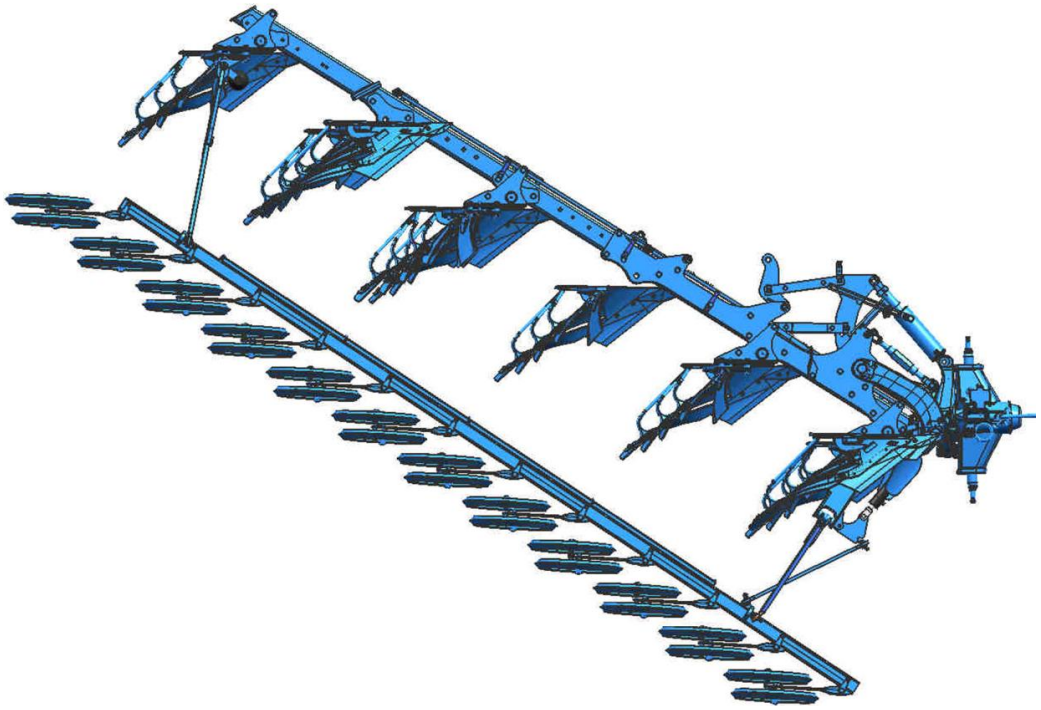
Operating Instructions

Integrated Packer

FlexPack



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LEMKEN GmbH & Co. KG

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Dear customer,

Thank you for the trust you have placed in us by purchasing this device. The device can only be used to its full advantage when operated and used properly. When the device was delivered, you will already have been instructed in operation, adjustment and maintenance by your dealer. However, this brief instruction is not a substitute for thorough study of the operating instructions.

These operating instructions will help to familiarise you with the LEMKEN GmbH & Co. KG device and the options available for using it.

The operating instructions contain important information about how to operate the device safely, properly and efficiently. Following the instructions will help to prevent hazards, faults and down times and will increase reliability and service life. Read the operating instructions carefully and attentively before commissioning.

Make sure that the operating instructions are always available at the location where the device is used.

The operating instructions must be read and followed by anyone who is involved in carrying out the following work:

- Coupling and uncoupling
- Adjustments
- Operation
- Maintenance and repairs
- Troubleshooting, and
- Final shutdown and disposal.

Spare parts ordering

This device is supplied with a specification listing all assemblies that are relevant for the product. The spare parts list valid for your device includes both those assemblies relevant to you and those that are not intended for your device. Make sure that you only order spare parts that belong to the assemblies that can be found on your specification or the enclosed print out. When ordering spare parts, state the type designation and serial number of the device. This information can be found on the type plate. Enter this data in the fields below so that it is always to hand.

Type designation:	
Serial number:	

Remember that you should only use genuine LEMKEN spare parts. Reproduction parts have a negative influence on the function of the device, have a shorter service life and present risks and hazards that cannot be estimated by LEMKEN GmbH & Co. KG. They also increase the maintenance costs.

Service and spare parts

Information on service and spare parts is available from your local dealer or our website at www.lemken.com.

CONTENTS

1 GENERAL INFORMATION

1.1 Liability

The "Standard Terms and Conditions of Sales and Delivery" of LEMKEN GmbH & Co. KG, in particular Section IX, shall apply. Liability. In line with the dimensions cited in these conditions the LEMKEN GmbH & Co. KG shall not be held liable for any personal or material damage, when such damage is caused by one or more of the following reasons:

- improper use of the device, see also section entitled "Intended use",
- non-compliance with the operating instructions and the enclosed safety instructions,
- unauthorised changes to the device,
- inadequate monitoring of parts which are subject to wear,
- maintenance work that has not been conducted properly or in good time,
- the use of spare parts that are not original LEMKEN GmbH & Co. KG spare parts,
- accidents or damage through outside influences or force majeure

1.2 Guarantee

The "Standard Terms and Conditions of Sales and Delivery" of LEMKEN GmbH & Co. KG shall apply at all times.

The guarantee period shall be one year from the date of receipt of the implement. We shall rectify any implement faults in accordance with the LEMKEN guarantee guidelines.

1.3 Copyright

These operating instructions represent a document in terms of the law on unfair competition.

Copyright is retained by

LEMKEN GmbH & Co. KG

Weseler Strasse 5

D-46519 Alpen, Germany

These operating instructions are intended to be used by the user of the implement. They contain texts and drawings which must not be

- reproduced,
- divulged or
- communicated in any other way in whole or in part without the express permission of the manufacturer.

Infringements will result in a claim for damages.

1.4 Optional accessories

LEMKEN implements may be equipped with various accessories. The operating instructions below describe both series components and optional accessories.

Please note: These accessories will vary depending on the type of equipment.

2 SYMBOLS USED IN THE OPERATING INSTRUCTIONS

2.1 Hazard classes

The following symbols are used in the Operating Instructions for particularly important information:

DANGER

Denotes an imminent hazard with high risk, which will result in death or severe physical injury, if not avoided.

WARNING

Denotes a possible hazard with medium risk, which could result in death or severe physical injury, if not avoided.

CAUTION

Denotes a low-risk hazard, which could cause light or medium physical injury or property damage, if not avoided.

2.2 Information

Denotes special user tips and other particularly useful or important information for operation and efficient utilisation.

2.3 Environmental protection

Indication of special recycling and environmental protection measures.

2.4 Indication of passages

The following symbols are used for particular passages in the operating instructions:

– Indicates work steps

- Indicates enumerations

3 SAFETY MEASURES AND PRECAUTIONS

General safety instructions for the operator are specified in the chapter entitled «Safety measures and precautions». At the start of some main chapters the safety instructions, which refer to all work to be carried out in this chapter, are listed together. Each safety-relevant work step includes other safety instructions specific to the work step.

3.1 Target group

These operating instructions are restricted exclusively to the use of the device by trained technicians and instructed persons.

3.2 Intended use

The device is manufactured in accordance with state-of-the-art standards and the recognised safety rules. However, the use of the device may result in a risk to life and limb of the user or third parties, or cause damage to the device and other material property. The device may be operated in a technically perfect condition only, in accordance with its designated use and by safety-conscious persons in compliance with the operating instructions.

Intended use also includes:

- compliance with the operating instructions and implementation of the work steps indicated in the operating instructions,
- compliance with the safety and warning signs on the device,
- observance of the power limits of the tractor and device,
- observance of all maintenance specifications and additional checks,
- the use of original spare parts,
- the use of the listed auxiliary and operating materials as well as their environmentally friendly disposal.

Safe operation is not guaranteed unless all instructions, settings and power limits applicable to the device are observed.

The machine is only suitable for the usual agricultural use.

The implement is designed for cultivating light soils only.

3.3 Safety features of the device

To protect the operator and the device, the device is equipped with special safety features in accordance with country specific requirements.

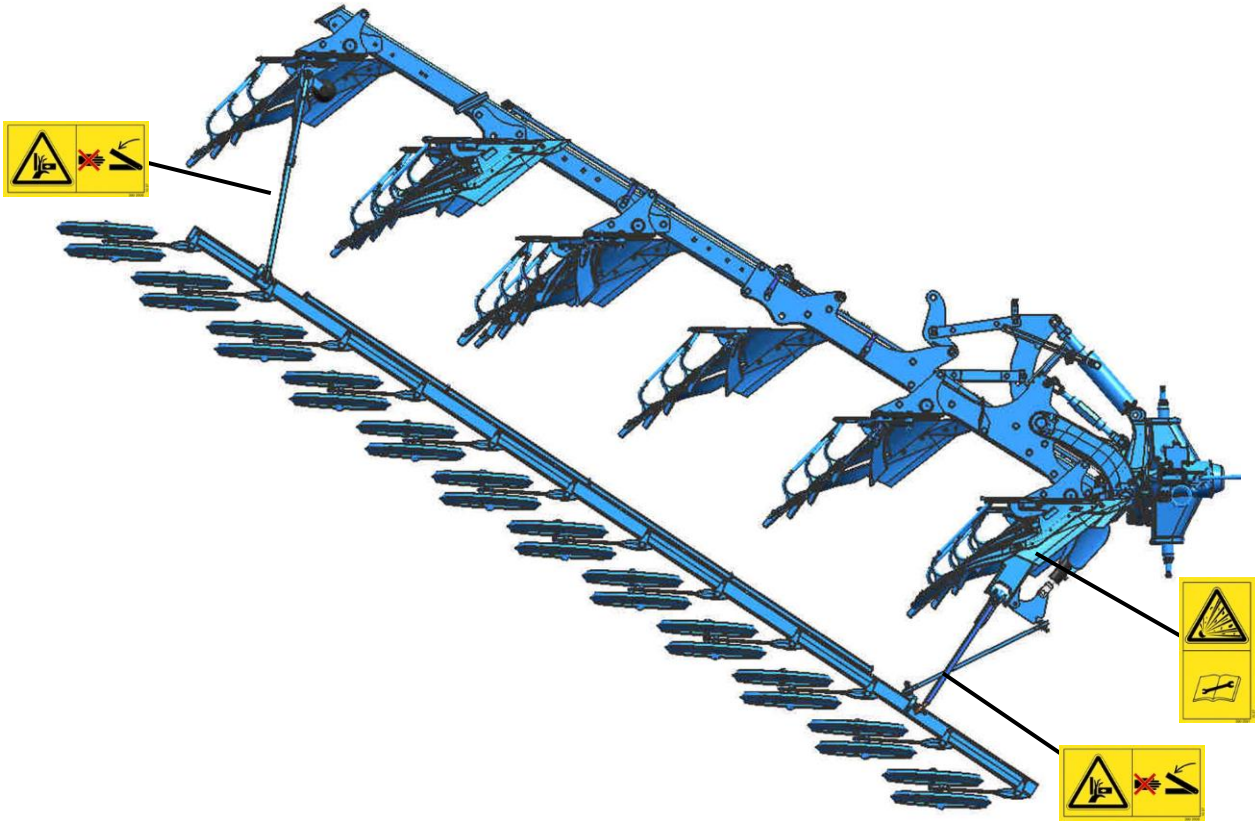
– Always keep all safety devices in working order.

3.4 Safety and warning signs

3.4.1 General information

The implement features all equipment which ensures safe operation. If hazardous areas could not be completely secured with respect to operational safety, warning signs are affixed which indicate these residual risks. Damaged, lost or illegible warning signs must be replaced immediately.

3.4.2 Overview of the position of warning symbols



3.4.3 Meaning of warning signs

– Please familiarise yourself with the meaning of the warning signs.

The following explanations provide detailed information.

Danger of crushing.

Hydraulic accumulator contains gas and oil under pressure. For removal and repair instructions in technical manual must be followed.

3.5 Special safety instructions

Risk of injury due to non-observance of the currently valid occupational safety guidelines

WARNING

If the currently valid occupational safety guidelines are bypassed or safety equipment is rendered unusable when handling the device, there is a risk of injury.

- The operator must personally monitor all work on and with the device.
- The operator instructs his personnel in occupational safety according to the currently valid occupational safety guidelines.

WARNING

Risk of injury due to foreign objects ejected at high speed

During work there is a risk of injury to the face and body by lumps of earth, soil constituents or stones ejected at high speed.

- During work there must be nobody directly in front of, behind or next to the device.
- During work nobody must accompany the device.

WARNING

Risk of injury when freeing casualties

When rescuing people trapped or injured by the device, there is a risk of additional serious injury to the casualty if the hydraulic connections were not connected according to their colour coding as described in the section entitled "Required hydraulic equipment". As a result, functions may run in the opposite direction or may be inverted.

– Before actuating the hydraulics, check that the hydraulic connections of the device are connected to the tractor according to the colour coding.

If there is no identification on the tractor and on the device or if the connections are not connected to the tractor according to their identification, it may not be possible to free the person safely.

If in doubt, leave casualties to be freed by specially trained rescue personnel.

WARNING

Risk of injury on parked implement

The implement is not a toy!

Climbing onto the parked implement can result in severe injuries, e.g. due to slipping or tripping.

Do not climb onto the parked implement.

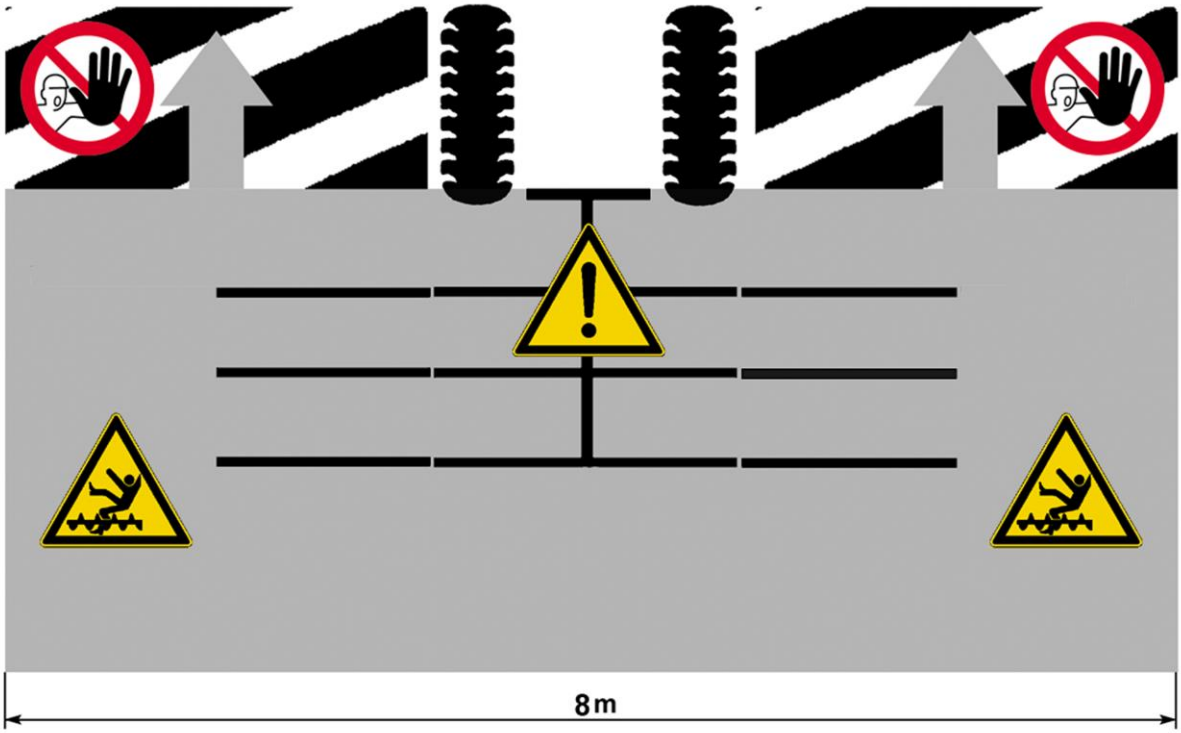
3.6 Danger areas

WARNING

Moving danger area

The danger area of the implement moves with the implement during operation.

While the implement is being operated, persons are not permitted in front of the actual danger area because the danger area moves with the implement.



3.7 Residual risks

Residual risks are particular hazards which occur when handling the device and which cannot be eliminated despite a design in accordance with safety requirements.

Residual risks are not usually obvious and may be the source of a potential injury or health hazard.

3.7.1 Hazard caused by mechanical systems

There is a risk of accidents due to crushing, cutting and striking body parts

- on abruptly moving machine parts,
- on moving machine parts caused by stored mechanical energy in elastic parts, such as springs,
- on an inadequately stable device,
- on the general shape or mounting location of components.

3.7.2 Hazard caused by hydraulic systems

There is a risk of injury to body parts, in particular the face, eyes and unprotected areas of skin, caused by burns and contamination with hydraulic fluid

- due to hot/pressurised hydraulic fluid spraying out of leaking joints or lines,
- due to bursting, pressurised lines or components.

3.8 Applicable rules and regulations

The applicable rules which must be observed during operation of the device are listed below:

- Observe the currently valid national highway code!
- Observe the currently valid national laws and regulations for occupational safety.
- Observe the currently valid national laws and regulations for operational safety.

3.9 Operation on public highways

3.9.1 Lighting system and identification

A proper lighting system, identification and equipment must be on the device if it is to be transported on public roads. Further information can be requested from the appropriate authorities.

WARNING

Risk of accidents due to inadequate steerability

A tractor which is too small or which has inadequate front ballast cannot be manoeuvred safely or steered with adequate tracking stability. As a result, the driver or other road users may be injured or killed.

- Only use a tractor which can be adequately ballasted and safely manoeuvred.
- Ensure that the front axle of the tractor is always loaded with at least 20% of the net weight of the tractor. See section on "Axle loads".

3.9.2 Axle loads

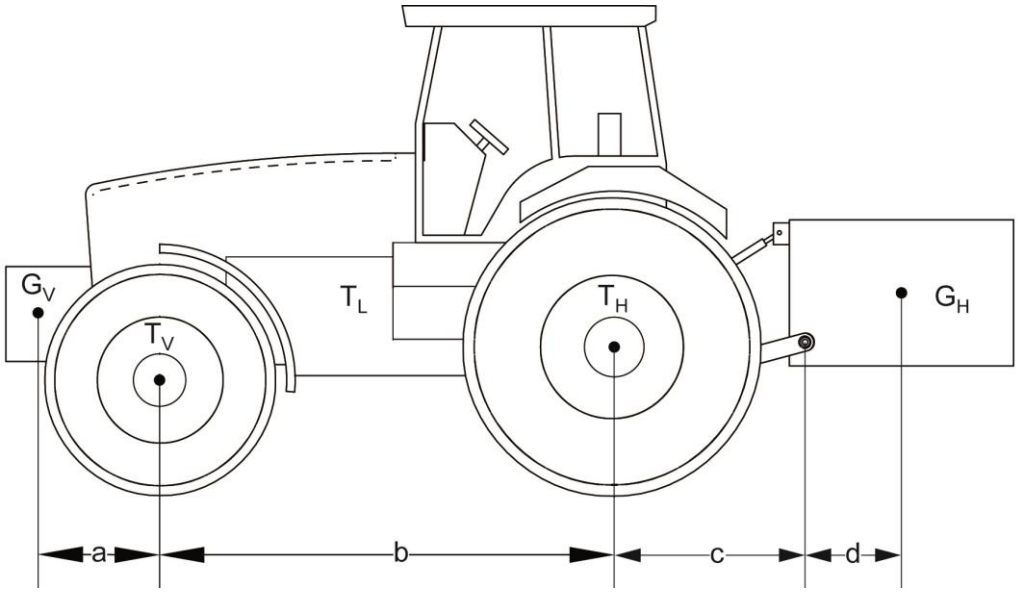
Implements mounted to the front and rear three-point linkage must not result in the following being exceeded:

- permissible gross weight of tractor,
- permissible axle loads of tractor,
- the tractor's tyre load-carrying capacities.

The tractor's front axle must always be loaded with at least 20 % of the tractor's curb weight.

The following data are required for the calculation:

- from the tractor operating instructions,
- from the implement operating instructions,
- which are to be documented through remeasuring.


G_V
T_V
T_L
T_H
G_H
a
b
c
d

Data from tractor operating instructions

– Take the following data from your tractor's operating instructions:

Abbreviation		Data
T_L	Tractor kerb weight (kg)	_____ kg
T_V	Front axle load (kg) of empty tractor	_____ kg
T_H	Rear axle load (kg) of empty tractor	_____ kg

Data from implement operating instructions

– Take the following data from these operating instructions or from the documents for the front weight or rear weight:

Abbreviation		Data
G_H	Gross weight (kg) for rear mounting implement or rear weight	_____ kg
G_V	Gross weight (kg) for front mounting implement or front weight	_____ kg
d	Distance (m) between centre of lower control link ball and centre of gravity for rear mounting implement or rear weight	_____ m

Data to be determined through remeasuring are

– Determine the following data through remeasuring:

Abbreviation		Data
a	Distance (m) between centre of gravity for front mounting implement or front weight and centre of front axle	_____ m
b	Tractor wheelbase (m)	_____ m

c	Distance (m) between centre of rear axle and centre of lower control link	_____ m

Calculation of minimum ballasting value at front $G_{V\,min}$ for rear mounting implement

$$G_{V\,min} = \frac{G_H \times (c + d) - T_V \times b + (0.2 \times T_L \times b)}{a + b}$$

– Enter the calculated minimum ballasting value, as required at the front of the tractor, into the table.

Calculation of minimum ballasting value at rear $G_{H\,min}$ for front mounting implement

$$G_{H\,min} = \frac{G_V \times a - T_H \times b + (0.45 \times T_L \times b)}{b + c + d}$$

– Enter the calculated minimum ballasting value, as required at the rear of the tractor, into the table.

Calculation of actual gross weight G_{tat}

$$G_{tat} = G_V + T_L + G_H$$

– Enter the value for the calculated actual gross weight and the permissible gross weight as given in the tractor's operating instructions into the table.

Calculation of actual front axle load $T_{V\,tat}$

$$T_{V\,tat} = \frac{G_V \times (a + b) + T_V \times b - G_H \times (c + d)}{b}$$

– Enter the value for the calculated actual front axle load and the permissible front axle load as given in the tractor's operating instructions into the table.

Calculation of actual rear axle load $T_{H\ tat}$

$$T_{H\ tat} = G_{tat} - T_{V\ tat}$$

– Enter the value for the calculated actual rear axle load and the permissible rear axle load as given in the tractor's operating instructions into the table.

Tyre load-carrying capacity

– Enter double the value (for two tyres) for the permissible tyre load-carrying capacity (see, e.g. tyre manufacturer's documentation) into the table.

Table	Actual value according to calculation			Permissible value according to tractor operating instructions			Double permissible tyre load-carrying capacity [two tyres]	
Minimum ballasting, front	$\mathbf{G_{V\ min}}$	kg		-			-	
Minimum ballasting, rear	$\mathbf{G_{H\ min}}$	kg		-			-	
Gross weight	$\mathbf{G_{tat}}$	kg	≤	$\mathbf{T_L}$	kg		-	
Front axle load	$\mathbf{T_{V\ tat}}$	kg	≤	$\mathbf{T_V}$	kg	≤	kg	
Rear axle load	$\mathbf{T_{H\ tat}}$	kg	≤	$\mathbf{T_H}$	kg	≤	kg	

3.9.3 Correct behaviour in road traffic

– When driving on public highways, observe the relevant statutory national regulations.

Driving behaviour, steering and braking performance are influenced by ballast weights.

– Ensure that the tractor has adequate steering and braking performance.

– When driving around corners, take into account the wide radius and the inertia of the device.

It is prohibited to transport people on the device.

3.10 Obligation of the operator

– Before switching on the device, read the operating instructions.

– Follow the safety instructions!

– Wear appropriate protective clothing when carrying out any work on the device. Protective clothing must be tight-fitting!

– Observe generally accepted and other obligatory regulations for the prevention of accidents and protection of the environment and add them to the operating instructions!

The operating instructions are an important component of the device.

– Ensure that the operating instructions are always ready available at the installation location of the device and are kept for the entire service life of the device.

– If the device is sold or the operating company changes, pass on the operating instructions with the device!

– Keep all safety instructions and danger warnings on the device in a completely legible state. The affixed safety and warning signs provide important information on safe operation. Comply with them to ensure your safety!

– Do not alter, retrofit or modify the device, potentially impairing safety, without the approval of the manufacturer. The manufacturer is not liable for any damage resulting from arbitrary modifications to the device!

- Operate the device only in compliance with all connection and default values provided by the manufacturer!
- Use original spare parts only!

3.11 Safe use of the implement

3.11.1 General

- Before starting work, familiarise yourself with all the equipment and controls and how they work.
- Do not operate the implement unless all the safety guards are in place and correctly positioned. For field work: remove safety guards that are designed for transport only.
- Always attach the implement correctly and only attach it to the equipment provided for that purpose.
- Always take great care when attaching the implement to and detaching it from the tractor.

There is a risk of injury due to crush and shear points in the area around the three-point linkage.

- Before attaching or detaching the implement to/from the three-point linkage, move the control device to the position where the implement cannot be raised or lowered accidentally.
- Do not stand between the tractor and implement when operating the external controls for the three-point linkage.

Do not stand in the danger area around the implement or climb onto the implement during operation.

There is a risk of injury in the wider operating area around the implement, e.g. from flying stones.

- Before operating the hydraulic equipment, ensure that nobody is standing in the danger area. There is a risk of crushing and shearing from power-operated components.

- Do not stand between the tractor and the implement. This is only permitted when the tractor is secured by the parking brake and wheel chocks to prevent it from rolling away.
- Always keep the implement clean to avoid the risk of fire.
- Lower the implement onto the ground before leaving the tractor.
- Switch off the engine.
- Remove the ignition key.

3.11.2 Personnel selection and qualifications

- The tractor driver must have the appropriate driving licence.
- All work on the implement must be carried out by properly trained and instructed personnel. The personnel must not be under the influence of drugs, alcohol or medication.
- All maintenance and servicing work must be carried out by trained technicians or persons who have received appropriate instruction.
- All work on electrical components must be carried out by an electrician in accordance with the electrical safety regulations.

3.11.3 Hydraulic system

- The hydraulic system is under high pressure.
- When connecting hydraulic cylinders and motors, ensure that the specified hydraulic hose connection is used.
- When connecting the hydraulic hoses to the tractor hydraulics, make sure that the hydraulic system is depressurised on both the tractor and the implement.
- If there are hydraulic functional connections between the tractor and the implement, coupling sleeves and plugs must be identified to prevent operating errors. If the connections are reversed, the function is reversed (e.g. raising/lowering) - Risk of accident.
- Check hydraulic hose lines regularly and replace if damaged or showing signs of aging. The replacement hose lines must meet the technical requirements stipulated by the implement manufacturer.

- When searching for leaks, use appropriate equipment because of the risk of injury.
- Fluid (hydraulic fluid) which escapes under high pressure can penetrate the skin and cause severe injuries. If injuries occur, call a doctor immediately. Risk of infection.
- Before working on the hydraulic system, set down the implement, depressurise the system and shut down the motor.

4 HANDING OVER THE IMPLEMENT

– As soon as the implement is delivered, ensure that it corresponds with the order package.

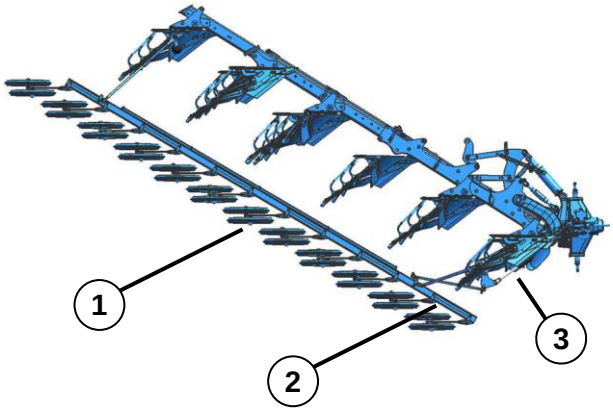
– Also check the type and completeness of any supplied accessories.

When the device is handed over, your dealer will explain how it works.

– As soon as the implement is handed over, familiarise yourself with the implement and its functions.

5 LAYOUT AND DESCRIPTION

5.1 Overview



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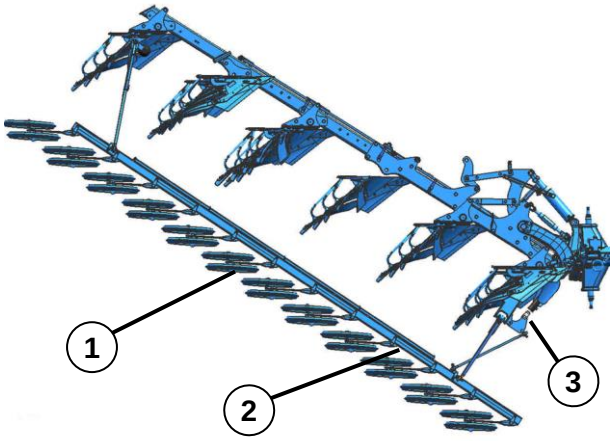


Working position

1 Furrow press rings

2 Furrow press frame

3 Hydraulic cylinder

5.2 Description

5.2.1 General information

The FlexPack is an integrated packer for light and sandy soils.

The packer can be combined with the following 4-, 5- and 6-furrow LEMKEN ploughs:

- Juwel 7 M / Juwel 7 M V
- Juwel 8 M / Juwel 8 M V
- Juwel 10 M / Juwel 10 M V

The packer may be mounted on the plough only on a level and solid surface and with the plough attached to the tractor.

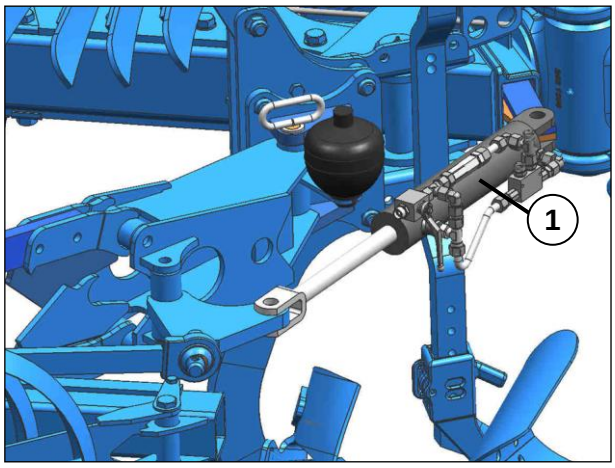
5.2.2 Furrow press rings

Furrow press rings which are arranged as staggered pairs with a Ø of 600 mm and a V-profile of 90 degrees prevent blockages during operation.

5.2.3 Furrow press frame

The FlexPack automatically adjusts the working width of the plough, as in the working position, the furrow press frame runs parallel to the plough frame.

5.2.4 Hydraulic cylinder

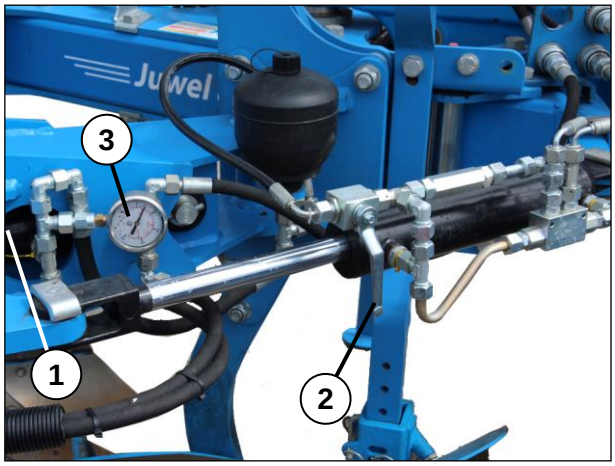


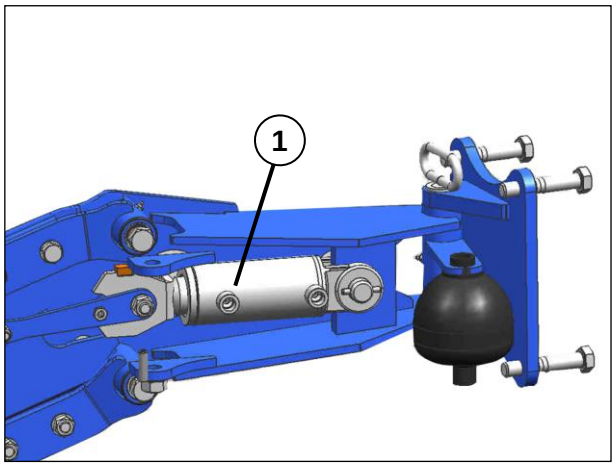
The hydraulic cylinder (1) is used to pivot the FlexPack in and out.

6 OPERATION

6.1 Ground pressure of the furrow press

The hydraulic cylinder (1) must be retracted before each adjustment.



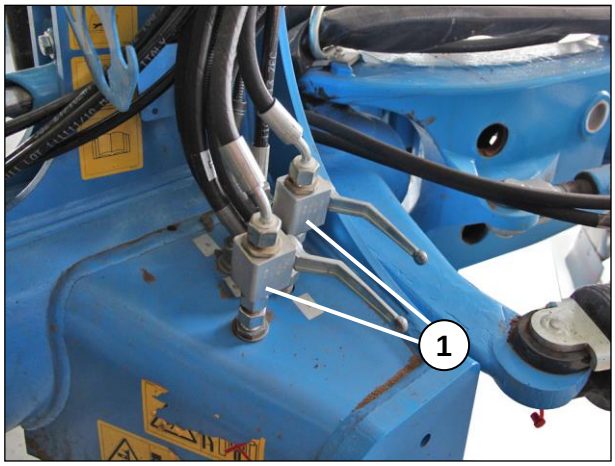


The ground pressure can be adjusted via the hydraulic cylinder (1).

To increase or reduce the pressure:

- Switch the tractor control unit to increase or decrease the pressure.
- Open the shut-off valve (2) and observe the pressure gauge (3).
- Close the shut-off valve (2) as soon as the required pressure (maximum 100 bar) is reached.

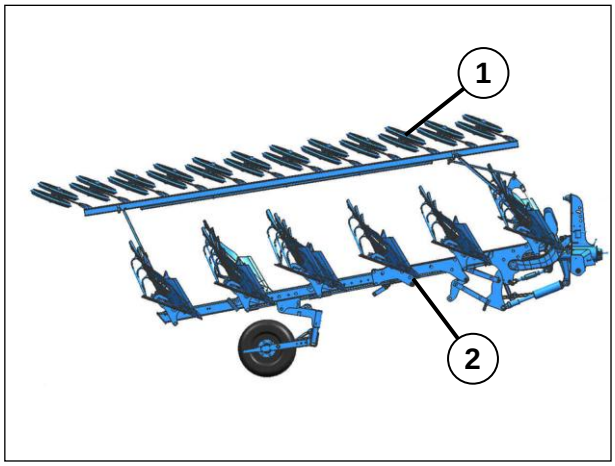
6.2 Locking the furrow press in the centre position



If the furrow press is not to be used:

- Raise the furrow press to the centre position.
- Close the shut-off valve (1) as shown in the illustration.

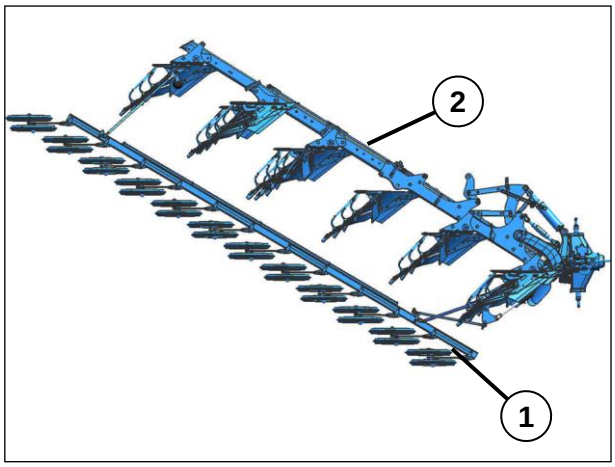
6.3 Changing from the transport position to the working position



Transport position

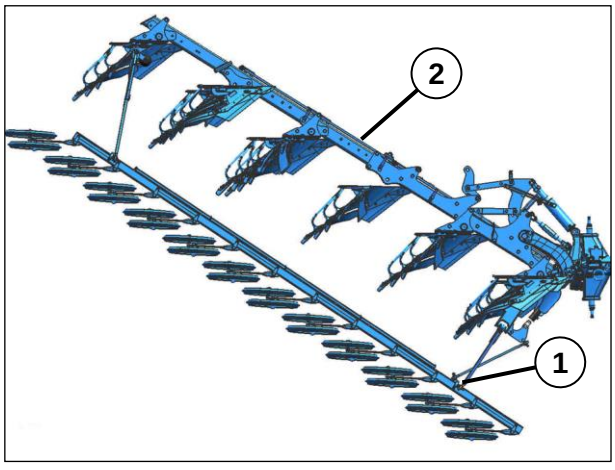
The furrow press (1) is brought from the transport position to the working position using the control unit of the tractor.

– First, turn the plough (2) with the furrow press (1) into the folded in position.



Folded position

– Then swivel the furrow press (1) into the folded out position = working position.



Folded out position = Working position

7 TRANSPORTATION

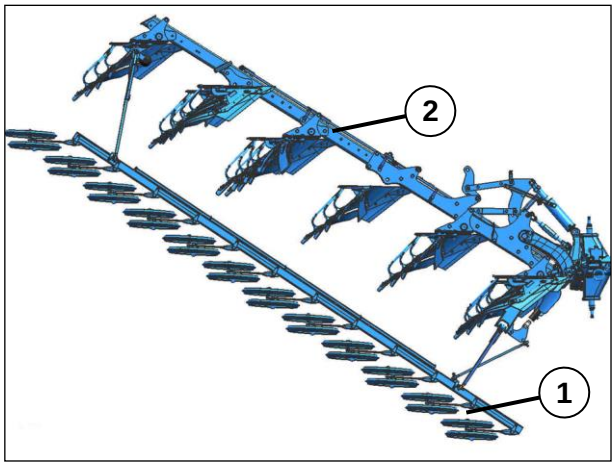
7.1 General

The FlexPack is located above the plough and can therefore be transported without further conversion work. The permissible transport height for travel on public roads must be observed.

– Take care that the tractor can be steered properly.

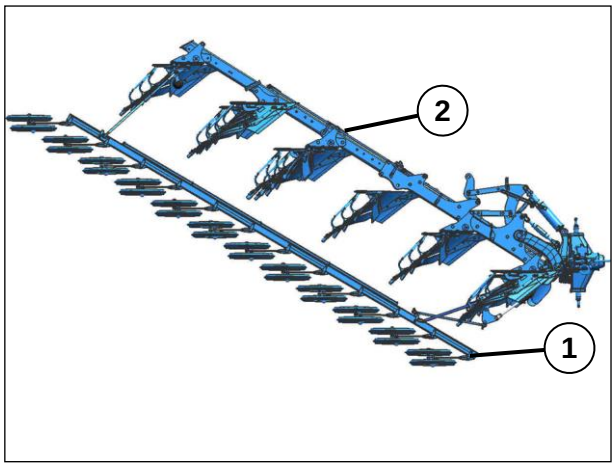
The control lever must be secured against lowering during road travel with the raised implement.

7.2 Changing from the working position to the transport position



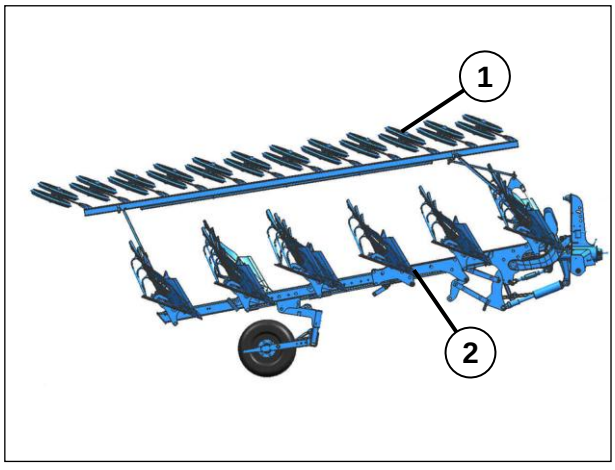
Folded out position = Working position

– First, turn furrow press (1) from the folded out position to the folded in position.



Folded position

– The turn the plough (2) with the furrow press (1) into the transport position.



into the

8 PUT THE IMPLEMENT OUT OF OPERATION

8.1 Shutting down the implement in an emergency

– In an emergency shut down the implement via the tractor.

– Switch the tractor engine off.

– Remove the ignition key.

CAUTION

Damage caused by improper storage of the implement

If incorrectly or improperly stored, the implement may be damaged, e.g. by humidity and dirt.

The implement should be deposited on a flat and adequately stable base only.

– Clean the implement prior to storage.

– Lubricate the implement according to "Lubrication diagram".

8.2 Disposal

Metal and plastic components must be recycled.

– When disposing of the implement, ensure that the individual components as well as the auxiliary and operating materials are disposed of in an environmentally friendly manner.

9 MAINTENANCE AND REPAIRS

9.1 Special safety instructions

9.1.1 General

Risk of injury when carrying out maintenance and repair work

There is always the risk of injury when carrying out maintenance and repair work.

WARNING

- Use suitable tools, suitable climbing aids, platforms and support elements.
- Always wear protective clothing.
- Carry out maintenance and repair work only on an extended and deposited device or on a device secured by suitable support elements to prevent it from extending or dropping.

9.1.2 Immobilise the implement for maintenance and repairs

Risk of accidents when tractor starts up

Injuries may occur if the tractor starts moving during maintenance and repair work.

WARNING

- Switch off the tractor engine before carrying out any work on the implement.
- Secure the tractor against unintentional starting.
- Remove the ignition key.
- Affix a warning sign in front of the implement and in front of the tractor to advise outsiders of maintenance work.
- Secure the tractor against rolling away using wheel chocks.

9.1.3 Working on the hydraulics

Risk of accident from spurting hydraulic fluid

WARNING

Fluid (hydraulic fluid) which escapes under high pressure may penetrate your skin and cause severe injuries. If injuries occur, call a doctor immediately.
Always depressurise the hydraulic system before working on it.

– Always wear appropriate protective clothing before working on the hydraulic system.

9.1.4 Personnel qualifications

CAUTION

Risk of accident due to inadequate qualifications of the maintenance and repair personnel

Maintenance and repair work require appropriate training.

All maintenance and repair work may only be carried out by trained and instructed personnel.

9.1.5 Protective equipment

CAUTION

Risk of accident due to working without protective equipment

There is always an increased risk of accidents when carrying out maintenance work and repairs.

– Always wear appropriate protective equipment.

9.1.6 Utilised tool

WARNING

Risk of accident due to use of unsuitable tool

If working with an unsuitable or defective tool, there is a risk of accidents and injuries.

– Perform all work on the device with a suitable and functional tool only. This applies in particular to the use of lifting gear.

Risk of back injuries

WARNING

If your posture is not correct when installing or fixing heavy or cumbersome components, you may suffer back injuries which require long convalescence.

Installation and maintenance work may be carried out by trained and instructed personnel only.

– Perform all work on the device with a suitable and functional tool only. This applies in particular to the use of lifting gear.

Risk of accident due to tool slipping off

WARNING

If applying a large force, e.g. when loosening bolts, the tool may slip off. This may result in hand injuries on sharp-edged parts.

– Avoid applying a large force by using suitable auxiliary equipment (e.g. extensions).

Check nuts and bolt heads, etc. for wear and, if required, consult an expert.

9.2 Environmental protection

– Ensure that all materials and operating supplies used to maintain and care for the device are disposed of in line with environmental regulations.

– All recyclable components should be recycled.

– Observe the national regulations applicable in your country.

9.3 Tightening torques

9.3.1 General

– Secure self-locking nuts that have been loosened against working themselves loose again by:
  - Replacing them against new self-locking nuts
  - Using lock washers
  - Using locking compounds such as Loctite

The tightening torques set out below refer to screw connections that are not specifically mentioned in these operating instructions. Specific tightening torques to be applied are mentioned in the text.

– Identify the relevant screw connection by means of the spare-parts list or the markings on the screw head.

9.3.2 Bolts and nuts made of steel

Diameter	Strength category		
	8.8 [Nm*]	10.9 [Nm*]	12.9 [Nm*]
M 6	9,7	13,6	16,3
M 8	23,4	32,9	39,6
M 10	46,2	64,8	77,8
M 12	80,0	113	135
M 14	127	178	213
M 16	197	276	333
M 20	382	538	648
M 24	659	926	1112
M 30	1314	1850	2217

*μ_g = 0,12

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