▶ Immobilise the lock-in position of the hydraulic control units.
- ▶ Before using the front loader, immobilise or disconnect other implements on the tractor.
- ▶ Immobilise or disconnect the front loader before using other implements.
- ▶ Never use programmed sequences for the front loader.

### ⚠ WARNING

#### Risk of accident due to wrong assignment of the hose lines!

If the front loader is connected directly to the auxiliary control units of the tractor with hose lines, swapping of the hose lines can result in incorrect assignment of the functions on the operating lever. This can result in unexpected movements and accidents.

- ▶ Always mark the couplings on the hose lines and connection points.
- ▶ Promptly replace damaged or missing labels.
- ▶ Connect the hose lines so that the float position takes place in the actuation direction of the *lowering* function.
- ▶ After connecting, check all of the functions of the front loader while at a standstill.

The operating lever can look different depending on the tractor model. However, the control of basic functions remains the same (see 6.1.1 *Basic controls with levers*).

The assignment of the buttons is arranged as follows:

#### Operating lever with one button

Button	Front loader	Function	Additional function with changeover switch	
A	FS, FZ	3rd control circuit	-	
	FS-rapid emptying	Rapid emptying	3rd control circuit	4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)

#### Operating lever with 2 buttons

Button	Front loader	Function	Additional function with changeover switch	
A	FS, FZ	3rd control circuit	-	
	FS-rapid emptying	Rapid emptying	3rd control circuit	4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)
	FZ-L	Quick emptying	3rd control circuit	
B	FS, FZ	4th control circuit	-	
	FZ-L	Return-to-Level	4th control circuit	4.9.1 Additional control circuits



### Operating lever with 3 buttons

Button	Front loader	Function	Additional function with changeover switch	
A	FS, FZ	3rd control circuit		
	FS-rapid emptying	Rapid emptying	3rd control circuit	4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)
	FZ-L	Quick emptying	3rd control circuit	
B	FS, FZ	4th control circuit		
	FZ-L	Return-to-Level		
C	All	4th control circuit		



Lock the operating lever in the zero position when driving on roads to prevent accidental actuation of the front loader!

### 6.1.3 STOLL Base Control

#### **WARNING**

#### **Risk of injury due to unexpected movement of the front loader!**

If the operating lever is actuated unintentionally, the front loader can move unexpectedly. This can cause injury to persons in the surrounding area.

- ▶ Lock the operating lever in the zero setting when the front loader is not in use.
- ▶ Before using the front loader, immobilise or disconnect other implements on the tractor.
- ▶ Immobilise or disconnect the front loader before using other implements.

The STOLL "Base Control" operating lever is a single-lever control unit with up to 3 push-button switches for additional functions of the front loader and as an option, 2 micro-buttons on the sides for tractor functions.

Moreover, the Base Control also has a locking function, e.g. for driving on roads.



When the locking function is activated, it is not possible to move the operating lever.

The control of the operating lever is the same as the basic controls in 6.1.1 *Basic controls with levers*.

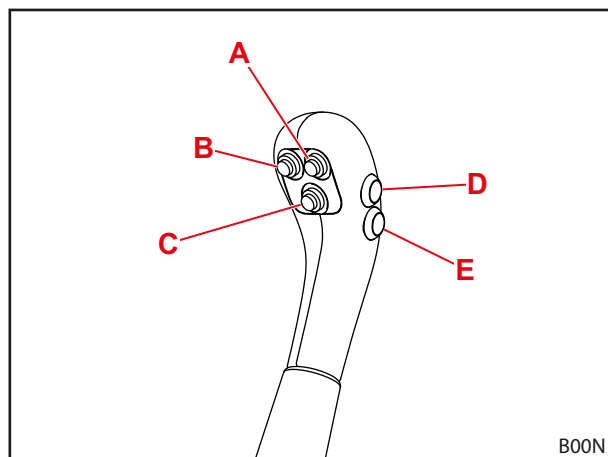


Fig. 57 Base Control with 5 buttons

The assignment of the buttons for the individual front loader types is shown in the following tables:

#### **Operating lever with one button**

Button	Front loader	Function	Additional function with changeover switch	
A	FS, FZ	3rd control circuit	-	
	FS-rapid emptying	Rapid emptying	3rd control circuit	4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)

### Operating lever with 2 buttons

Button	Front loader	Function	Additional function with changeover switch	
A	FS, FZ	3rd control circuit	-	4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)
	FS-rapid emptying	Rapid emptying	3rd control circuit	
	FZ-L	Quick emptying	3rd control circuit	
B	FS, FZ	4th control circuit	-	4.9.1 Additional control circuits
	FZ-L	Return to Level		

### Operating lever with 3 buttons

Button	Front loader	Function	Additional function with changeover switch	
A	FS, FZ	3rd control circuit		4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)
	FS-rapid emptying	Rapid emptying	3rd control circuit	
	FZ-L	Quick emptying	3rd control circuit	
B	FZ-L	Return To Level	-	
C	All	4th control circuit	-	

**i** Buttons D and E are intended for the additional tractor functions and therefore have a different assignment depending on the model and the customer requirements.

### Locking and unlocking the operating lever in zero position

*Lock the operating lever:*

- (1) Move the operating lever to the zero setting.
- (2) Push in the locking bolt.
  - ✓ The red mark on the bolt is no longer visible.
  - ✓ The operating lever is locked and cannot be moved.

*Unlock the operating lever:*

- Pull out the locking bolt until the red mark is visible.
- ✓ The operating lever is unlocked and can be moved.

**i** When driving on roads and when the front loader is not needed, lock the operating lever in the zero position to prevent accidental actuation of the front loader!

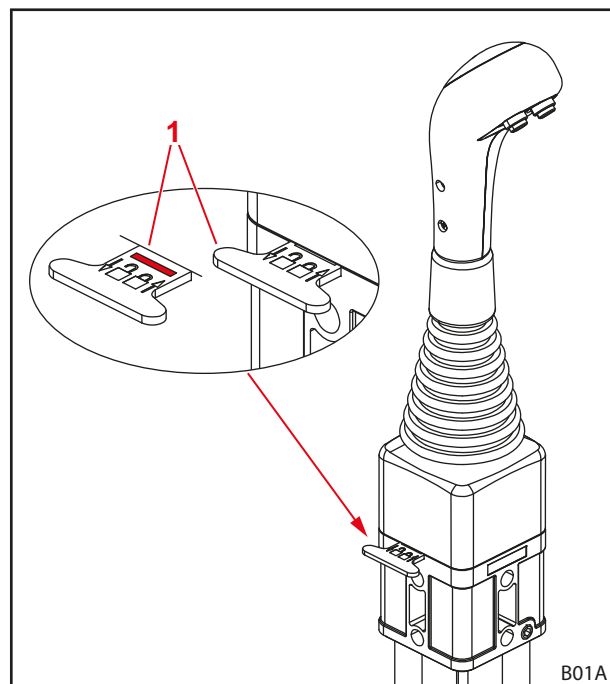


Fig. 58 Locking the operating lever

#### Legend

- 1 Locking bolt

### 6.1.4 STOLL Pro Control

#### **⚠ WARNING**

##### **Risk of injury due to unexpected movement of the front loader!**

If the operating lever is actuated unintentionally, the front loader can move unexpectedly. This can cause injury to persons in the surrounding area.

- ▶ Switch the operating lever to standby mode when the front loader is not in use.
- ▶ Before using the front loader, immobilise or disconnect other implements on the tractor.
- ▶ Immobilise or disconnect the front loader before using other implements.

#### **⚠ WARNING**

##### **Possible risk of injury due to the implement tipping over!**

On FS front loaders, the float position for the implement may not be activated for the *scooping* and *dumping* functions. This could cause the implement to tip over unintentionally to the rear. This may result in serious accidents.

- ▶ The activation of the float position must be ruled out through the assembly on FS front loaders. If this is not the case, work with the front loader must be stopped immediately and the specialist workshop must be contacted, to have the float position deactivated for the *scooping* and *dumping* functions. The front loader may only be used again when the float position has been deactivated for the *scooping* and *dumping* functions.



This single-lever control unit may only be used on tractors with a cab.

The STOLL "Pro Control" operating lever is a single-lever control unit with integrated buttons as well as an integrated membrane keyboard.

The control of the operating lever is the same as the basic controls in section 6.1.1 *Basic controls with levers* except for the float position.

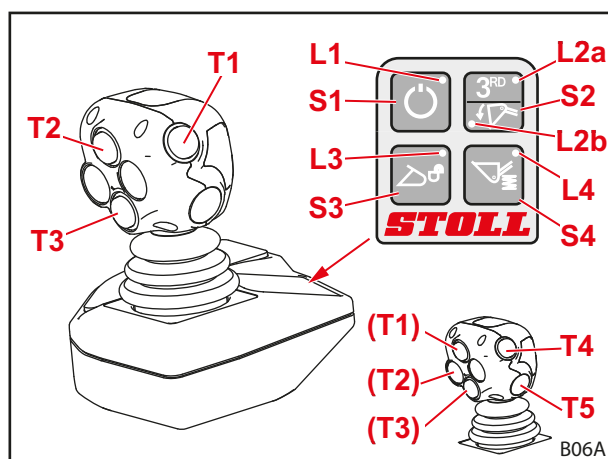


Fig. 59 STOLL Pro Control

The assignment of the buttons is shown in the following table:

#### **Buttons on the joystick for optional functions**

Button	Operating lever	LED	Front loader option
T1	To the right	L2b on	Quick emptying
Yellow	Right/left	L2a on	3rd control circuit
T2	To the front		Return to Level
Green	To the right		Implement float position
T3	To the front		Lifting arm float position
Blue	Right/left		4th control circuit
T4			Optional for functions
Red			
T5			Optional for functions
Red			

## Membrane keys

Button	LED	Function
S1	L1 on	Standby
	L1 off	Work mode
S2	L2a on	3rd control circuit
	L2b on	Quick emptying
S3	L3 flashing	Implement locking mechanism activated
	L3 off	Implement locking mechanism closed
S4	L4 on	Comfort Drive activated
	L4 off	Comfort Drive deactivated

## Switching on and off

### Switching on:

- (1) Switch on the tractor ignition (start engine).
  - ✓ LED L1 lights up.  
The controls are in standby mode.
- (2) Briefly press the membrane key S1.
  - ✓ LED L1 is flashing.  
Depending on the programming, the flashing cycle can look different.  
The front loader can now be operated with the joystick.

### Switching off:

- (1) Briefly press the membrane key S1.
  - ✓ LED L1 lights up.  
The controls are in standby mode.  
By switching off the ignition, the controls can be completely switched off.



When driving on roads and when the front loader is not needed, switch the controls to standby mode to prevent accidental actuation!

## Closing and opening the implement locking mechanism

### **WARNING**

#### **Risk of injury due to implements falling down!**

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

If the front loader is appropriately equipped, switch S3 can be used to lock and unlock the implement.



Instructions on how to mount and dismount the implement can be found in 6.5 *Picking up and putting down the implement*.

#### *Opening the implement locking mechanism:*

- (1) Press the membrane key S3.
- (2) Press the membrane key S3 once more after 2-5 seconds.
  - ✓ LED L3 is flashing.
- (3) Pull the joystick to the left (scoop with implement).
  - ✓ The valve switches.

The implement locking mechanism is opened.

#### *Closing the implement locking mechanism:*

- (1) Press the membrane key S3.
- (2) Pull the joystick to the left for at least 3 seconds (scoop with implement).
  - ✓ LED L3 is turned off.
- (3) Perform a visual check on the implement locking mechanism.
  - ✓ The implement locking mechanism is closed.

#### **Working at half-speed**

For work that requires particularly careful handling of the load, you can reduce the speed of the front loader hydraulic system to half.

#### *Switching functions on and off:*

- (1) Put Pro Control into standby mode (see "Switching on and off").
- (2) Press and hold membrane key S2.
- (3) Press button T2.
- (4) Let go of membrane key S2.
  - ✓ When the half-speed function is switched on, LED L2a flashes in standby mode.

### Depressurizing the 3rd control circuit for coupling and uncoupling

#### ⚠ WARNING

#### Risk of injury due to malfunctions!

This function is only possible with Hydac valves, front loaders with a 3rd control circuit and activated implement float position. If these conditions are not met, malfunctions can occur and people can be severely injured.

- ▶ Ensure that all 3 conditions are met to prevent the occurrence of malfunctions.

#### Switching functions on and off:

- (1) Put Pro Control into standby mode (see "Switching on and off").
- (2) Press and hold membrane key S2.
- (3) Move the joystick all the way to the left (scooping).
  - ✓ The 3rd control circuit is depressurized.

### Depressurizing the 4th control circuit for coupling and uncoupling

#### ⚠ WARNING

#### Risk of injury due to malfunctions!

This function is only possible with Hydac valves, front loaders with a 3rd and 4th control circuit and activated implement float position. If these conditions are not met, malfunctions can occur and people can be severely injured.

- ▶ Ensure that all 3 conditions are met to prevent the occurrence of malfunctions.

#### Switching functions on and off:

- (1) Put Pro Control into standby mode (see "Switching on and off").
- (2) Press and hold membrane key S2.
- (3) Move the joystick all the way to the right (dumping).
  - ✓ The 4th control circuit is depressurized.

## 6.1.5 STOLL Trac Control

The STOLL "Trac Control" operating lever is a handle with integrated buttons. It can replace the tractor's own operating lever if it does not have enough integrated buttons.

The control of the operating lever is the same as the basic controls in section 6.1.1 *Basic controls with levers* except for the float position.

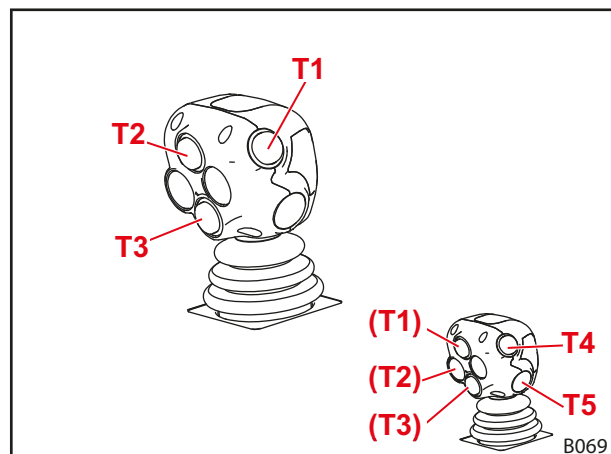


Fig. 60 STOLL Trac Control (3 buttons)

The assignment of the buttons is shown in the following table:

#### Buttons on the joystick for optional functions

Button	Front loader	Function	Additional function with changeover switch	
T1 Yellow	FS, FZ	3rd control circuit		
	FS-rapid emptying	Rapid emptying	3rd control circuit	4.6 Rapid traverse emptying (FS) and quick emptying (FZ-L)
	FZ-L	Quick emptying	3rd control circuit	
T2 Green	FZ-L	Return-to-Level	-	
T3 Blue	All	4th control circuit	-	
T4 Red		Optional for functions	-	
T5 Red		Optional for functions	-	

#### 6.1.6 Switch/changeover switch

##### Rapid emptying and quick emptying/3rd control circuit

To prevent simultaneous use of rapid emptying and quick emptying (see 4.6 *Rapid traverse emptying (FS) and quick emptying (FZ-L)*) and functions of the 3rd control circuit (see 4.9.1 *Additional control circuits*), both functions are assigned to the same switch.

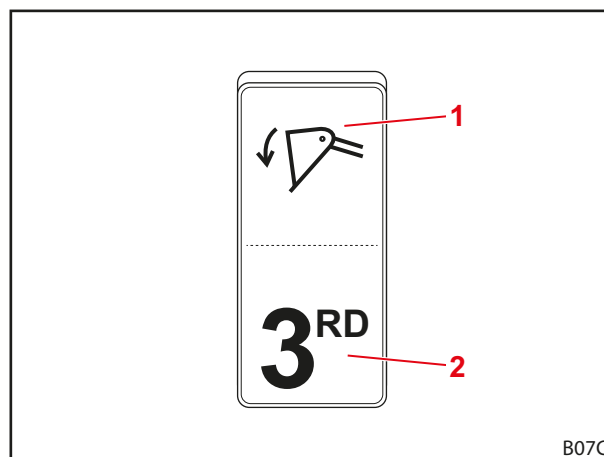


Fig. 61 Switch for rapid or quick emptying and 3rd control circuit

#### Legend

- 1 Switch position for rapid or quick emptying
- 2 Switch position for 3rd control circuit

### RTL/4th control circuit

The switch must be used to pre-select the functions of the 4th control circuit (see 4.9.1 *Additional control circuits*) and return-to-level (see 4.7 *Return-To-Level (FZ-L)*).



This switch is only equipped if there is no three-button operating lever.

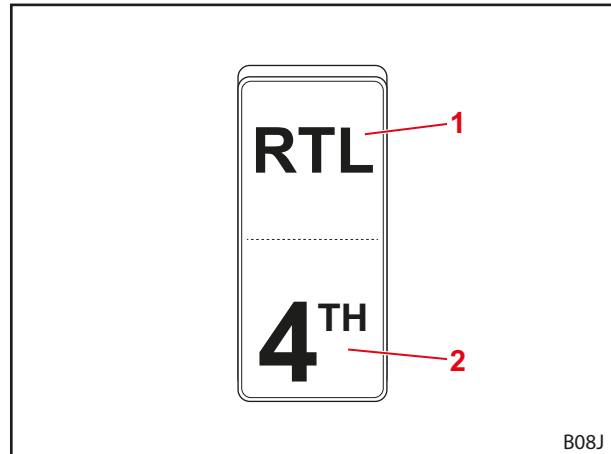


Fig. 62 Switch for the RTL function and 4th control circuit

#### Legend

- 1 Switch position for RTL
- 2 Switch position for 4th control circuit

### 6.1.7 Comfort hydraulic system

#### ⚠ CAUTION

#### Risk of injury and material damage due to accidental movement of the front loader!

On tractors that have tractor management, the Comfort hydraulic system can cause accidental movements of the front loader.

- ▶ Check that the tractor does not have tractor management if it is equipped with a Comfort hydraulic system.
- ▶ Contact the specialist workshop if unexpected or unwanted movements of the tractor occur.

The Comfort hydraulic system switches over between the functions for the hydraulic valves of the front loader and the original functions of the tractor (e.g. rear connection or front power lift).

Indicator light	Description
ON	Front loader active
OFF	Original function active



When driving on roads and when the front loader is not needed, put the switch in the "Original Function Active" switch position (see Fig. 63) to prevent accidental actuation of the front loader!

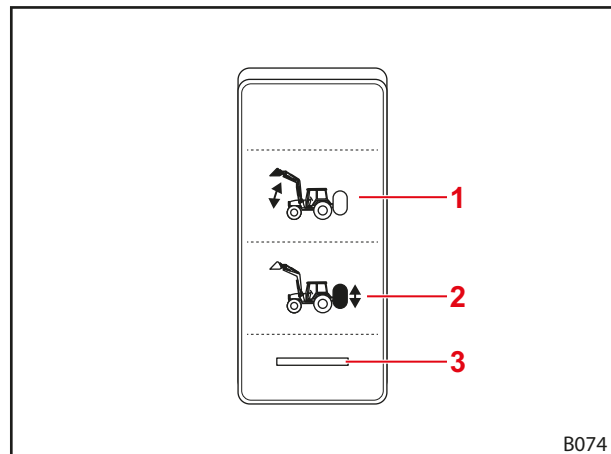


Fig. 63 Switch for Comfort hydraulic system

#### Legend

- 1 Switch position for front loader active
- 2 Switch position for original function active
- 3 Indicator light



## 6.2 Operating the parking supports

### **⚠ CAUTION**

#### **Risk of crushing by swivelling components!**

When folding the parking supports, limbs can be crushed.

- ▶ When folding the parking supports, do not reach between them and the lifting arm bar.

The parking supports serve to safely put down the front loader. Locking struts allow adaptations to be made for putting down the front loader with different implements as well as on different surfaces.

#### *Unfolding the parking support:*

- (1) Press on the latch to unhook.
  - (2) Fold the parking support down to the ground.
  - (3) Check if the locking strut engaged in the latching section.
- ✓ The parking support is unfolded.

#### *Folding in the parking support:*

- (1) Raise and hold the locking strut against the spring tension.
  - (2) Carefully raise the parking support until the tip of the locking strut is no longer in the latching section.
  - (3) Release the locking strut.
  - (4) Fold the parking support with some momentum all way up, so that the latch hooks on.
- ✓ The parking support is folded up.

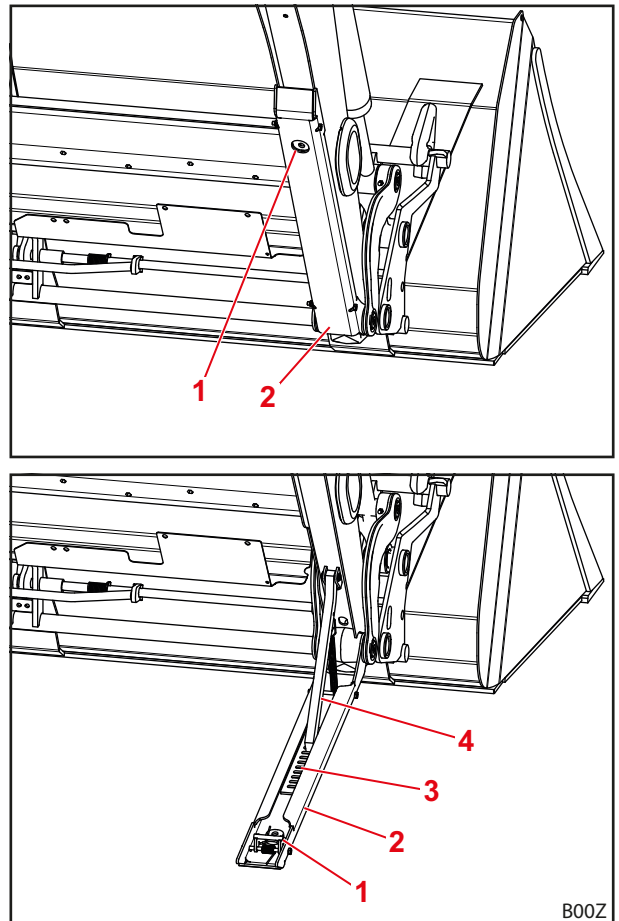


Fig. 64 Parking support

#### **Legend**

- 1 Latch
- 2 Parking support
- 3 Latching section
- 4 Locking strut

## **6.3 Operating the hydraulic couplings**

### **6.3.1 Operating the plug-in coupling**

*Connecting plugs with couplings:*

- (1) Remove the caps and wipe the coupling if necessary.
  - (2) Insert the connector in the couplings.
  - (3) Stick the caps together to prevent soiling.
- ✓ The plug-in couplings are connected.

*Disconnecting the plugs from the couplings:*

- (1) Pull out the plugs from the couplings.
  - (2) Put on the caps.
- ✓ The plug-in couplings are disconnected.

### 6.3.2 Operating Hydro-Fix

#### **⚠ WARNING**

##### **Risk of injury and material damage due to soiled hydraulic couplings!**

Hydro-Fix couplings that are not cleaned on a regular basis can result in plug parts not being correctly connected or parts of the Hydro-Fix being damaged when attempting to couple them. This can cause malfunctions of the hydraulic system. All functions of the hydraulic system can result in uncontrolled movements of the implement or of the front loader, and cause severe injuries.

- ▶ Clean the Hydro-Fix before coupling.
- ▶ Always close the cover of the lower part of the Hydro-Fix to prevent contamination.

##### *Coupling the hydraulic lines:*

- (1) Open the cover on the lower part  
(see 3.7.2 *Multiple coupling Hydro-Fix*).
- (2) Wipe the coupling surfaces with a cloth.



Do not wipe dust into any nearby plug connectors.

- (3) Press the lock button and push the lever upwards.
- (4) Remove the protective cap on the upper part.
- (5) Remove the upper part from the holder on the front loader.
- (6) Insert the upper part into the bottom part using the guide pins.
- (7) Push the lever down.
  - ✓ The guide presses the upper part onto the lower part by means of the pins. The lock button is pushed out.
  - ✓ The hydraulic lines are coupled.

##### *Uncoupling the hydraulic lines:*

- (1) Press the lock button and push the lever upwards.
- (2) Pull out the upper part.
- (3) Put on the protective cap.
- (4) Hook the upper part onto the appropriate mounting on the front loader.
- (5) Close the cover on the lower part.
- (6) Push the lever down.
  - ✓ The hydraulic lines are uncoupled.

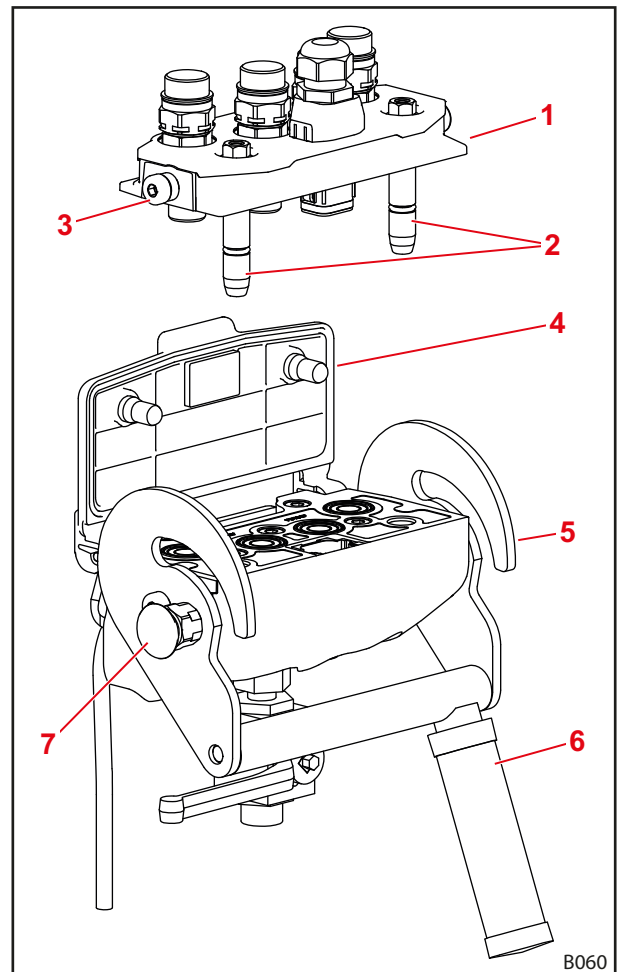


Fig. 65 Hydro-Fix

#### **Legend**

- 1 Hydro-Fix upper part
- 2 Guide pins
- 3 Pin
- 4 Cover
- 5 Guide
- 6 Lever
- 7 Lock button

## 6.4 Operating the implement locking mechanism

### 6.4.1 Operating the mechanical implement locking mechanism on Euro, SMS and Combi change frames

#### **⚠ WARNING**

##### **Risk of injury due to implements falling down!**

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

#### **⚠ CAUTION**

##### **Risk of crushing due to spring tension!**

There is spring tension on the handle of the implement locking mechanism, which closes the locking mechanism when the handle is lifted. Improper use can lead to injury to hands and fingers.

- ▶ Always operate the handle with one hand and grab it in the middle.

*Opening the implement locking mechanism:*

- (1) Lift the handle and pull out.
  - (2) Move the handle downwards until the nose hooks onto the change frame.
- ✓ The implement locking mechanism is open.

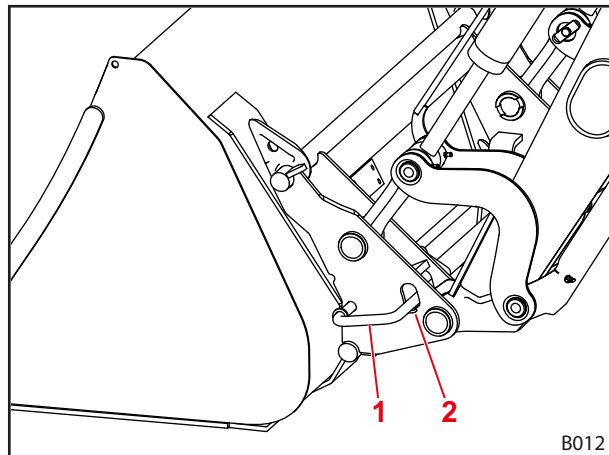


Fig. 66 Mechanical implement locking mechanism

#### **Legend**

- 1 Handle
- 2 Nose

*Closing the implement locking mechanism:*

- (1) Actuating the *scooping* function. To do this, the front loader may not be lifted to a height of more than 1.5 m.
- ✓ The implement locking mechanism closes automatically.

## Checking the implement locking mechanism:

- Check that the tip of the arrow on the sticker is aligned directly at the socket.
- Check that the locking pins engage correctly in the eyelets of the implement.

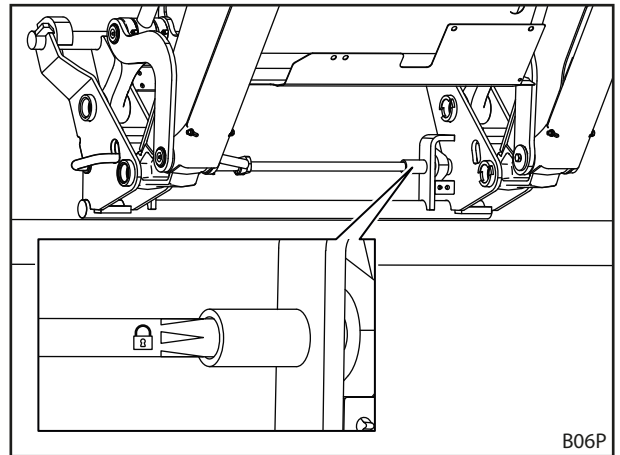


Fig. 67 Using the sticker to check the implement locking mechanism

- For implements without hydraulic functions:
  - Lower front loader close to the ground and actuate the *dumping* function. or
  - Press the implement with the tip on the ground.
  - ✓ When locked correctly, the implement remains on the change frame.
- ✓ The implement locking mechanism is checked.

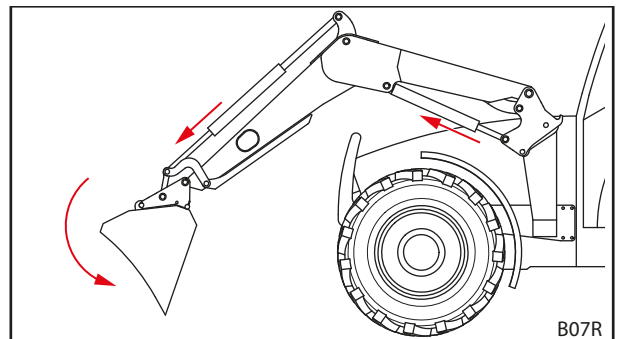


Fig. 68 Lowering and dumping

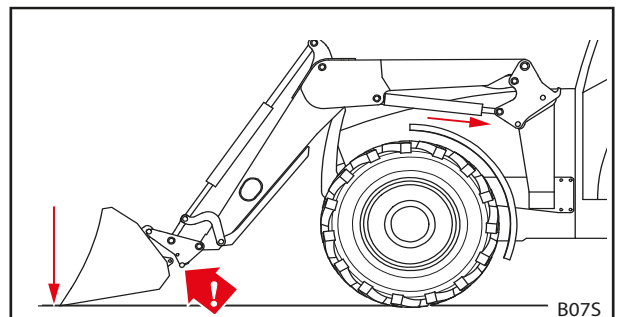


Fig. 69 Pressing the implement onto the ground

## 6.4.2 Operating the mechanical implement locking mechanism on skid-steer change frames

### **⚠ WARNING**

#### **Risk of injury due to implements falling down!**

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

### **⚠ CAUTION**

#### **Risk of crushing due to spring tension!**

There is spring tension on the handle of the implement locking mechanism, which closes the locking mechanism when the handle is lifted. Improper use can lead to injury to hands and fingers.

- ▶ Always operate the handle with one hand and grab it in the middle.

*Opening the implement locking mechanism:*

- (1) Swivel the handle on both sides downwards.
  - ✓ The implement locking mechanism is open.

*Closing the implement locking mechanism:*

- (1) Swivel the handle on both sides upwards.
  - ✓ The implement locking mechanism is closed.

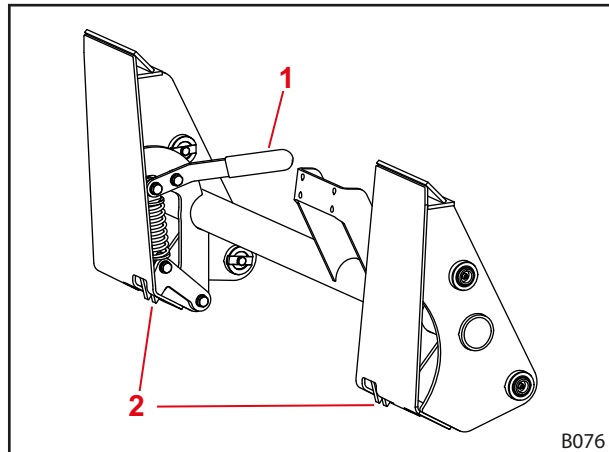


Fig. 70 Implement locking mechanism on skid-steer change frames

#### **Legend**

- 1 Handle
- 2 Hook

*Checking the implement locking mechanism:*

- (1) Check that both hooks engage correctly on the implement.
  - ✓ The implement locking mechanism is checked.

### 6.4.3 Operating the hydraulic implement locking mechanism

#### **⚠ WARNING**

#### **Risk of injury due to implements falling down!**

If not installed or operated correctly, the implement can fall down. This can cause serious injury to persons standing in the surrounding area.

- ▶ The hydraulic implement locking mechanism must only be installed by a specialist workshop.
- ▶ Only use switches that are approved by STOLL.
- ▶ Set the implement on the ground or on a safe support before using the implement locking function.

#### *Opening the implement locking mechanism:*

- (1) Push the locking bolt slightly down while actuating the switch.
  - ✓ The lamp lights up.
- (2) Use the *scooping* function.
  - ✓ The implement locking mechanism is open.

#### *Closing the implement locking mechanism:*

- (1) Actuate the switch.
  - ✓ The implement locking mechanism is closed.
- (2) Use the *scooping* function.
  - ✓ The lamp is off.



The implement locking mechanism can also be operated with STOLL Pro Control (see 6.1.4 STOLL Pro Control).

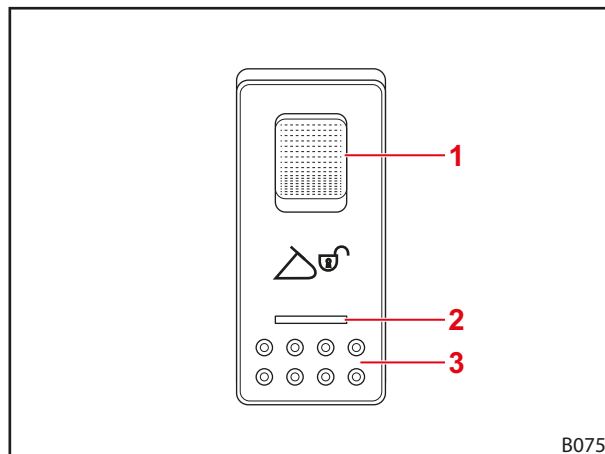


Fig. 71 Hydro-Lock switch

#### **Legend**

- 1 Locking bolt
- 2 Lamp
- 3 Switch

#### *Checking the implement locking mechanism:*

- (1) Check that the locking pins engage correctly in the eyelets of the implement.
  - ✓ The implement locking mechanism is checked.

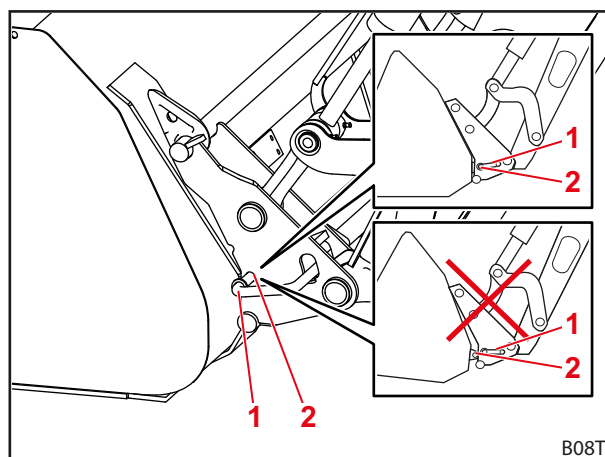


Fig. 72 Checking the hydraulic implement locking mechanism

#### **Legend**

- 1 Locking pin
- 2 Eyelet

## 6.5 Picking up and putting down the implement

### ⚠ WARNING

#### **Risk of injury and material damage caused by falling loads or lowering front loader!**

With dumping implements that are long or protrude far to the front, the centre of gravity can shift and cause the pressure relief valve of the front loader to open by itself. As a result, the front loader dumps or lowers uncontrollably and can lead to serious injuries and damage.

- ▶ Observe the maximum load of the front loader (see *11 Technical specifications*).
- ▶ Always use sufficient counterweights at the rear of the tractor (see *5.3.2 Ballasting*).
- ▶ During loading work, instruct persons to exit the working area (see *2.8 Danger zones*).

### NOTICE

#### **Material damage due to unsuitable implements!**

The mounting of implements that are too long, too wide or too heavy can cause damage to the tractor, the front loader or the implement.

- ▶ Ensure that the dimensions and weights of the front loader and implements fit to each other.
- ▶ Only use implements that are designed for the front loader and the mounted change frame.
- ▶ Only use implements that are appropriate for the kind of work you are doing.
- ▶ Observe the operating instructions of the implement.

### 6.5.1 Picking up implements with mechanical implement locking mechanism on Euro, SMS and Combi change frames

### ⚠ WARNING

#### **Risk of injury and material damage due to implements falling down!**

The automatic locking mechanism only works up to a height of about 1.5 m. Implements not locked correctly may fall down and cause damage to the surroundings as well as injuries.

- ▶ Always check that the implement is correctly locked.

### ⚠ CAUTION

#### **Risk of crushing due to spring tension!**

There is spring tension on the handle of the implement locking mechanism, which closes the locking mechanism when the handle is lifted. Improper use can lead to injury to hands and fingers.

- ▶ Always operate the handle with one hand and grab it in the middle.

*Mounting the implement:*

- (1) Open the implement locking mechanism (see *6.4.1 Operating the mechanical implement locking mechanism on Euro, SMS and Combi change frames*).

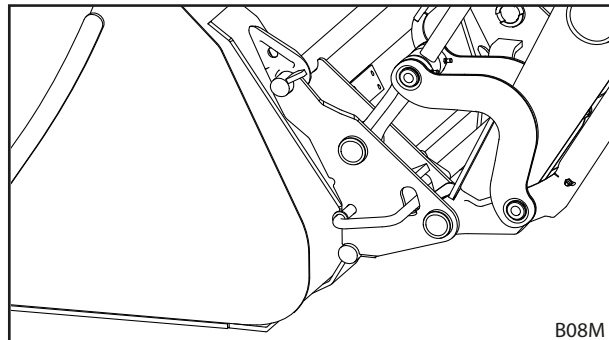


Fig. 73 Opening the implement locking mechanism



- (2) Use the *dumping* function until the upper cross bar of the change frame is positioned under the hook of the implement.

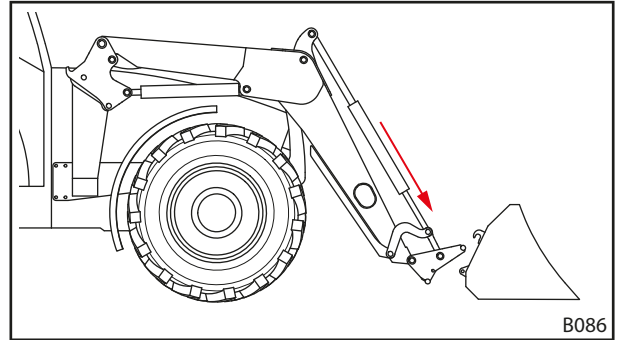


Fig. 74 Positioning the lifting arm

- (3) Drive up close to the implement.

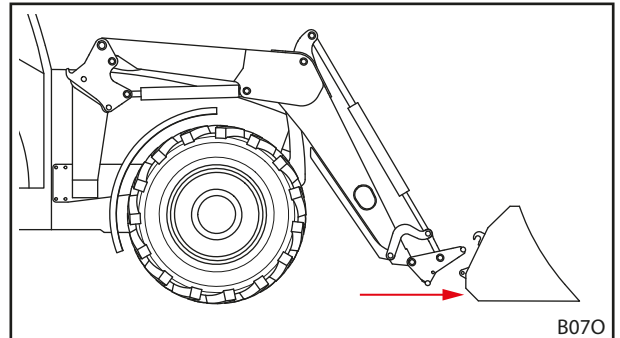


Fig. 75 Driving up

- (4) Carefully drive the tractor forwards until the cross bar of the change frame touches the implement.

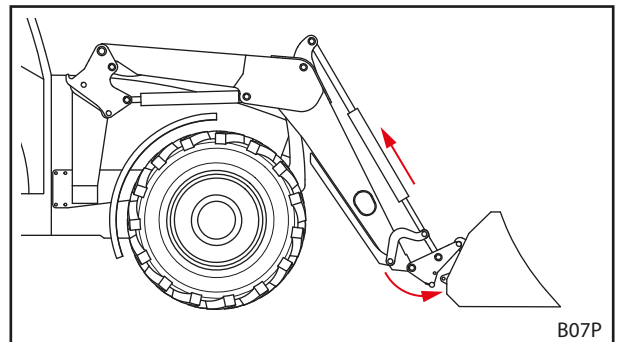


Fig. 76 Hooking in

- (5) Use the *scooping* function and drive forward a bit until the cross bar is hooked in.
  - ✓ The implement locking mechanism closes automatically.
- (6) Checking the implement locking mechanism (see 6.4.1 *Operating the mechanical implement locking mechanism on Euro, SMS and Combi change frames*).

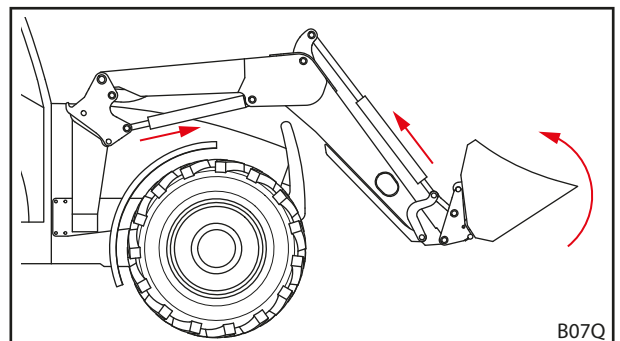


Fig. 77 Triggering the implement locking mechanism

- (7) If applicable, connect the hydraulic lines of the implement with the front loader couplings.
  - Lower the front loader until the implement is level on the ground.
  - Switch off the tractor.
  - Apply the parking brake.
  - Depressurize the hydraulic system.  
or  
With the implement function actuated, move the operating lever in the lateral end positions in order to depressurize the implement hydraulic system (see 6.1 *Operating elements*).
  - Connect the hydraulic lines of the implement to the couplings on the change frame.
- (8) For implements from other manufacturers: carefully swivel the implement to all end positions, to ensure that the implement does not collide with the front loader.
- ✓ The implement is mounted and ready for operation.

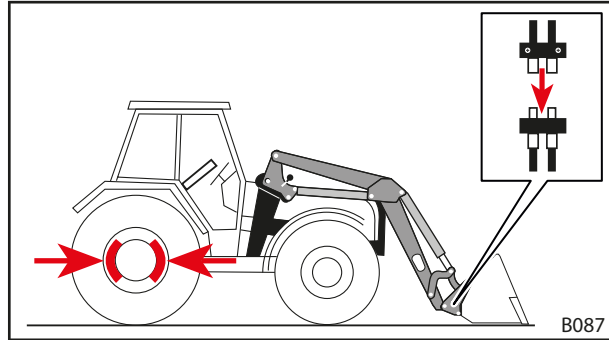


Fig. 78 Connecting the hydraulic lines of the implement to the front loader couplings

## 6.5.2 Picking up implements with mechanical implement locking mechanism on skid-steer change frames

### **WARNING**

#### **Risk of injury due to implements falling down!**

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

### **CAUTION**

#### **Risk of crushing due to spring tension!**

There is spring tension on the handle of the implement locking mechanism, which closes the locking mechanism when the handle is lifted. Improper use can lead to injury to hands and fingers.

- ▶ Always operate the handle with one hand and grab it in the middle.

#### *Mounting the implement:*

- (1) Open the implement locking mechanism (see 6.4.2 *Operating the mechanical implement locking mechanism on skid-steer change frames*).

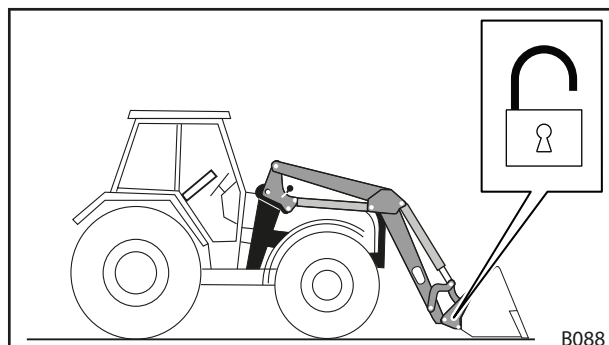


Fig. 79 Opening the implement locking mechanism

- (2) Drive up close to the implement.

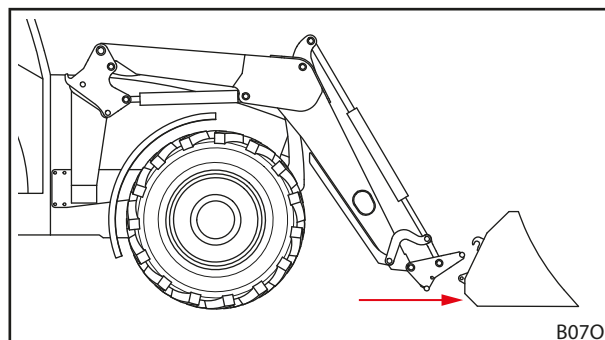


Fig. 80 Driving up

- (3) Use the *dumping* function until the upper cross bar of the change frame is positioned under the hook of the implement.
- (4) Carefully drive the tractor forwards until the cross bar of the change frame touches the implement.

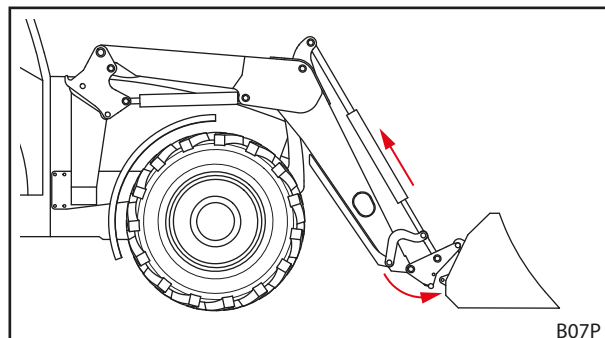


Fig. 81 Hooking in

- (5) Switch off the tractor.
  - Switch off the engine.
  - Apply the parking brake.
- (6) Close the implement locking mechanism manually (see 6.4.2 *Operating the mechanical implement locking mechanism on skid-steer change frames*).
- (7) If applicable, connect the hydraulic lines of the implement with the front loader couplings.
  - Lower the front loader until the implement is level on the ground.
  - Depressurize the hydraulic system.
    - or
    - With the implement function actuated, move the operating lever in the lateral end positions in order to depressurize the implement hydraulic system (see 6.1 *Operating elements*).
  - Connect the hydraulic lines of the implement to the couplings on the change frame.
- (8) For implements from other manufacturers: carefully swivel the implement to all end positions, to ensure that the implement does not collide with the front loader.
- ✓ The implement is mounted and ready for operation.

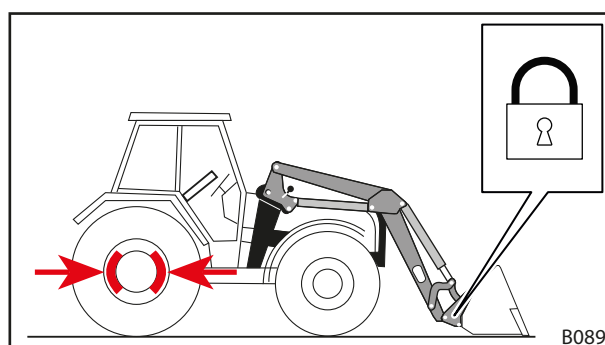


Fig. 82 Closing the implement locking mechanism

### 6.5.3 Picking up implements with a hydraulic implement locking mechanism

#### **WARNING**

##### **Risk of injury due to implements falling down!**

The implement may fall down if the implement locking mechanism is open or not locked correctly. This can cause serious injury to persons standing in the surrounding area.

- ▶ Only actuate the implement locking mechanism when the implement is set down on the ground or on a secure rack.
- ▶ Always check that the implement is correctly locked.

##### *Mounting the implement:*

- (1) Drive up close to the implement.
- (2) Open the implement locking mechanism (see 6.4.3 *Operating the hydraulic implement locking mechanism*).
- (3) Use the *dumping* function until the upper cross bar of the change frame is positioned under the hook of the implement.

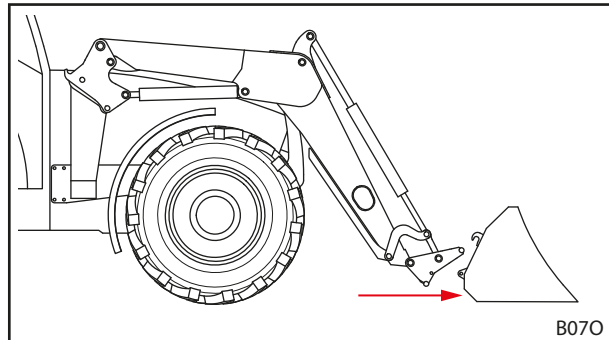


Fig. 83 Driving up

- (4) Carefully drive the tractor forwards until the cross bar of the change frame touches the implement.
- (5) Closing the implement locking mechanism (see 6.4.3 *Operating the hydraulic implement locking mechanism*).
- (6) Checking the implement locking mechanism (see 6.4.3 *Operating the hydraulic implement locking mechanism*).
- (7) If applicable, connect the hydraulic lines of the implement with the front loader couplings.

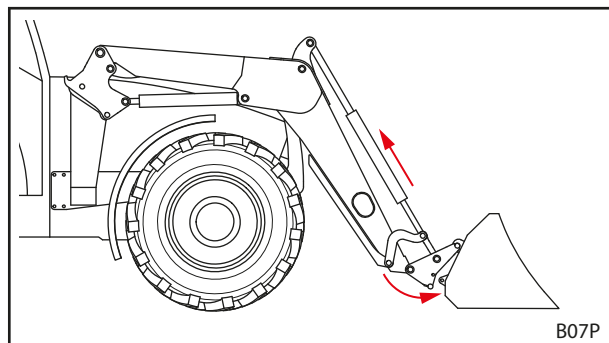


Fig. 84 Hooking in

- Lower the front loader until the implement is level on the ground.
  - Switch off the engine and apply the parking brake.
  - Depressurize the hydraulic system.  
or  
With the implement function actuated, move the operating lever in the lateral end positions in order to depressurize the implement hydraulic system (see 6.1 *Operating elements*).
  - Connect the hydraulic lines of the implement to the couplings on the change frame.
- (8) For implements from other manufacturers: carefully swivel the implement to all end positions, to ensure that the implement does not collide with the front loader.
- ✓ The implement is mounted and ready for operation.

## 6.5.4 Putting down the implement

*Putting down the implement:*

- (1) Lower the front loader and the implement horizontally on the ground or a secure rack.
  - (2) Switch off the tractor.
    - Apply the parking brake.
    - Stop the engine.
    - Depressurize the hydraulic system.  
or  
With the implement function actuated, move the operating lever in the lateral end positions in order to depressurize the implement hydraulic system (see 6.1 *Operating elements*).
  - (3) Open the implement locking mechanism (see 6.4 *Operating the implement locking mechanism*).
  - (4) If applicable, disconnect the hydraulic lines from the couplings on the change frame (see 3.7 *Hydraulic couplings*).
  - (5) Switch on the tractor.
  - (6) Unhook the change frame from the implement hooks.
    - Use the *dumping* function until the upper cross bar is positioned under the implement hook.
  - (7) Slowly drive the tractor away in reverse.
  - (8) If applicable, cover the implement with a protective tarp.
- ✓ The implement is put down.

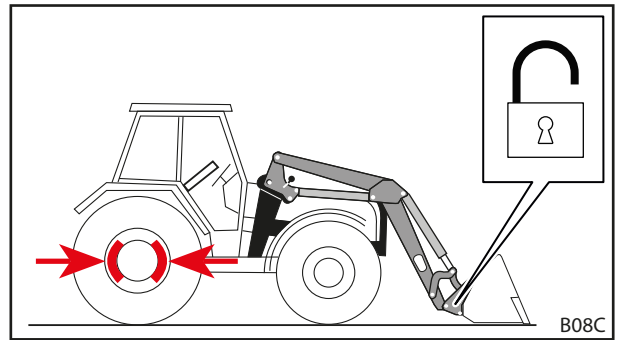


Fig. 85 Opening the implement locking mechanism

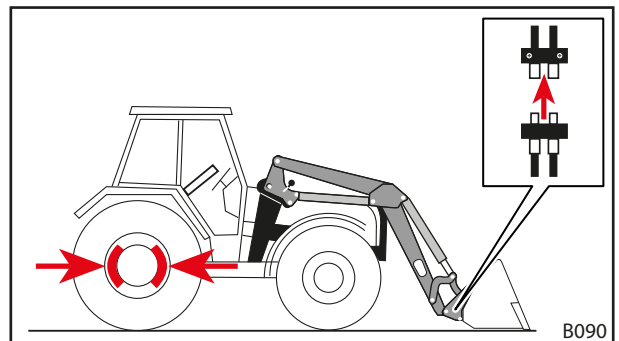


Fig. 86 Releasing the hydraulic lines

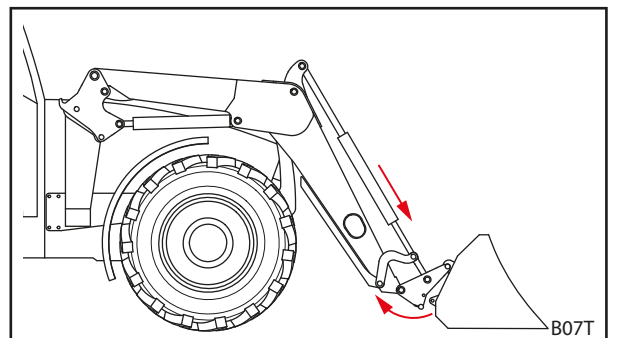


Fig. 87 Unhooking the change frame

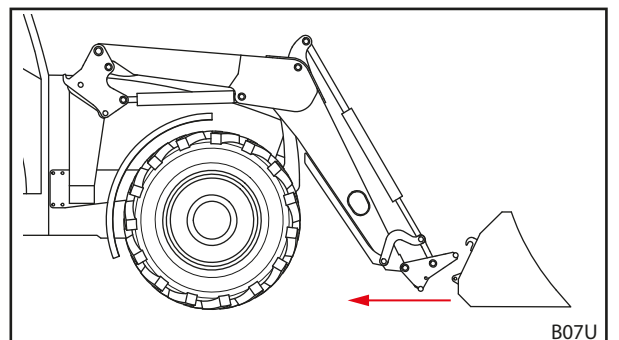


Fig. 88 Driving away

## 6.6 Levelling in reverse

### NOTICE

#### Material damage due to improper levelling!

If the front loader is not correctly used for levelling, the machine can be overloaded and damaged.

- ▶ Only perform levelling work with bucket implements.
- ▶ Level only with the front edge of the bucket.
- ▶ Maintain a maximum angle of 45° between the bottom edge of the bucket and the ground.
- ▶ Only drive in reverse with the bucket in this position.
- ▶ Do not exceed a speed of 10 km/h.

With a bucket implement, the front loader can perform light levelling work.

#### Levelling in reverse:

- (1) Lower the front loader.
  - (2) Use the *dumping* and *scooping* function until the angle between the bottom edge of the bucket and the ground does not exceed 45°.
  - (3) Slowly drive in reverse.
- ✓ The ground is levelled.

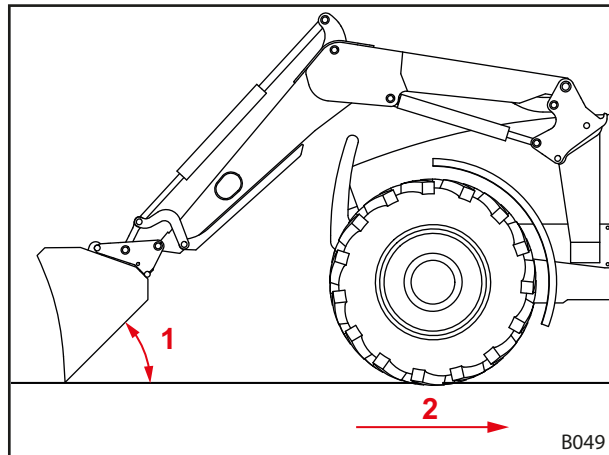


Fig. 89 Levelling in reverse

#### Legend

- 1 Maximum angle of 45° between the bottom edge of the bucket and the ground
- 2 Maximum speed of 10 km/h

## 6.7 Driving on roads

### **WARNING**

#### **Serious risk of accidents and injury due to loads falling down!**

When driving on roads, serious accidents and injuries can be inflicted on other road users due to loads falling down.

- ▶ Only drive on roads without a load.

### **WARNING**

#### **Possible risk of accident and injury due to accidental movement of the front loader!**

Accidental actuation of the front loader while driving on roads can cause accidents and personal injury.

- ▶ Lock the operating lever or hydraulic system of the front loader when driving on roads.

### **WARNING**

#### **Possible risk of injury due to uncontrolled movement of the front loader!**

If the control unit was not actuated for a longer period of time, there may be e.g. temperature differences between the hydraulic fluid and the control unit. This can cause the control valves to jam and the front loader moves uncontrollably. This may result in serious accidents.

- ▶ At ambient temperatures lower than 10 °C and when the front loader is not used for longer than 15 minutes, always first actuate the *scooping* and *dumping* functions at a standstill to warm up the control unit.
- ▶ Only use the *lifting* and *lowering* functions after the warm-up phase.

### **WARNING**

#### **Risk of accident due to raised front loader!**

When driving on roads, the tractor with the raised front loader can tip over and cause serious accidents.

- ▶ Always use sufficient counterweights at the rear of the tractor.
- ▶ Do not drive faster than 25 km/h.
- ▶ Pay attention to changes in the dimensions of the machine.
- ▶ Pay attention to the clearance height, e.g. under bridges, power lines and trees.
- ▶ Take extra care on bends.
- ▶ Pay attention to the longer braking path.
- ▶ If necessary, let somebody else guide you at blind spots.

When driving on roads, the tractor with a mounted front loader may only be driven by people who have the necessary driving license and knowledge of the traffic regulations.

*Also to be observed:*

- Dismount the implement at a distance of more than 3.5 m between the steering wheel and the front edge of the implement.
- If possible, raise the front loader such that the top edge of the implements does not exceed a height of 4 m and the bottom edge of the implements begins at least 2 m above the road surface.
- Activate the road operating lock (see 6.7.1 *Activating and deactivating the road operation lock*).
- If equipped, activate Comfort Drive (see 4.9.2 *Comfort Drive*).
- Observe the applicable national traffic regulations.

### 6.7.1 Activating and deactivating the road operation lock

#### Tractor's own operating lever

*To activate the road operation lock:*

- (1) Lock the operating lever in the zero position. If it is not possible to lock the operating lever, close the shut-off valve in the *lifting* hydraulic line (see tractor operating instructions).
- ✓ The road operation lock is activated. Accidental actuation of the front loader is no longer possible.

#### Tractor-specific operating lever and additional Comfort hydraulic system

*To activate the road operation lock:*

- (1) Move the switch for the Comfort hydraulic system (see 4.9.2 *Comfort Drive*) to the "Original function active" switch position.
- ✓ The road operation lock is activated. Accidental actuation of the front loader is no longer possible.

#### STOLL Base Control

*To activate the road operation lock:*

- (1) Lock the operating lever (see 6.1.3 *STOLL Base Control*) in the zero position.
- ✓ The road operation lock is activated. Accidental actuation of the front loader is no longer possible.

#### STOLL Pro Control

*To activate the road operation lock:*

- (1) Switch the operating lever (see 6.1.4 *STOLL Pro Control*) to standby mode.
- ✓ The road operation lock is activated. Accidental actuation of the front loader is no longer possible.

### 6.7.2 Passing through low clearances

When passing e.g. bridges, power lines or trees, the clearance height can be too low for the raised front loader. In this case, the following procedure must be observed:

*Passing through low clearances:*

- (1) Stop before driving through.
  - (2) Deactivate the road operation lock.
  - (3) Use the *scooping* and *dumping* function to warm up the control unit if necessary.
  - (4) Lower the front loader.
  - (5) Pass through the clearance.
  - (6) Once the clearance has been passed, raise the front loader.
  - (7) Activate the road operation lock.
- ✓ The clearance has been passed.



## 6.8 Parking the tractor with the front loader

### **WARNING**

#### **Possible risk of injury due to lowering of the front loader!**

The front loader is lowered over time by the drop in pressure in the hydraulic system. This can result in damage and accidents.

- ▶ Always lower the front loader when parking or exiting the tractor.
  - ▶ Observe all of the action steps to correctly park the tractor with the front loader.
- 

#### *Parking the tractor with the front loader:*

- (1) Lower the front loader to the ground.
- (2) Switch off the tractor.
  - Apply the parking brake.
  - Stop the engine.
- (3) Depressurize the hydraulic system.
  - Move all of the operating levers to the end position.
- (4) Pull out the ignition key to secure the tractor against unauthorised use.
  - ✓ The tractor with the front loader is safely parked.

To park the tractor with the front loader, also observe the operating instructions for the tractor.  
Instructions for parking the tractor without front loader, see 9.1 *Temporary decommissioning*.

## 7 Troubleshooting

### **WARNING**

#### **Mortal danger and material damage due to lack of safety!**

Troubleshooting and repair work carried out incorrectly can impair the safety of the front loader.

- ▶ Necessary repair work should only be performed by an authorised specialised workshop.

Faults on the front loader are frequently caused by factors that are not a result of a malfunction on the front loader.

In case of faults, first check:

- Is there enough oil in the hydraulic tank of the tractor?
- Has the correct oil been used?  
Only use oil types specified in the tractor operating instructions. The wrong oil can cause foam to build up and leaks.
- Is the hydraulic oil clean and free of moisture?  
You may need to change the oil and filter.  
Install an additional filter in the hydraulic system if necessary.
- Are the hoses and connections mounted correctly?  
The connections must be locked in place.
- Are the hoses and connectors undamaged, not clamped or twisted?
- Have the cylinders of the front loader been moved several times into their end positions to remove the air from the lines and the cylinders?
- Have you taken the low outside temperatures into consideration?  
Is the oil at operating temperature already?

If these points do not resolve the problem, the following table will help to localize and correct the fault.



Incorrect repairs can lead to safety risks. That is why the repair work must only be carried out by suitably qualified personnel!

STOLL recommends that the repair work be performed at a specialised workshop.

Description of the fault	Cause	Rectifying the fault
It is difficult to move the operating lever (stiff).	Bowden cables are stiff.	Check the attachment and routing of the Bowden cables and if they are stuck anywhere. If necessary, oil or replace the Bowden cables.
	Stiff shutters in the control block.	Check the shutters, and replace if necessary.
Front loader and/or implements work in the wrong direction to the operating lever.	Hydraulic connection is not connected properly.	Check the hydraulic connections, correct if necessary.
	Bowden cables are mounted incorrectly.	Check the connection of the Bowden cables and adjust if necessary.
	Operating lever not aligned correctly.	Check the installation position, and change the connection of the Bowden cables if necessary.
The front loader, implement and implement with hydraulic function, such as a top loading grip, move too slowly or not at all.	Not enough oil in the hydraulic system.	Check oil level and refill if necessary.
	Hydraulic couplings are not connected correctly.	Check the connections.
	Tractor pump is worn.	Check the tractor pump, replace if necessary.
	Insufficient oil flow.	Check the tractor hydraulics.
	Engine speed too low.	Increase engine speed.
	Hydraulic fluid too cold.	Warm up the hydraulic system to operating temperature.
	Too big load in the implement.	Reduce load.
	Hydraulic coupling defective.	Check couplings, replace if necessary.
	Internal leaking in the hydraulic cylinder.	Check the cylinders, repair or replace defective cylinders.
	Pressure relief valve is set incorrectly.	Check the setting of the pressure relief valve.
	Internal leakage in the control block.	Check the control block, replace if necessary.
	Operating lever not adjusted correctly.	Correct the settings of the operating lever.
	The top loading grip valve does not switch.	Check the magnet and shutters, replace if necessary.
Insufficient lifting and tear-out force.	Insufficient oil pressure.	Check the tractor hydraulics.
	Internal leaking in the hydraulic cylinder.	Check the cylinders, repair or replace defective cylinders.
	Too big load in the implement.	Reduce load.
	The primary or secondary pressure relief valve is incorrectly set or defective.	Check the settings of the pressure relief valve and replace if necessary.
	Internal leakage in the control block.	Check the control block, replace if necessary.
Air in the hydraulic fluid (recognizable by the foamy hydraulic fluid).	The hydraulic pump sucks in air.	Check the lines between the hydraulic pump and tank for loose or defective connections.
	The hydraulic filter is dirty.	Check the hydraulic filter, replace if necessary.
	Low oil quantity in the tank.	Check the oil level, refill if necessary.
	Mixed oil types.	Only use recommended oils.
	Discharging of returning oil.	Connection for returning oil according to the specifications.
Leakage on the hydraulic couplings of the front loader or the 3rd or 4th control circuit.	Leaks caused by infiltrated dirt.	Clean the coupling, replace if necessary. If the front loader or the 3rd or 4th control circuits are not used, seal the hydraulic couplings with the protective caps, or close the cover of the Hydro-Fix.
	Couplings are worn or damaged.	Replace the couplings.

Description of the fault	Cause	Rectifying the fault
Front loader, implement and implement with hydraulic function is blocked during lifting or lowering movement.	Coupling not completely closed.	Check the hydraulic coupling.
	The coupling is defective.	Replace the defective coupling halves.
	Hydro-Fix, multi-coupler and Implement-Fix not fully closed.	Check the locking lever for deformation. Check the couplings for firm seating, fasten if necessary.
The front loader rocks when lowering the load.	Lowering speed too high.	Reduce the lowering speed.
Unstable implement on FS rapid emptying front loaders (implement tilts away backwards).	Rapid emptying activated without dumping. This causes a vacuum in the hydraulic system.	Only activate the rapid emptying during the dumping process. Increase the engine speed in order to deliver enough oil.
The implement cylinder are extended, but are not retracted again.	Piston seal in the implement cylinder is defective, so that the surface of the piston and the ring are stuck together.	Check each cylinder separately for leaks and if necessary replace any defective cylinders.
	Seat valve does not return to starting position after turning on the rapid emptying.	Remove seat valve and check for debris, if necessary, replace.
	Insufficient oil flow.	Check the tractor hydraulics.
	The double pressure relief valve of the front loader control block does not close.	Clean the double pressure relief valve and replace if necessary.
Leaks on the hydraulic block and system.	Loose bolted connections.	Tighten the screw again.
	Leak between the magnet and valve.	Unscrew the knurled nut, remove the magnet, tighten the magnetic core again with an open-end spanner.
	Leak between the valve flanges.	Tighten the screws again or renew the gasket rings.
	Defective gaskets.	Replace the gasket rings such as Walform.
The front loader is raised when scooping from a lowered position.	Oil shortage on the piston rod side of the lifting arm cylinder.	Increase the engine speed when lowering.
		Lower without float position.
The front loader is raised when scooping from a lowered position, and when subsequently dumping, the front loader is lowered very fast.	Oil shortage on the piston crown side of the lifting arm cylinder.	After the previous error, only actuate the <i>lifting</i> function until the front loader is raised and the implement can be carried in a parallel position.

## 8 Servicing

### **WARNING**

#### **Serious risk of injury due to uncontrolled lowering of the front loader!**

During service and repair work, a raised front loader can be lowered unexpectedly and crush and injure nearby persons.

- ▶ Only perform maintenance work when the front loader is completely lowered.

### **WARNING**

#### **Risk of injury due to the front loader tipping over!**

When the front loader is put down on the parking supports, it does not have sufficient stability to perform maintenance work. The front loader can tip over and cause serious injury to persons standing nearby.

- ▶ Only perform maintenance work when the front loader is mounted.
- ▶ If mounting is not possible, secure the front loader against overturning using a crane or with load-bearing ropes or chains.

### **WARNING**

#### **Risk of injury due to hydraulic fluids under high pressure!**

Even when the tractor is switched off or the front loader has been removed, the hydraulic system can still be under pressure. If the service work is not carried out correctly, oil can spurt out at high pressure and cause serious injury to persons standing nearby.

- ▶ Before opening the couplings or dismounting hydraulic components, depressurize the hydraulic system.
- ▶ Always use suitable auxiliary materials when searching for leaks.
- ▶ Never search for leaks using your fingers.

### **CAUTION**

#### **Risk of burns by hot machine parts!**

Hydraulic components as well as other parts of the front loader and tractor can get very hot during operation. This can cause burns to the skin when performing maintenance work.

- ▶ Allow the machine and components to cool down to under 55 °C before performing maintenance work.

Repairs help to maintain proper functioning of the front loader and prevent premature wear. A distinction is made between the following measures:

- Cleaning and care
- Service
- Repairs

## 8.1 Cleaning and care

### NOTICE

#### Possible material damage due to unsuitable cleaning agents!

Unsuitable cleaning agents can damage surfaces and safety devices as well as destroy seals.

- ▶ Only use cleaning agents that are compatible with the machine surfaces and seal materials.
- 
- Clean the front loader with water and a mild cleaning agent.
  - Lubricated surfaces of the front loader must be re-greased after cleaning.

### 8.1.1 Lubrication points

#### Lubrication points on the catch hooks

The front loader mountings must be lubricated regularly, (see 8.1.2 *Lubrication schedule*).

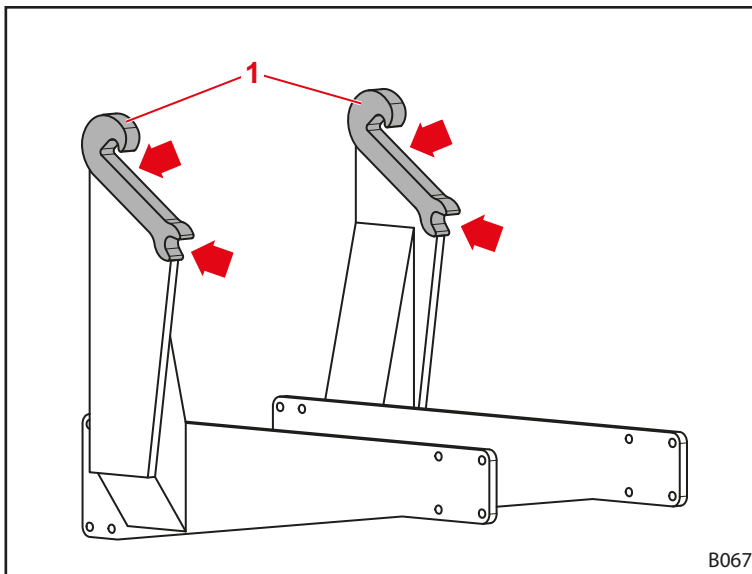


Fig. 90 Lubrication points on the front loader mountings



Grease the lubrication points on the front loader mounting each time the front loader is mounted or dismounted to save extra work.

**Lubrication points on FS and FZ front loaders**

The FS front loader has 9 lubrication points on each side:

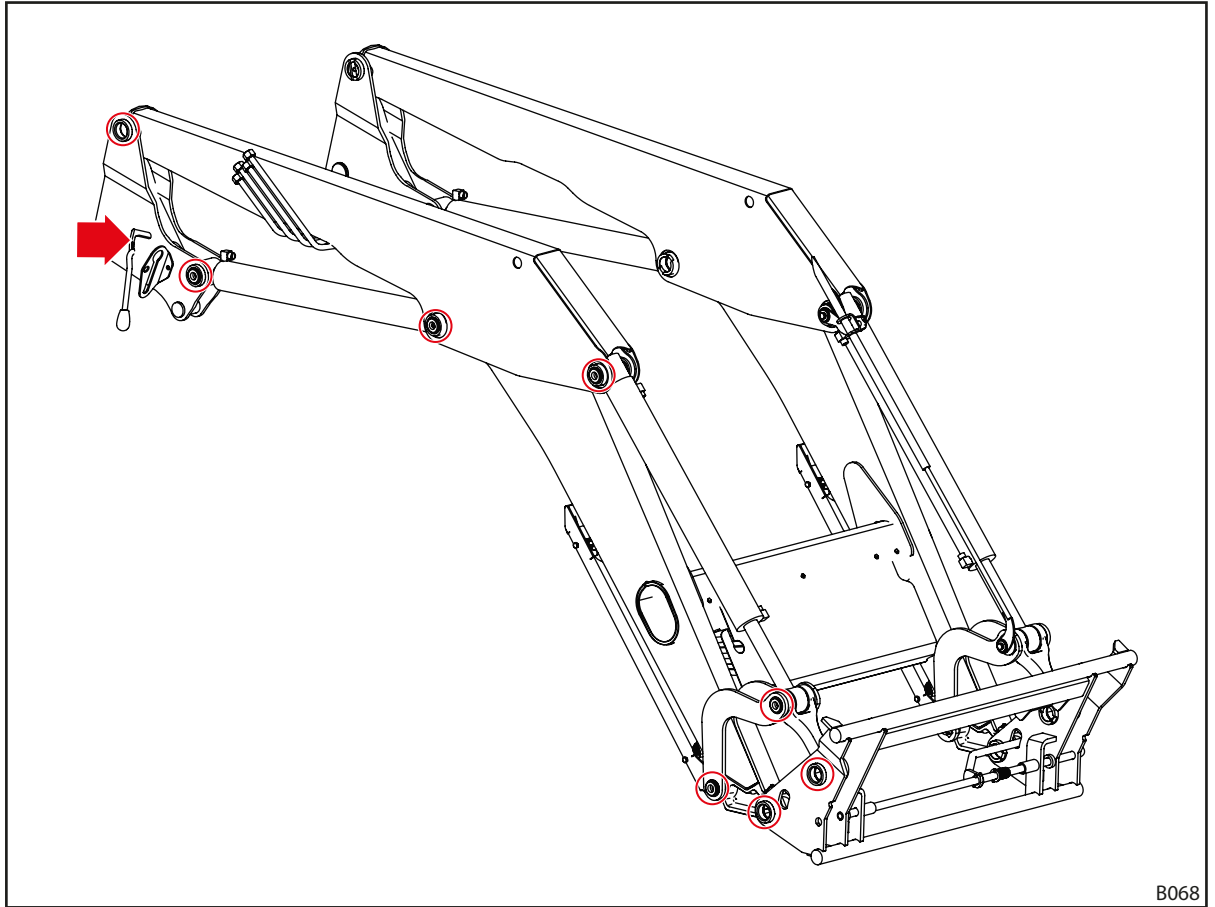


Fig. 91 Lubrication points on the FS

B068

The FZ front loader has 12 lubrication points on each side:

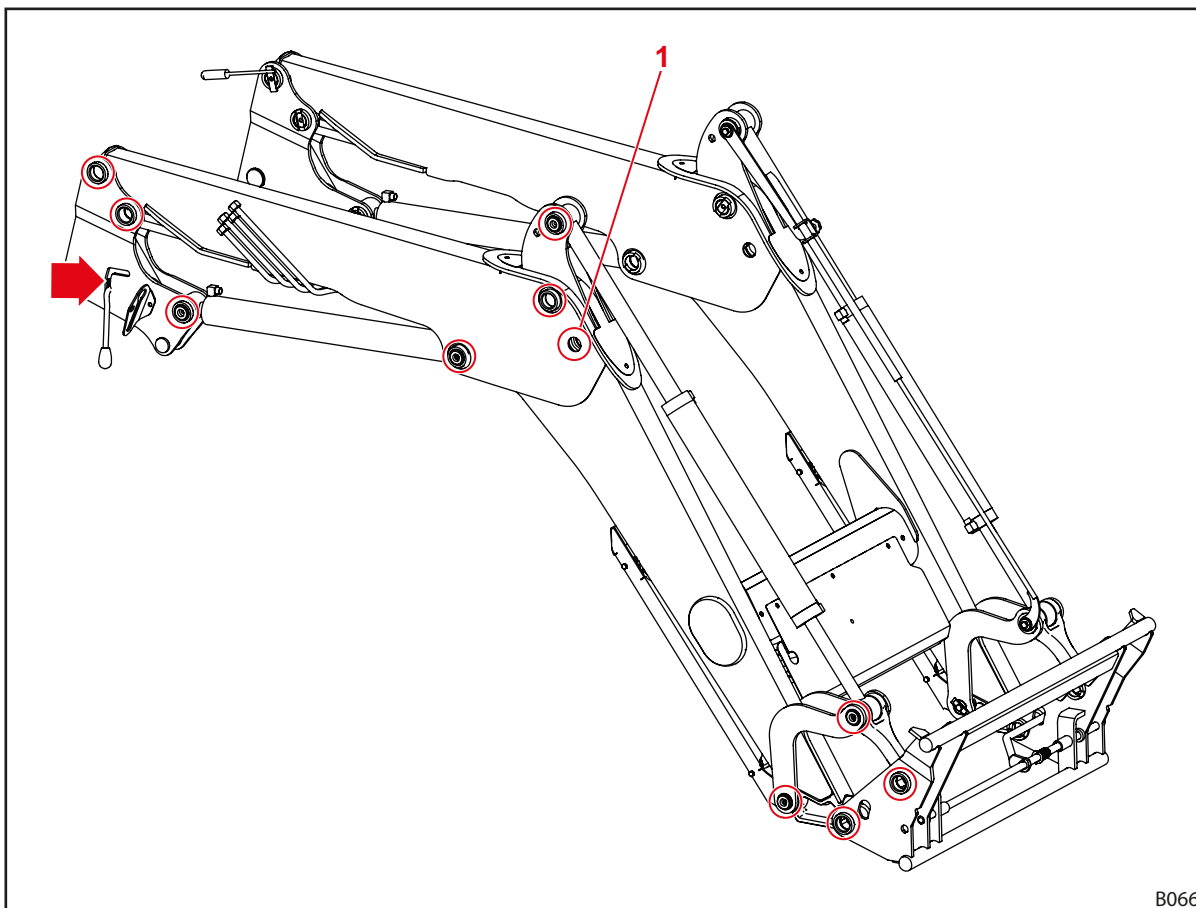


Fig. 92 Lubrication points on the FZ

The grease nipple at Position 1 can only be reached by slightly lifting the front loader and putting it down on the tip of the implement.

### 8.1.2 Lubrication schedule

Lubrication point	Interval [operating hours]	Lubricant
Bearing positions	20 h	Multipurpose grease DIN 51502 K2K, ISO 6743 ISO-L-XCCEA2, or comparable product
Front loader mountings (catch hooks)	100 h	
Front loader locking mechanism	100 h	Multipurpose grease or lubricating oil



Shorten the lubrication intervals if there is strong dirt contamination.



## 8.2 Service

### **WARNING**

#### **Lethal danger and material damage due to lack of service!**

Service tasks deferred or carried out incorrectly impair the safety of the front loader.

- ▶ Only have service carried out by authorised personnel.
- ▶ Only have visible defects repaired by trained qualified personnel.
- ▶ Observe additional documentation, e.g. for implements, for other service tasks.

To ensure proper operating condition of the front loader, the defined service tasks must be performed at the specified intervals by qualified personnel.

- Have service tasks performed regularly according to the service intervals described in the following.

### 8.2.1 Service schedule

The specified service intervals are guidelines.

- Adjust the intervals according to the operating conditions.
- Consult with a workshop for any questions.

Maintenance position	Job	Interval [operating hours]
Check the screw connections	Check, tighten if necessary (see 11.3 <i>Tightening torque for screws</i> )	100 h
Bearing positions	Lubrication (refer to the lubrication schedule)	20 h
Front loader mountings (catch hooks)	Lubrication (refer to the lubrication schedule)	100 h
	Check for wear (see 8.2.2 <i>Service instructions for front loader mountings</i> )	200 h
Front loader locking mechanism	Check the setting	20 h
	Lubrication (refer to the lubrication schedule)	100 h
Comfort Drive	Open and close the shut-off valve	100 h <sup>1</sup>
Hydraulic hose lines	Visual inspection, if necessary, have them replaced by an authorized workshop	100 h
	Replacement by authorized workshop	4 years <sup>2</sup>

<sup>1</sup> At least once a month

<sup>2</sup> See information under 8.2.5 *Service instructions for the hydraulic lines*

## 8.2.2 Service instructions for front loader mountings

### ⚠ WARNING

#### Risk of serious injury due to the front loader breaking off!

In cases of strong wear of the catch hook, the front loader can break off of the mounting part and thus cause serious injury to the driver or persons standing nearby.

- ▶ Check the catch hooks regularly for wear.
- ▶ Only mount the front loader on supports that are not worn or damaged.
- ▶ Worn or damaged mounting parts must be repaired or replaced by an authorised specialised workshop.

- To check the wear of the catch hooks, use the following wear dimensions:

Variable	Dimension
L	300 mm 475 mm (FZ 100)
X	Wear limit: 61 mm Nominal size: $60 \pm 0.2$ mm
D	40 mm

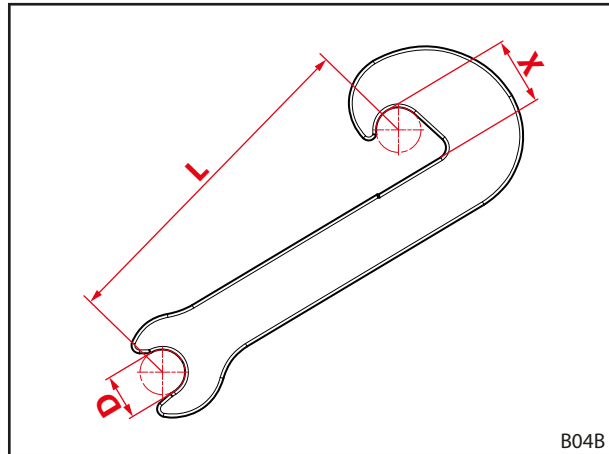


Fig. 93 Wear dimensions of the catch hook

## 8.2.3 Service instructions for front loader locking mechanism

### Checking the FS and FZ 8 to 50 front loader locking mechanism

*Checking the front loader locking mechanism:*

- (1) Completely open the front loader locking mechanism.
  - (2) Close the front loader locking mechanism.
    - Use the required manual force as soon as the tensioning begins in the pivot point.
    - Move the lever all the way down.
    - ✓ When the front loader locking mechanism is closed, the lever does not rattle.
  - (3) If necessary, readjust the front loader locking mechanism (see 5.4.1 *Adjusting the FS and FZ 8 to 50 front loader locking mechanism*).
- ✓ The front loader locking mechanism has been checked.

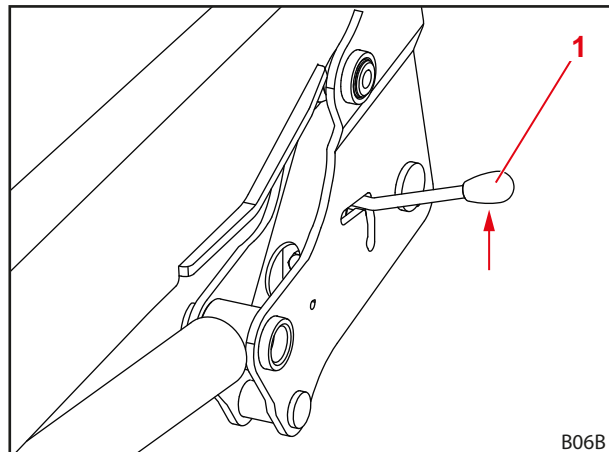


Fig. 94 Checking the front loader locking mechanism

1 Lever

### Checking the "Double locking mechanism" FZ 50 to 100 front loader locking mechanism

Checking the front loader locking mechanism:

- (1) Close the front loader locking mechanism.
  - Push the lever down.

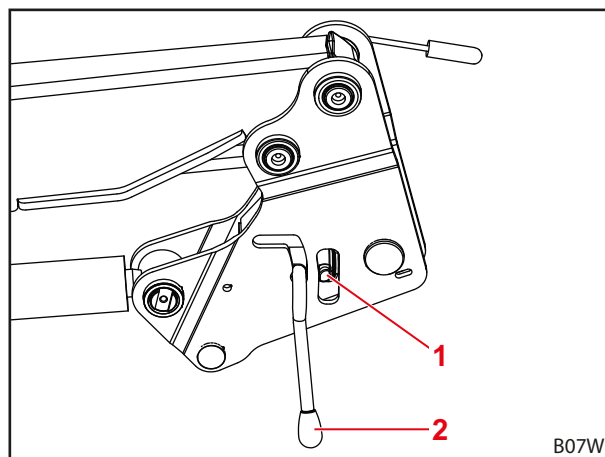


Fig. 95 Checking the front loader locking mechanism

#### Legend

- 1 Turning lock
- 2 Lever

- (2) Blow out the front loader locking mechanism with compressed air.
- (3) Pay attention to the gap between the disc springs and the turning lock.
  - ✓ The clamping wedge is tensioned to the maximum when the gap virtually disappears or the disc spring is flat.
- (4) If necessary, readjust the front loader locking mechanism (see 5.4.2 *Adjusting the "Double locking mechanism" FZ 50 to 100 front loader locking mechanism*).
  - ✓ The front loader locking mechanism has been checked.

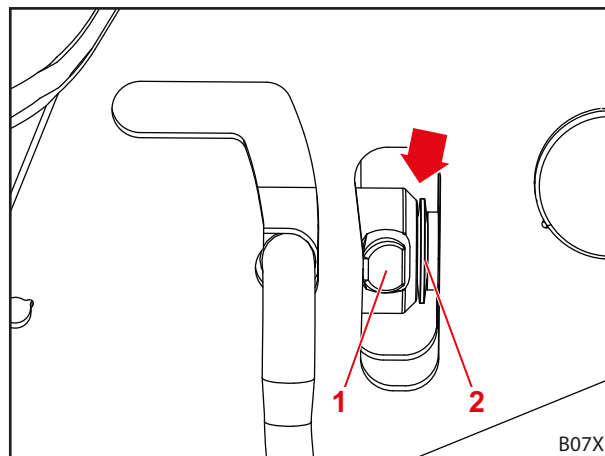


Fig. 96 Check the gap

#### Legend

- 1 Turning lock
- 2 Disc springs

### 8.2.4 Service instructions for Comfort Drive

Maintenance on the Comfort Drive may only be performed by an authorised specialist workshop.

### 8.2.5 Service instructions for the hydraulic lines

#### **WARNING**

##### **Risk of accident and injury due to defective hydraulic hose lines!**

Defective or worn hydraulic hose lines can cause uncontrolled escaping of hydraulic fluid and injury to persons nearby or the safety of the front loader can be impaired.

- ▶ Do not use hydraulic hose lines that are more than 6 years old.
- ▶ Do not use hydraulic hoses with tubing material that is more than 10 years old.
- ▶ Shorten the replacement interval when hoses wear out prematurely.
- ▶ For all work on the hydraulic system, wear personal protective equipment, especially oil-proof gloves and goggles.
- ▶ Have the hydraulic lines replaced if they are porous or cracked.

#### **WARNING**

##### **Risk of injury due to hydraulic fluids under high pressure!**

Even when the tractor is switched off or the front loader has been removed, the hydraulic system can still be under pressure. Hydraulic fluid can escape under high pressure and cause personal injury.

- ▶ Depressurize the hydraulic system before performing any service tasks.

In accordance with DIN 20066, hydraulic hose lines should be stored for a maximum of 2 years and used for a maximum of 6 years from the date of manufacture. This results in a service life of at least 4 years with normal loading.

Hydraulic hose lines are marked with 2 dates:

- On the hose material, e.g. "1Q15" for production of the hose in the 1st quarter of 2015;
- on the fittings, e.g. "0415" or "04/15" for production of the hose line in April 2015.

### 8.2.6 Service instructions for oil changes

The front loader is supplied by the oil circulation of the tractor.

- Observe the oil change intervals specified for the tractor.
- Before performing an oil change, lower the front loader onto the ground.
- After an oil change or after working on the hydraulic system, move the front loader carefully to all end positions without a load to remove any air that might have entered.

### 8.3 Repairs

#### **WARNING**

##### **Mortal danger and material damage caused by repair work carried out incorrectly!**

Repair work carried out incorrectly can impair the safety of the front loader and can lead to serious accidents and injuries.

- ▶ Repair work should only be performed by an authorised specialised workshop.

Repairs involve the replacement and repair of components. This is only necessary if components are damaged after wear or due to external circumstances.

The specialised workshop must:

- Perform all required repair work professionally and complying with the applicable regulations and according to the rules of engineering.
- Worn or damaged parts should never be provisionally repaired.
- Only use original or approved spare parts for repairs (see *10.1 Spare parts*).
- Replace the gaskets.

## 9 Decommissioning

### 9.1 Temporary decommissioning

#### **WARNING**

##### **Risk of injury due to lacking stability!**

If the front loader is not correctly and safely parked, it can tip over and injure persons nearby.

- ▶ Only park the front loader with a mounted implement that weighs at least 70 kg.
- ▶ Use the parking supports and lock them correctly.
- ▶ Only park the front loader on load-bearing and level ground.

##### *Dismounting the front loader:*

- (1) Switch off the tractor.
  - Apply the parking brake.
  - Stop the engine.
- (2) Lower the front loader to the ground.

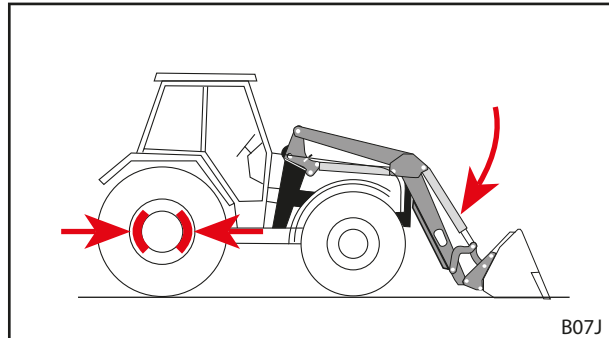


Fig. 97 Applying the parking brake and lower the front loader

- (3) Release the front loader locking mechanism on both sides (see 5.5 Mounting the front loader).

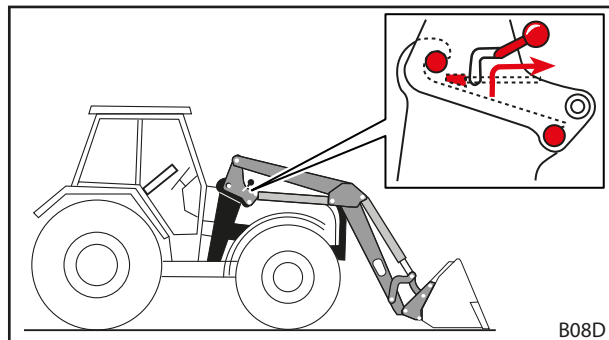


Fig. 98 Releasing the front loader locking mechanism

- (4) Unfold the parking supports (see 6.2 Operating the parking supports).
- (5) Start the tractor.

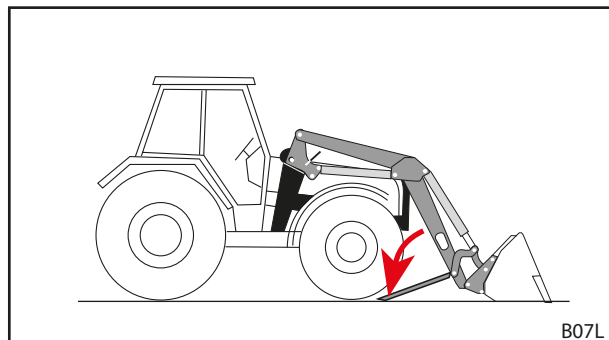


Fig. 99 Unfolding the parking supports

- (6) Using the *lowering* function, release the front loader pins from the catch hooks.
- (7) Switch off the tractor.
  - Apply the parking brake.
  - Stop the engine.
  - Depressurize the hydraulic system. To do so, move all of the operating levers to the end position.
- (8) Uncouple the front loader hydraulic system.
- (9) Disconnect the electrical system.
- (10) Drive the tractor in reverse out of the front loader.

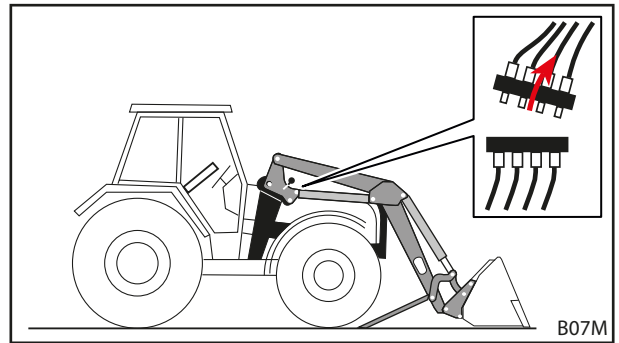


Fig. 100 Uncoupling the hydraulic system

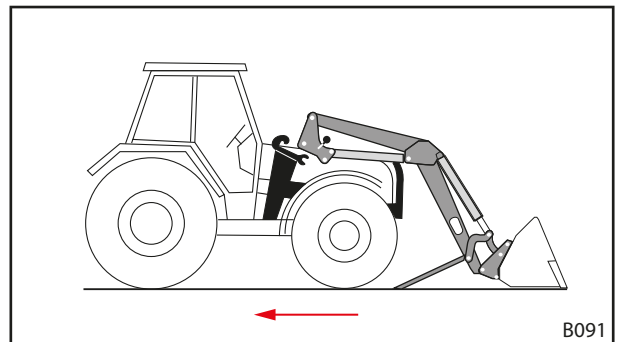


Fig. 101 Driving the tractor in reverse

- (11) Hang the hydraulic lines for the front loader on the coupling mount on the front loader.
  - (12) Replace the protective caps on the hydraulic couplings and plugs.
  - (13) If applicable, put the protective tarp over the front loader.
- ✓ The front loader is dismantled.

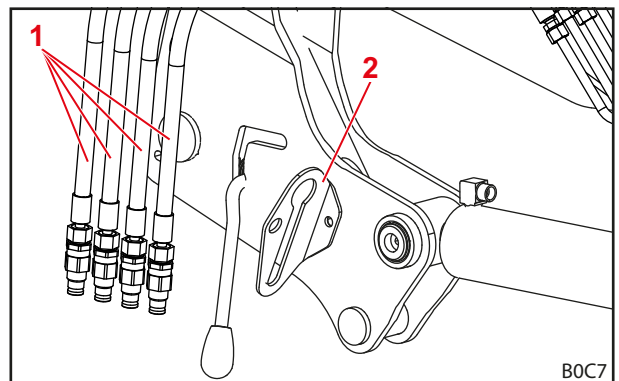


Fig. 102 Hanging the hydraulic lines on the coupling mount (shown with plug-in couplings)

### Legend

- 1 Hydraulic lines of the front loader
- 2 Coupling holder

## 9.2 Recommissioning

*Recommissioning the front loader:*

- (1) Remove the tarp from the front loader.
- (2) Clean the front loader if necessary.
- (3) Have maintenance performed on the front loader if necessary (see 8.2.1 *Service schedule*).
- (4) Perform a "Check before each start-up" (see 5.2 *Check before each start-up*).
- (5) Check all of the front loader functions.
  - ✓ The front loader is ready for operation.

## 9.3 Final decommissioning and disposal

### NOTICE

#### **Environmental damage due to improper disposal!**

The front loader contains operating materials as well as electrical and hydraulic components that need to be disposed of separately. Improper disposal can harm the environment.

- ▶ Observe the national and local regulations and environmental legislation for the disposal.
- ▶ Hand the front loader over to the dealer or a specialised company for disposal.

---

The front loader does not have a limit on its service life. In case of disposal, the front loader must be decommissioned and disposed of correctly.

- Also observe the safety instructions for service and maintenance.



## 10 Spare parts and customer service

### 10.1 Spare parts

#### **WARNING**

##### **Risk of injury and material damage due to using the wrong spare parts!**

The use of non-approved spare parts can impair the safety of the front loader and results in expiry of the operating permit.

- ▶ Only use original spare parts or those approved by STOLL.

Original spare parts and fitting accessories are listed in separate spare part lists.

- Download spare part lists at [www.stoll-germany.com](http://www.stoll-germany.com).

##### **Order information for safety stickers**

Order no.	Name	Stickers included
3462690	Set of stickers "Technology"	1 sticker each at Pos. no. 1, 4,5, 6, 7, 2 stickers at Pos. no. 8
3431550	Label sheet "Technology yellow"	2 stickers at Pos. no. 3 1 sticker at Pos. no. 9
3449070	Sticker "Cab"	1 sticker at Pos. no. 2
3435500	"Hydraulic implement locking mechanism" sticker in the cab	1 sticker at Pos. no. 10
3435620	"Hydraulic implement locking mechanism" sticker	1 sticker at Pos. no. 11
1439830	"Pressure oil" sticker	1 sticker at Pos. no. 12
1432670	"Pressure accumulator" sticker	1 sticker at Pos. no. 13
3667720	"Work area" sticker	2 sticker at Pos. no. 14

### 10.2 Customer service

For further questions regarding your front loader, please contact your dealer.

## 11 Technical specifications

### 11.1 Dimensions and weights

Front loader	Nominal width <sup>1</sup> [mm]	Lifting arm length <sup>2</sup> [mm]	Nominal lifting force <sup>3</sup> [daN]	Weight <sup>4</sup> [kg]
FS 8	916	2300	1660	356
FZ 8		2300	1660	406
FS 10		2500	1720	420
FZ 10		2500	1720	465
FS 20		2500	2120	425
FZ 20		2500	2120	475
FS 30		2720	1950	470
FZ 30		2720	1950	540
FS 40		2720	2240	480
FZ 45		2720	2260	580
FZ 50		2850	2430	680
FZ 60		3000	2630	790
FS 8.1	1100	2300	1660	366
FZ 8.1		2300	1660	416
FS 10.1		2500	1720	430
FZ 10.1		2500	1720	475
FS 20.1		2500	2120	435
FZ 20.1		2500	2120	485
FS 30.1		2720	1950	484
FZ 30.1		2720	1950	544
FS 40.1		2720	2240	494
FZ 45.1		2720	2260	594
FZ 50.1		2850	2430	694
FZ 60.1		3000	2630	805
FZ 80.1		3200	2740	850
FZ 100	1450	3500	3500	1250

<sup>1</sup> Measured from the centre of the pillar to the centre of the pillar.

<sup>2</sup> Measured from the lifting arm pivot point to the implement pivot point.

<sup>3</sup> Mathematically determined lifting force in the implement pivot point with hydraulic pressure at 195 bar, lifting arm raised to 1.5 m and ideal typical mounting. Since the geometry of the actual mounting parts must also take the specific geometry of different tractor equipment (tire sizes, axles, etc.) into account, the actual values in individual cases may vary significantly. The lifting capacity at the highest position of the front loader is up to 15% lower, the lifting capacity on the ground is correspondingly higher.

<sup>4</sup> Typical weight without implement, without special equipment. Deviations in individual cases are possible.

### 11.2 Noise emissions

The emission sound pressure level is less than 70 dB(A) (depending on the tractor).

### 11.3 Tightening torque for screws

Tightening torque for screws						
Thread	Strength category					
	8.8		10.9		12.9	
	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft
M4	3	2	4.5	3	5	4
M6	11	8	15	11	17	13
M8	27	20	36	27	42	31
M8x1	29	21	38	28	45	33
M10	54	40	71	52	83	61
M10x1.25	57	42	75	55	87	64
M12	93	69	123	91	144	106
M12x1.5	97	72	128	94	150	111
M12x1.25	101	74	133	98	155	114
M14	148	109	195	144	229	169
M14x1.5	159	117	209	154	244	180
M16	230	170	302	223	354	261
M16x1.5	244	180	320	236	374	276
M18	329	243	421	311	492	363
M18x2	348	257	443	327	519	383
M18x1.5	368	271	465	343	544	401
M20	464	342	592	437	692	510
M20x2	488	360	619	457	724	534
M20x1.5	511	377	646	476	756	558
M22	634	468	807	595	945	697
M22x2	663	489	840	620	984	726
M22x1.5	692	510	873	644	1022	754
M24	798	589	1017	750	1190	878
M24x2	865	638	1095	808	1282	946
M27	1176	867	1496	1103	1750	1291
M27x2	1262	931	1594	1176	1866	1376
M30	1597	1178	2033	1499	2380	1755
M30x2	1756	1295	2216	1634	2594	1913
5/8" UNC (normal)	230	170	302	223		
5/8" UNF (fine)	244	180	320	236		
3/4" UNC (normal)	464	342	592	437		
3/4" UNF (fine)	511	377	646	476		



Make sure that the threads are clean! The specified tightening torques are valid for screws and threads that are clean, dry and free of grease.

## 11.4 Hydraulic diagram

### 11.4.1 Hydraulic diagram FS and FS-rapid emptying

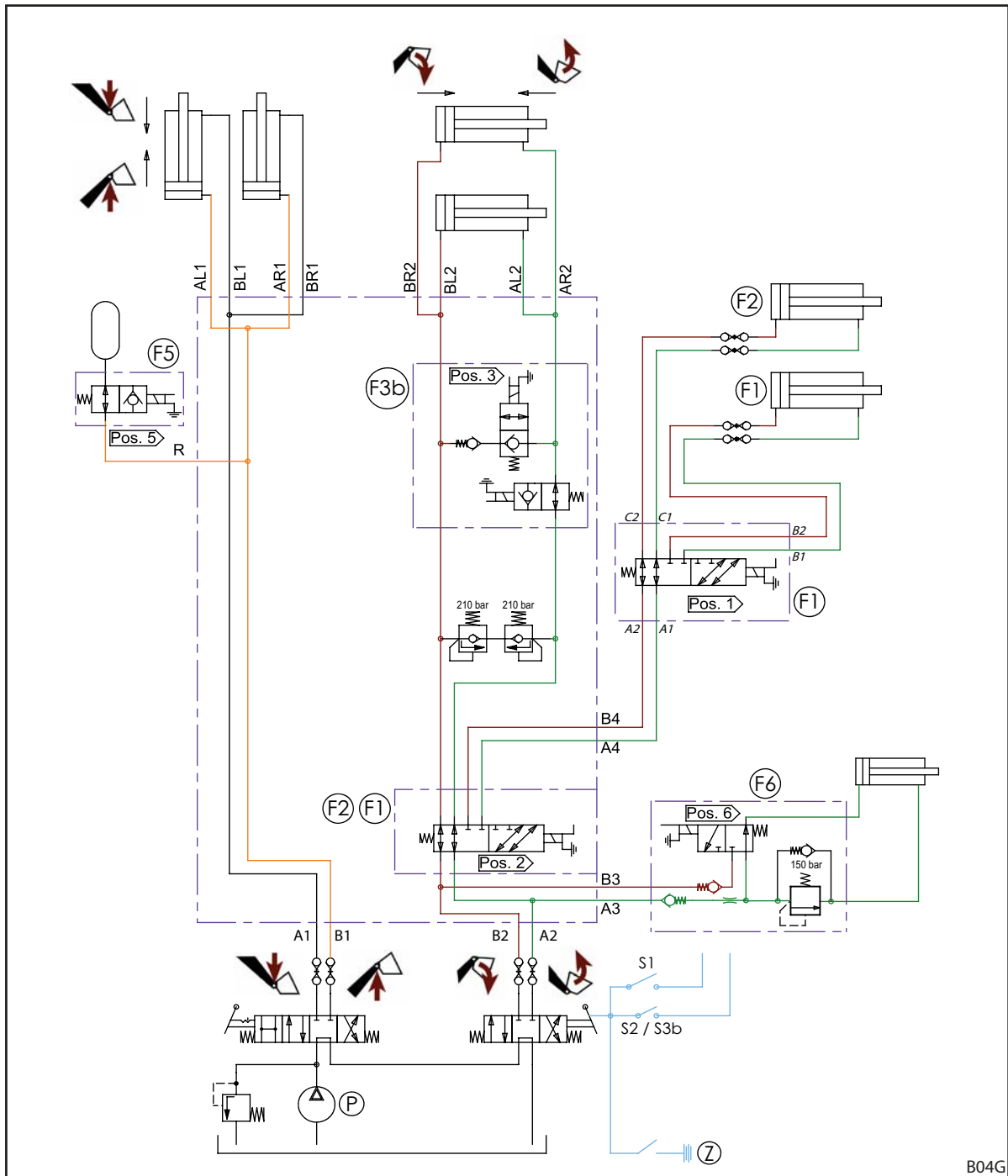


Fig. 103 Hydraulic diagram FS and FS-rapid emptying

#### Legend

F1, S1	4th control circuit (optional)
F2, S2	3rd control circuit (optional)
F3b, S3b	Rapid emptying (only FS-rapid emptying)
F5, S5	Comfort Drive (optional)
F6, S6	Hydro-Lock (optional)
P	Tractor pressure
Z	Ignition

#### 11.4.2 Hydraulics diagram FZ and FZ-L

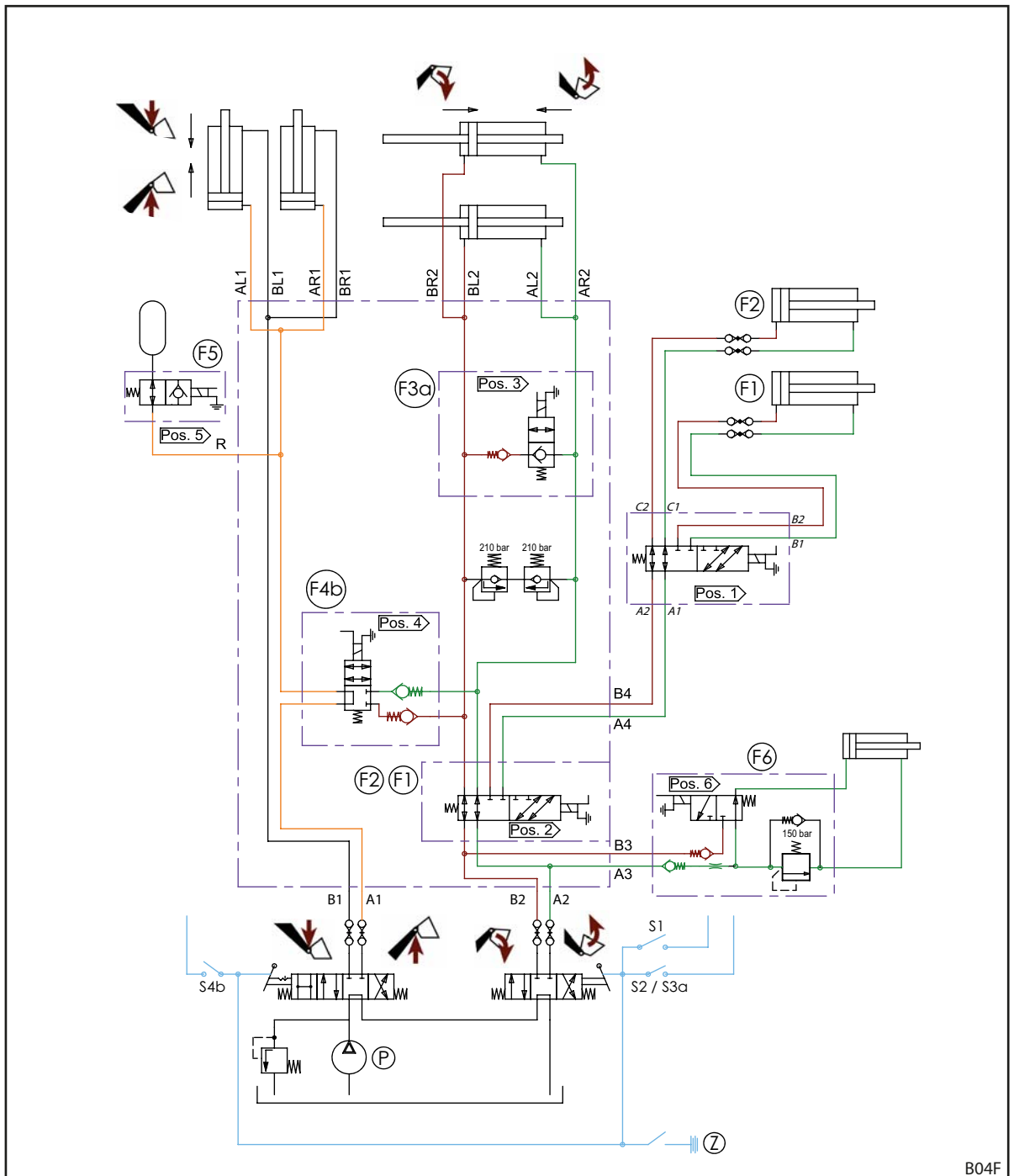


Fig. 104 Hydraulics diagram FZ and FZ-L

#### Legend

F1, S1	4th control circuit (optional)
F2, S2	3rd control circuit (optional)
F3a, S3a	Quick emptying (only FZ-L)
F4b, S4b	Return To Level (only FZ-L)
F5, S5	Comfort Drive (optional)
F6, S6	Hydro-Lock (optional)
P	Tractor pressure
Z	Ignition

## 11.5 Electric circuit diagram

### NOTICE

#### Material damage due to improper tensioning or lacking fuse!

If the rated voltage of 12 V is exceeded or the ignition lock is not switched, the system can be damaged.

- ▶ Switch the rated voltage of 12 V via the ignition lock.
- ▶ The connection must be protected with a fuse.

The optional functions Q1 to Q6 on the front loader lifting arm are shown in simplified form, as they may vary depending on the type of front loader.

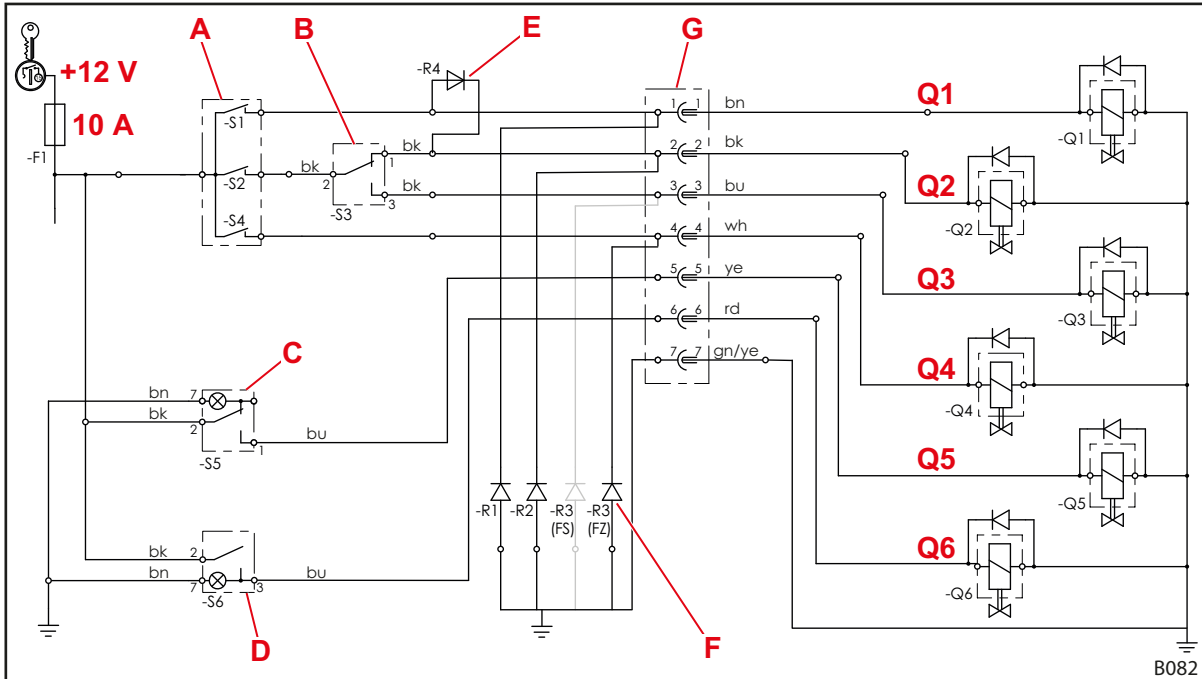


Fig. 105 Electric circuit diagram

#### Legend

- Q1 4th control circuit
- Q2 3rd control circuit
- Q3 Rapid emptying (FS-rapid emptying) or quick emptying (FZ L)
- Q4 Return To Level (FZ-L)
- Q5 Comfort Drive
- Q6 Hydro-Lock (hydraulic implement locking mechanism)
- A Button on the operating lever (on some operating levers with relay)  
-S2: 3rd control circuit, quick emptying or rapid emptying  
-S4: Return To Level  
-S1: 4th control circuit
- B -S3: Changeover switch 3rd control circuit / rapid emptying or quick emptying
- C Comfort Drive switch, with pilot lamp
- D Hydro-Lock rocker switch, with pilot lamp
- E Suppressor diode 4th control circuit, button S1 simultaneously activates valve Q2 for the 3rd control circuit and switches this function via shuttle valve Q1 to the 4th control circuit.
- F Suppressor diodes: reduce disruptions caused by the solenoid valves.  
Depending on the equipment, the suppressor diodes on FS front loaders are used on terminals 1, 2 and/or 3, and with FZ front loaders, they are on terminals 1, 2 and/or 4.
- G Plug / socket



This circuit diagram does not apply to tractors with a *Pro Control* single-lever control unit! In this case, observe the chapter about *Pro Control* in the installation instructions for the mounting kit.

## 11.6 Arrangement of the hydraulic valves for additional functions

The figure shows the arrangement of the hydraulic valves for the additional functions Q1 to Q6 on the cross bar of the front loader lifting arm. The maximum equipment for the FZ front loader (including FZ-L) and FS (including FS-rapid emptying) is shown.

The designations Q1 to Q6 correspond to the designations in the electric circuit diagram (see 11.5 *Electric circuit diagram*).

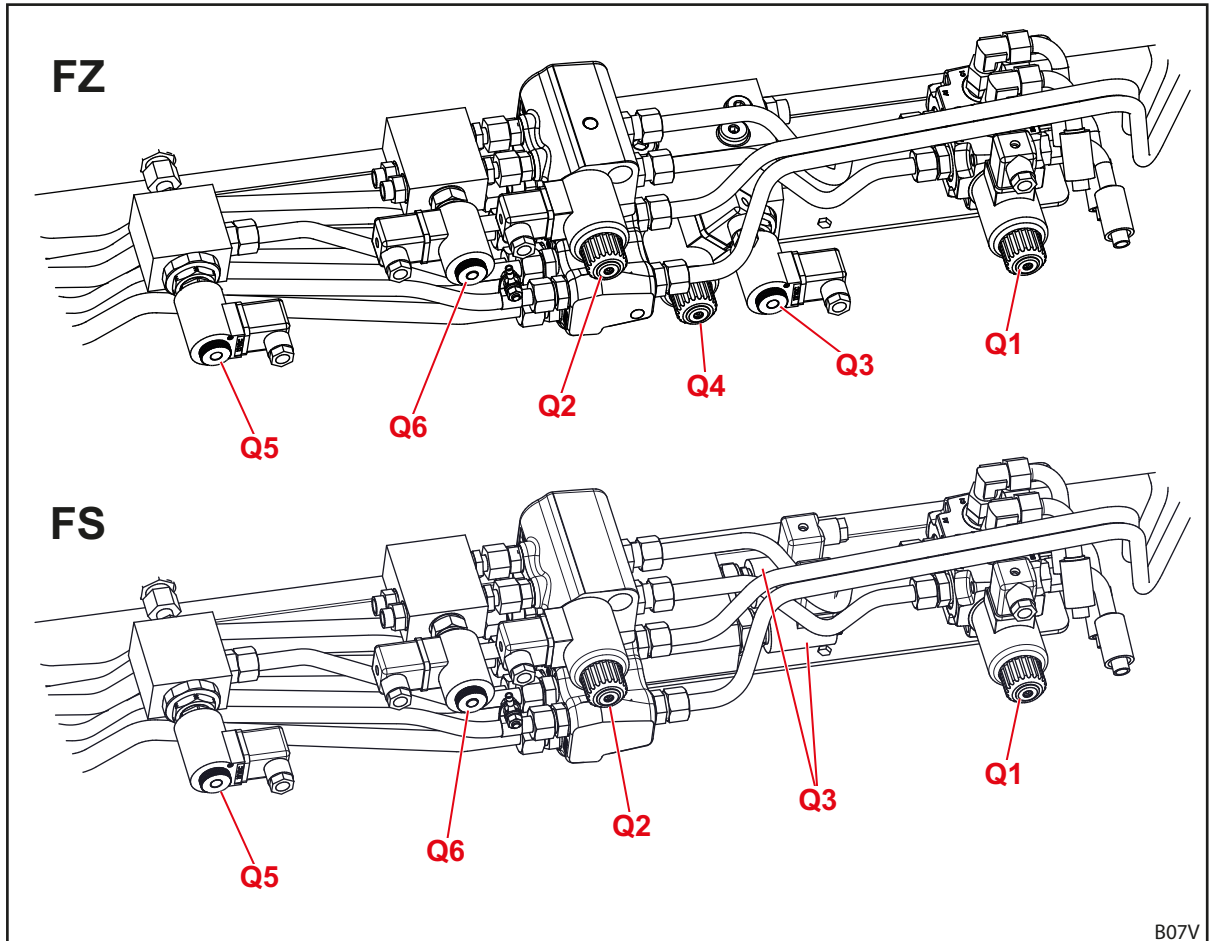


Fig. 106 Arrangement of the hydraulic valves for additional functions

### Legend

Q1	Hydraulic valve for 4th control circuit
Q2	Hydraulic valve for 3rd control circuit
Q3	Hydraulic valve for rapid emptying (on FS-rapid emptying) or quick emptying (on FZ L)
Q4	Hydraulic valve for Return To Level (on FZ-L)
Q5	Hydraulic valve for electrically controlled Comfort Drive
Q6	Hydraulic valve for Hydro-Lock (hydraulic implement locking mechanism)

## 12 Declaration of Conformity

(in accordance with EC Directive 2006/42/EC, Appendix II 1.A)

Wilhelm STOLL Maschinenfabrik GmbH  
Bahnhofstrasse 21  
38268 Lengede, Germany

hereby declares that the machine in its state on delivery complies with the directives and harmonised standards listed in the following, and will be made available on the market:

Designation: Front loader

Type: ProfiLine

Machine no.: 7015000 to 7999999

With the intended use/  
function: As a mounted implement, the front loader is "interchangeable equipment" as defined by the Machinery Directive 2006/42/EC. The front loader is mounted on agricultural and forestry tractors using a mounting frame, and serves to mount other interchangeable equipment (implements), which are used for processes and tasks in the agricultural and forestry sector. Further information on the intended use with the operating conditions, the description, the function and other technical data for the front loader can be found in the operating instructions.

The machine complies with all relevant and applicable provisions of the

- Council Directive 2006/42/EC on machinery,
- Directive 2014/30/EU of the European Parliament and the Council for Electromagnetic Compatibility (EMC),
- Directive 2014/68/EU on the provision of pressure equipment on the market.

The technical documentation was produced according to Annexe VII A of Directive 2006/42/EC, and is the responsibility of the development manager at Wilhelm STOLL Maschinenfabrik GmbH, Bahnhofstrasse 21, D-38268 Lengede.



The design and manufacturing of the front loader observed the following harmonised standards that are also published in the EU official gazette:

Harmonised standards	Date	Title of the standard
DIN EN ISO 4254-1	2016-09	Agricultural machinery - Safety - Part 1: General requirements
DIN EN ISO 4413	2011-04	Hydraulic fluid power - General rules and safety requirements for systems and their components
DIN EN 12525	2011-02	Agricultural machinery - Front loader - Safety
DIN EN ISO 12100	2011-03	Safety of machinery - Basic terms, General principles for design for the safety of machinery - General principles for design - Risk assessment and risk reduction
DIN EN ISO 13849-1	2016-06	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
DIN ISO 10448	1999-01	Agricultural tractors - Hydraulic power transmission for implements
ISO 23206	2007-03	Agricultural wheeled tractors and attachments - Front loaders - Carriages for attachments
DIN EN ISO 13857	2008-06	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
DIN EN ISO 14982	2009-12	Agricultural and forestry machines - Electromagnetic compatibility - Test methods and acceptance criteria

Lengede, 22.03.2018



Guido Marenbach  
Managing Director



Dr. Rainer Golloch  
Head of development

## Index

### 3

3rd control circuit . . . . . 49

### 4

4th control circuit . . . . . 50

### A

Adjusting the FS and FZ 8 to 80 front loader locking mechanism . . . . . 58

Adjusting the FZ 50 to 100 front loader locking mechanism . . . . . 60, 60

Aligning the front loader for mounting . . 64

Anti-lowering guard . . . . . 48

### B

Ballasting . . . . . 56

Base Control . . . . . 68

Basic functions . . . . . 40

Behaviour in case of emergency . . . . . 24

### C

Check before each start-up . . . . . 54

Cleaning . . . . . 97

Comfort Drive . . . . . 51

Comfort hydraulic system . . . . . 75

### D

Danger areas . . . . . 17

Danger due to emissions . . . . . 12

Dangers during assembly for initial operation . . . . . 13

Dangers during loading work . . . . . 14

Dangers during maintenance . . . . . 16

Dangers during packaging and transport . . . . . 13

Dangers when mounting and dismounting the front loader . . . . . 13

Dangers when operating the front loader . . . . . 15

Dangers when picking up and putting down implements . . . . . 14

Dismounting the front loader . . . . . 105

Disposal . . . . . 107

Documentation overview . . . . . 5

Driving on roads . . . . . 90

Dumping . . . . . 42

### E

EC conformity . . . . . 9

Electrical dangers . . . . . 12

Electro-hydraulic Comfort Drive . . . . . 52

Equipment variations . . . . . 29

Euro change frame . . . . . 31

Euro-Alö3 Combi change frame . . . . . 33

Euro-MX Combi change frame . . . . . 33

Euro-SMS Combi change frame . . . . . 32

### F

Faults . . . . . 93

Float position . . . . . 43

Foreseeable misuse . . . . . 10

### G

Gas-hydraulic Comfort Drive . . . . . 51

### H

Hydraulic dangers . . . . . 11, 12, 16

Hydraulic implement locking mechanism . . . . . 39

hydraulic lines . . . . . 35

Hydro-Fix coupling . . . . . 36

### I

Indicator for implement position . . . . . 45

Initial operation . . . . . 54

### L

levelling . . . . . 89

Lifting . . . . . 40

Lowering . . . . . 41

Lubrication points on the catch hooks . 97

Lubrication points on the FS . . . . . 98

Lubrication points on the FZ . . . . . 99

Lubrication schedule . . . . . 99

### M

Mechanical dangers . . . . . 11

Mounting kit for tractors . . . . . 30

Mounting the front loader . . . . . 62

### O

Operating the hydraulic lines . . . . . 78

Operating the implement locking mechanism on skid-steer change frames . . . . . 81

Operating the parking supports . . . . . 76

Operating the plug-in coupling . . . . . 77

Operational limits . . . . . 10

**P**

Parallel motion . . . . .	45
Passing through low clearances . . . . .	91
Plug-in couplings . . . . .	35
Preparations on the tractor . . . . .	55
Pro Control . . . . .	70
Proper use . . . . .	10
Protective and safety equipment . . . . .	17
Putting down the implement . . . . .	88

**Q**

Quick emptying . . . . .	46
--------------------------	----

**R**

Rapid emptying . . . . .	46
rating plate . . . . .	6
Recommissioning . . . . .	107
Reinforced FZ 100 change frame . . . . .	34
Repairs . . . . .	96, 104
Return-to-level function. . . . .	47

**S**

Safety and warning notices . . . . .	9
Safety stickers . . . . .	18
Scooping . . . . .	41
Service intervals . . . . .	100
Skid-steer change frame. . . . .	34
SMS change frame . . . . .	32
Spare parts . . . . .	108
Structure of FS front loaders. . . . .	25
Structure of FZ front loaders. . . . .	27
Switching on Pro Control . . . . .	71

**T**

Tightening torques for screws. . . . .	110
--	-----



**Address of the dealer**

Stick or write down the serial number here

**Wilhelm STOLL Maschinenfabrik GmbH**

PO box 1181, 38266 Lengede

Bahnhofstr. 21, 38268 Lengede

Phone: +49 (0) 53 44/20 0

Fax: +49 (0) 53 44/20 182

E-mail: [info@stoll-germany.com](mailto:info@stoll-germany.com)

**STOLL on the Internet:**

[www.stoll-germany.com](http://www.stoll-germany.com)

[www.facebook.com/STOLLFrontloader](https://www.facebook.com/STOLLFrontloader)

[www.youtube.com/STOLLFrontloader](https://www.youtube.com/STOLLFrontloader)