

# **Operating Instructions**

# Mounted Reversible Ploughs Juwel 8 i V



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Item no. 17513324 00/10.19

# 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.

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# 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.



## 1.5 Type plate

The implement carries a type plate.

The type plate can be found at front right on the implement.

The operating instructions may apply to different implement types or variants of the implement.

The operating instructions indicate information which only applies to a specific implement type or a specific variant of the implement.

The type plate will help you to identify the implement type and variant.



## Layout of the type plate



Illustration: Example of a type plate

<b>EXERCISES Strasse</b>	e s Germany 9
Marque 10	PTAC (7) kg
Type/variante/version	Masse max. essieu 6 kg
Série 1	Masse max. attelage 5 kg
No. d'identification	Année de fabrication 4
Désignation	Réception par la DREAL du Centre le

Illustration: Example of a type plate, France only

- 1 Series
- 2 Type designation
- 3 Serial number
- 4 Year of manufacture
- 5 Permissible drawbar load [kg]
- 6 Permissible axle load [kg]
- 7 Permissible gross weight [kg]
- 8 Company logo and address
- 9 CE marking (only within the European Union)
- 10 Name of manufacturer
- 11 Type, variant, version
- 12 Type approval date



# 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.



## 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 Warning sticker positions





# 3.4.3 Meaning of warning signs

Please familiarise yourself with the meaning of the warning signs.

The following explanations provide detailed information.



Please read and observe the operating instructions and safety instructions before starting up the implement for the first time.



Before carrying out maintenance or repair work, switch off the engine and remove key.



Do not remain in the operating and swivel area of the implement.



Danger of crushing.





Keep well clear of the turning and swinging area of the implement.



When the three-point power lift is activated, stay outside of the lifting range of the three-point suspension.

## 3.5 Special safety instructions

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

WARNING

- G 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



of earth, soil constituents or stones ejected at high speed.During work there must be nobody directly in front of, behind or

During work there is a risk of injury to the face and body by lumps

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



### 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.

#### WARNING



 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

#### 3.6.1 Danger areas during implement operation

#### Moving danger area

The danger area around the implement moves with the implement during operation. The danger area includes the area extending across the entire width (a) of the implement in the direction of travel. Allow an additional 2 m safety distance from the implement on each side.



WARNING

- Pay attention to the entire danger area while the implement is moving in the field. Stop if necessary.
- Never get off the tractor while it is moving.
- Never allow anyone else to get on or off the tractor while it is moving.





### 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.

### 3.9.2 Requirements of the tractor

 Ensure that the tractor with mounted device always reaches the stipulated braking deceleration.

Observe the permitted axle loads, gross weights and transportation dimensions, see also section entitled "Axle loads"!

Observe the permitted power limit of the tractor!

### Risk of accidents due to inadequate steerability

WARNING



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".



#### 3.9.3 Axle loads



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.



## Data from tractor operating instructions

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

Abbreviation		Data
TL	Tractor kerb weight (kg)	kg
T <sub>V</sub>	Front axle load (kg) of empty tractor	kg
Т <sub>н</sub>	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 <sub>H</sub>	Gross weight (kg) for rear mounting implement or rear weight	kg
Gv	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 imple- ment or rear weight	m

#### Data to be determined through remeasuring are

- Determine the following data through remeasuring:

Abbreviation		Data
а	Distance (m) between centre of gravity for front mounting implement or front weight and centre of front axle	m
b	Tractor wheelbase (m)	m
С	Distance (m) between centre of rear axle and centre of lower control link	m



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

$$G_{V \min} = \frac{G_{H} x (c + d) - T_{V} x b + (0.2 x T_{L} x b)}{a + b}$$

 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

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

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

## Calculation of actual gross weight G<sub>tat</sub>

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

 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 $T_{V\,tat}$

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

 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	Actua cordin	al value ac- g to calcula- tion		Per acco opera	missible value ording to tractor ating instructions	5 5	Double permissible tyre load-carrying capacity [two tyres]		
Minimum ballas- ting, front	$G_{V \min}$	kg	3		-		-		
Minimum ballas- ting, rear	G <sub>H min</sub>	kg	3		-		-		
Gross weight	G <sub>tat</sub>	kg	۷	ΤL	kg		-		
Front axle load	T <sub>V tat</sub>	kg	<	Τv	kg	<	≤ kg		
Rear axle load	T <sub>H tat</sub>	kg	<	Тн	kg	<	≤ kg		

#### 3.9.4 Check before departure

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- Before driving with the implement raised, lock the control lever of the control unit; otherwise it may drop and the implement may be unintentionally lowered.
- Mount and check the transport equipment such as the lighting system, warning signs and protective devices.

The actuating cables for the quick-release couplings of the tractor must hang loose and must not actuate themselves in any position.

- Before starting up and operating the implement, check the immediate vicinity around it. No-one must be standing in this area!
- Ensure that visibility is adequate.

Observe permitted axle loads, total weights and transportation dimensions.

#### 3.9.5 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 STRUCTURE AND DESCRIPTION

#### 5.1 Overview



- 1 Headstock with cross shaft
- 2 Turnover device
- 3 Job computer
- 4 Optiquick adjustment centre
- 5 Basic frame
- 6 Plough bodies

- 7 Lighting equipment, not shown
- 8 Disc coulter
- 9 Depth wheel
- 10 Additional tools (skimmer, trashboard)



### 5.2 Description

#### 5.2.1 Headstock



The headstock (1) with top link pin (2) and cross shaft (3) conforms to ISO 730.

Cross shaft L2/Z3 conforms to category 3 N.

Cross shaft L3/Z3 conforms to category 3.

Cross shaft L3/Z4 conforms to category 4 N.

The top link pin (2) conforms to category 3 or optionally category 4.

#### 5.2.2 Turnover device

The ploughs in the Juwel 8 i V series have the electrohydraulic TurnControl Pro G120 turnover device.

#### 5.2.3 Job computer

The job computer on the headstock is responsible for implement control.

It is operated from the terminal on the tractor.

### 5.2.4 Optiquick adjustment system

The plough line and the front furrow width can be adjusted independently. This permits ploughing without lateral force at every working width.

#### 5.2.5 Basic frame

Ploughs in the Juwel 8 (8V) / Juwel 8M (8M V) series have a 140 x 140 x 10 mm square profile frame.

The underframe clearance is 80 cm, optionally 85 cm.


### 5.2.6 Plough body



### DuraMaxx

The mould boards (1) or slats (2) are attached to the body (4) with hooks (3). This means that they can changed without having to use tools.





### 5.2.7 Lighting system

The lighting system contributes significantly to increasing the safety of the implement in road traffic.



### 5.2.8 Disc coulters



The large, beaded (1) disk coulter provides for a clean furrow.

### 5.2.9 Uniwheel

The ploughs in the Juwel 8 i V series have a hydraulically adjustable uniwheel 340/55-16.



### 5.2.10 Working tools

The following working tools are available as accessories:



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### 6 PREPARATIONS ON TRACTOR

### 6.1 Tyres

The air pressure must be identical, particularly on the rear tractor tyres. Under difficult conditions, additional wheel weights should be used or the tyres topped up evenly with water. See operating instructions of the tractor manufacturer.

### 6.2 Lifting rods

The lifting rods should be adjusted so they are as short as possible and of equal length. See operating instructions from the tractor manufacturer.

### 6.3 Top Link

Where there are alternative fitting positions at the tractor for the top link, fit the top link tractor-sided as hight as possible.

### 6.4 Chains and stabilisers of the three-way linkage

The chains or stabilisers must be adjusted so that they ensure adequate lateral movement of the lower link of the tractor during work.

• They must be laterally locked if the lower links are raised and are in the transport position.



 Some makes of tractor are equipped with automatic side struts, which must be specially adjusted. If the tractor suddenly pulls to one side or the implement works with different widths on the right and left, this may be caused by the side strut not having been released. The function of the locking device of the automatic side strut should be checked and re-adjusted if necessary. See the operating manual provided by the tractor manufacturer.

### 6.5 Hydraulics

For work the tractor hydraulics must be set to 'Draft' or 'Mixed' Control. See manufacturer's instructions.

### 6.6 Hydraulic equipment required

The implement is supplied as standard with separate hydraulic connections for load-sensing hydraulics.

The following spool valves must be available on the tractor in order to operate the individual hydraulic devices listed below:

Consumer /	Hydraulic systems required			
settings	Load sensing			
Inclination				
Working width				
Front furrow width				
Working depth				
Attachment arm	- F, I, LS			
Overload protection	-			
Integrated furrow press				
OF adjustment				

### 6.7 Power supply, electronic control system

A supply voltage of 12 V is required for the electronic control system.

Undervoltages and overvoltages cause malfunctions and may destroy electrical equipment.

Power for the entire electronic control system is supplied via the power supply cable.

The power supply cable is directly connected to the tractor battery.

On tractors with ISOBUS implement control, the ISOBUS sockets are used.

See the operating instructions for the TurnControl Pro electronic control system.



### 7 PREPARING THE IMPLEMENT



Before using the implement for the first time, set it up as described below while you are still in the yard and familiarise yourself with the implement and its functions.

The settings are adjusted with the implement mounted to the tractor.

### 7.1 Removing the lighting equipment



- Pull the plug out of the socket (4).



- Remove the linch pin (3).
- Remove the lighting equipment (1) from the flange plate.

### 7.2 Skimmer

See «Skimmer, page 60».

### 7.3 Three-point connection

### Loss of the implement

- **WARNING** The category of the tractor's three-point linkage and the category of the cross shaft and top link pin must correspond. Otherwise the cross shaft and top link pin may slip out of the linkage as a result of vibration or when travelling on uneven ground.
  - Ensure that the category of the three-point linkage precisely matches the diameter of the cross shaft and the top link bolt.

The maximum permissible tractor outputs and dimensions for each category according to ISO 730-1 are shown in the table below:



Tractor	output	Cat.	Cross shaft pivot diame- ter (mm)	Length of cross shaft (shoulder distance) (mm)	Distance, tractor lower links (mm)	Distance from cross shaft and extension of the point of inter- section between the lower links (mm)
kW	HP		Α	В	С	D
60 - 185	82 - 251	3N	36.6	825	390 - 505	1800 - 2400
60 - 185	82 - 251	3	36.6	960	480 - 635	1900 - 2700
110 - 350	150 - 476	4N	50.8	960	480 - 635	1900 - 2700

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### 8 ATTACHING THE IMPLEMENT

### Risk of injury from the parked implement

Never enter the danger zone between the tractor and implement.

### WARNING



- Read and observe the "Safety measures and precautions" section and the special safety instructions "Risk of injury from the parked implement".
- The implement is not a play area.
  - Climbing on the parked implement may cause serious injuries, e.g. as a result of slipping or tripping.

Do not climb on the parked implement.

### 8.1 General





A plough which has been parked in the working position should be mounted on the tractor as follows:

- Switch the tractor hydraulics to position control.
- Connect the tractor lower links to the cross shaft (1).
- Secure the lower links.
- Take the load off the stand (2).
- Pull out the locking bar (3) with a twisting motion.
- Pivot the stand (2) upwards.
- Secure the stand (2) with the locking bar (3).





- Connect the top link (4). The top link (4) should slope upwards towards the plough during ploughing work.
- Secure the top link pin (4). Only use the top link pin supplied with the plough.



In hilly terrain, on 5-, 6- or 7-furrow ploughs always connect the top link to the slot in such a way that the top link is ideally at the front of the slot during ploughing.

- Switch off the tractor engine.
- Connect the hydraulic hoses and electrical cables.
- Switch the hydraulic system to traction control or mixed control for operation.
   Refer to the operating instructions from the tractor manufacturer for details.

### 8.2 Upper link length

- Lower the plough.
- Stand the plough on level ground.
- Turn the top link until the front of plough is 1 to 3 cm higher than the rear, depending on the working width.

The top link is mounted in the slot:

 Raise the plough until the top link pin is at the front of the slot and the front of the plough is 1 to 3 cm higher than the rear, depending on the working width

### 9 UNCOUPLING THE IMPLEMENT

### 9.1 Specific safety information

### Risk of injury from the parked implement

Never enter the danger zone between the tractor and implement.

WARNING



 Read and observe the "Safety measures and precautions" section and the special safety instructions "Risk of injury from the parked implement".

The implement is not a play area.

Climbing on the parked implement may cause serious injuries, e.g. as a result of slipping or tripping.

Do not climb on the parked implement.

### 9.2 General

The procedure for detaching the plough from the tractor is as follows:

The plough must be in the right-hand working position.

- Park the plough on firm, level ground.
- Switch the tractor hydraulics to position control.



- Switch off the tractor engine. (Depressurise the load-sensing system.)
- Disconnect the hydraulic hoses and electrical cables.
- Slide on the protective caps.
- Disconnect the top link from the headstock (5).





- Hold the stand (2) with one hand.
- Pull out the locking bar (3) with a twisting motion.
- Pivot the stand (2) downwards.
- Secure the stand (2) with the locking bar (3).

### CAUTION



Risk of injury when the stand pivots downwards

- Release the locks on the lower links.
- Lower the plough completely.
- Check that the lower links are fully disconnected from the cross shaft.



When the plough is parked, the headstock (5) is sloping, which can make subsequent re-attachment more difficult.

 Before parking the plough, "straighten" the headstock (5) by setting the inclination to the appropriate angle.

This makes it easier to attach the plough again subsequently.





Parking a plough with subsoilers:

To ensure that the plough is stable, remove the subsoilers (6) from the underside of the plough.

- Remove the locking bar (7).
- Pull the subsoiler (6) out.

### 10 DRIVING ON PUBLIC ROADS

### 10.1 Laws and regulations

All laws and regulations relating to transport on public roads must be observed.

### 10.2 Warning boards and lighting

The implement must be fitted with warning boards and lighting if it is mounted on the tractor and transported on public roads.

The warning boards and lighting must be removed while working in the field to ensure that they are not damaged.

### **10.3 Transport speed**

The maximum permissible driving speed during transport with the uniwheel (unidepth control wheel) on a smooth road is 30 km/h. On uneven terrain and on roads with potholes you should drive at a much lower speed to avoid damaging the implement!

### 10.4 Uniwheel



A uniwheel must always be used if there is insufficient load on the front axle and this compromises the steerability of the tractor.

### **10.5** Installing the lighting equipment

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- Install the lighting equipment (1) on the flange plate (2) as shown.
- Fit the linch pin (3).



- Insert the plug into the socket (4).



 Plug the connection cable into the 7-pin socket (5) on the plough and the 7-pin socket on the tractor.



### Prevent damage

- Remove the lighting equipment before starting work in the field.

### 11 OPERATION

### 11.1 Turning the plough frame

- Observe the safety measures and precautions, see page 15.
- DANGER Before turning the plough, always ensure that nobody is standing within the folding and swivelling range of the plough.
- - Only operate the turnover device from the tractor cab.
  - Do not kink the hydraulic hoses.
  - Keep the hose connections clean.



The turnover device has a double-acting turnover ram (1) with automatic locking device and switching.

- Lift the plough completely before turning it.

For further operating information, see the operating instructions for the TurnControl Pro electronic control system.

### WARNING



In ploughs with a frame swivel cylinder, the frame swivels in before turning and out again after turning.



### 11.2 On-land version (OF version)



- Observe the safety measures and precautions, see page 15.

### 11.2.1 General



The implements are also available in an on-land version. In this version, the implement can be used either on-land or in the furrow.

O operation = on-land ploughing

F operation = ploughing in the furrow

The OF plough has an Optiquick adjustment centre with:

- a long main link (1),
- a hydraulic ram (2) for OF conversion and front furrow adjustment
- a hydraulic ram (3) for traction point adjustment and frame swivelling.



### 11.3 Converting from F operation to O operation

Converting from O operation to F operation



For conversion from F operation to O operation:

- Retract the inner hydraulic ram (2).
- Set the outer hydraulic ram (3) so that the plough headstock is at approximately a right angle (90°) to the landsides on the plough bodies.

See the operating instructions for the TurnControl Pro electronic control system.

F operation

11.4

# 

O operation

For conversion from O operation to F operation:

- Extend the inner hydraulic ram (2).

See the operating instructions for the TurnControl Pro electronic control system.



### 12 ADJUSTMENTS

- Read and follow the section entitled "Safety and protection measures.
- CAUTION



- The implement may only be used, maintained and repaired by people who are familiar with it and who are aware of the haz-ards involved.
- All adjustments and repair work, as well as the rectification of any malfunctions, is to be conducted when the drive has been switched off and the engine is at a standstill only. Remove the ignition key.

### Risk of accidents while making adjustments

DANGER

During all adjustment work, there is a risk of crushing, cutting, jamming and impacts to the hands, feet and body on heavy and - in part - spring-loaded and/or sharp-edge parts.



Adjustment work may be carried out by appropriately instructed personnel only.

- Always wear appropriate protective clothing.
- Always observe the currently valid operational safety and accident prevention regulations.



### 12.1 General



The following settings are adjusted with the TurnControl Pro electronic control system.

- Front furrow width
- OF conversion
- Inclination
- Working depth
- Working width
- Hydromatic overload safety device
- Integrated furrow press

See the operating instructions for the TurnControl Pro electronic control system.

### 12.2 Optiquick adjustment centre

### 12.2.1 Standard version

### Front furrow width

Set the front furrow width using the hydraulic ram (1) so that the front furrow width corresponds to the working width of the following plough bodies.

### **Pull line**

Set the tractor/plough pull line using the screw (2) so that there is no side pull.

Tractor pulls towards the ploughed land.

- Turn the screw (2) to make it longer.

Tractor pulls towards the unploughed land.

- Turn the screw (2) to make it shorter.

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### 12.2.2 On-land version

### F operation



Set the front furrow width using the hydraulic ram (2).

See the operating instructions for the TurnControl Pro electronic control system.

Narrower front furrow width:

=> Retract the hydraulic ram (2).

Wider front furrow width:

=> Extend the hydraulic ram (2).



The hydraulic ram (3) is used for side pull correction / adjusting the tractor/plough pull line.

See the operating instructions for the TurnControl Pro electronic control system.

Tractor pulls towards the ploughed land:

=> Retract the hydraulic ram (3).

Tractor pulls towards the unploughed land:

=> Extend the hydraulic ram (3).



### O operation





# Distance between the tractor and the furrow edge

Set the distance between the tractor and the furrow edge using the hydraulic ram (2). See the operating instructions for the TurnControl Pro electronic control system.

Distance too short

=> Retract the hydraulic ram (2).

Distance too long

=> Extend the hydraulic ram (2).

### Side pull correction / adjusting the tractor/plough pull line

Adjust the tractor/plough pull line using the hydraulic ram (3). See the operating instructions for the TurnControl Pro electronic control system.

Tractor pulls towards the ploughed land

- Retract the hydraulic ram (3).

Tractor pulls towards the unploughed land

- Extend the hydraulic ram (3).

### 12.3 Inclination

During ploughing, the legs should be perpendicular to the ground when viewed in the direction of travel. When the inclination is set correctly, the ploughed field will have a uniform appearance.

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### 12.4 Working depth

For information on adjusting the tractor hydraulics, refer to the operating instructions from the relevant tractor manufacturer. The tractor hydraulics must always be set to draft control or mixed control.

The uniwheel on the plough is only intended as a depth control wheel which prevents the plough from working too deep. To prevent excessive slippage, transfer as much of the plough's weight as possible to the tractor. Excessive slippage results in premature tyre wear and increases fuel consumption.

### 12.5 Working width



4 furrows



From 5 furrows

After adjusting the basic plough settings using the Optiquick adjustment centre, you can change the working width for each body from the tractor seat using the hydraulic ram (1), as required. See the operating instructions for the TurnControl Pro electronic control system.

Narrower working width

- Extend the piston rod (2).

Wider working width

Retract the piston rod (2).

### 12.6 Hydraulic frame swing-in

### WARNING



Observe the safety measures and precautions, see «Hydraulic system, page 31».



The frame swivel cylinder (1) is connected to the control valve in the headstock by two hydraulic hoses.

The plough frame automatically swivels in and out again during the turning process without affecting the previously set front furrow width.

For information on turning the plough frame, see the operating instructions for the TurnControl Pro electronic control system.



### 12.7 DuraMaxx plough body

### 12.7.1 Pitch angle



Medium pitch angle



The bodies are mounted at a medium pitch angle in relation to the ground. The eccentric washer (1) is in the middle position.

To change the pitch angle:

- Loosen the nut (2).

- Adjust the eccentric washer (1).
- Larger pitch angle
- Move the eccentric washer (1) forwards=> improved penetration.

Larger pitch angle



Smaller pitch angle

- Smaller pitch angle
- Move the eccentric washer (1) backwards => improved depth control.
- Tighten the nut (2), see «Tightening torques, page 82».



### 12.8 Landside



Landside DMV1, standard position



For better guidance on slopes, move landside DMV1 (1) to a lower position (only possible with DuraMaxx plough bodies.)

- Loosen the bolt (3).
- Remove the bolt (2).
- Move the landside (2) to the lower position.
- Replace the bolts.
- Tighten all the bolts.

See «Tightening torques, page 82».

Landside DMV1, position for working on slopes



Landside DMV2

Landside DMV2 (4) remains in this position even on slopes.



### 12.9 Skimmer

### 12.9.1 General information



The skimmers should work at a depth of around 5 - 10 cm. If you want to plough at a depth of 25 cm, for example, the skimmers should be adjusted so that the relevant share tip on the skimmer is at a distance **A** of around 15-20 cm from the share tip on the plough base.

12.9.2 Adjustment of the projection angle



The projection angle of the skimmer (1) must be adjusted by changing the position of the locking bar (2).

- Release the pin (3).
- Pull the pin (3) out.
- Remove the locking bar (2).
- Pivot the skimmer (1).
- Insert the locking bar (2) into the gap created.
- Use the pin (3) to secure the locking bar.
- Use the securing pin (4) to lock the pin.

### 12.9.3 Working depth

## CAUTION Risk of crushing



When setting the working depth, the skimmer may drop down when the pin (4) is removed.

 Hold on to the skimmer with one hand until you have secured it by inserting the pin.



Adjusting the working depth does not change the projection angle setting.



- Release the pin (4).
- Pull the pin (4) out.
- Adjust the working depth by selecting a different hole (5).
- Insert the pin (4) into the selected hole.
- Secure the pin (4) with the securing pin.

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### 12.9.4 Moving forwards or backwards



The stalk (6) can be moved forwards or backwards to optimise the skimmer (1) position:

- Backwards = more space between the skimmer and the plough body in front of it.
- Forwards = more space between the skimmer and its associated plough body (e.g. to prevent stones from getting stuck).

### CAUTION



### Risk of collision with the turnover ram

On implements with 100 cm interbody clearance, do not set the skimmer on the first body to the front position.



12.10 Trashboard

### 12.10.1 DuraMaxx



Bolt the trashboard (1) with holder (2) onto the leg (3).



The holder (2) has slots (4) for universal adjustment.



### 12.11 Sword coulter



Remove the landside wedge (1) before retrofitting the sword coulter.



DuraMaxx

- Bolt the sword coulter (2) in place in front of the landside (3).
- Tighten all the bolts, see «Tightening torques, page 82».

### 12.12 Disc coulters

### 12.12.1 General

The disc coulters should work at a depth of 7-9 cm and run 2-3 cm to the side of the vertical shin.

### 12.12.2 Working depth



The working depth of the disc coulter is set as follows:

- Loosen the bolt (2).
- Move the coulter arm (3) as necessary.

Rigid disc coulter



Suspended disc coulter

Ensure that the teeth (5) on the coulter arm (3) and the adjacent swivel bearing (4) are meshing perfectly before tightening the bolt (2).

### 12.12.3 Lateral distance

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Suspended disc coulter



Rigid disc coulter

### 12.12.4 Swivel action limiter



The lateral distance from the coulter disc (6) to the shin is set by:

• Swivelling the coulter stalk (7)

or

- Moving the pivot in the slot (11).
- Loosen the relevant bolts / nuts (1) or (8).
- To set the lateral distance.
- Swivel the coulter stalk (7), or
- Move the pivot in the slot (11), until it is in the position required.
- Tighten the bolts / nuts (1) or (8), see «Tightening torques, page 82».

The lateral swivel area of the disc coulter is set with the bolt (9).

- Loosen the bolt (9).
- Move the stop (10) into the position required.
- Tighten the bolt (9), see «Tightening torques, page 82».





- Tighten all loosened bolts and nuts securely after every adjustment.
- Never reverse with the implement while the disc coulters are still in the soil.

### 12.13 Subsoiler



 Fit the subsoiler as shown in the adjacent illustration.

Moving the blade (1) enables the working depth of the subsoiler to be adjusted to two positions.

- Release the subsoiler using a spring lock (2).
- Move the subsoiler to obtain the desired working depth.
- Secure the subsoiler again with the spring lock (2).

The blade (1) is protected against wear by the blade guard (3). Both the blade guard (3) and the thorn (4) can be replaced after removing the nuts (5).



### 12.14 Uniwheel

### 12.14.1 General



The uniwheel (1) is a depth and transport wheel.

The uniwheel (1) only has a depth control function.

Set the tractor hydraulics accordingly. See the tractor manufacturer's operating instructions.

Plough with Hydromatic hydraulic overload safety device (T version):

More of the plough weight is transferred to the uniwheel. The working depth of the plough does not change after a plough body has tripped.

# 12.14.2 Moving the uniwheel from the working position to the transport position

CAUTION	<ul> <li>Read and observe the "Safety measures and precautions" sec- tion and the specific safety instructions "Hazards caused by hy- draulic systems"</li> </ul>
$\underline{\land}$	There are crushing and shearing points in the area around the wheel stops.
	<ul> <li>Keep a safe distance away.</li> </ul>
	<ul> <li>Do not exceed the maximum permissible tyre pressures.</li> </ul>





- Turn the plough into the right-hand working position.
- Lower the plough to the ground.

Set the working depth so that it is shallow enough for the wheel to stand on the ground.

- Remove the safety pin (2).
- Raise the plough.
- Move the hydraulic ram (3) into the resting position.

The nose (5) engages in the hook (6).









- Release the pin (7) and pull it out.
- Pivot the wheel through 90°.
- Lock the wheel using the pin (7).
- Secure the pin (7) with the linch pin.



Pivot the locking pin (8) through 180°.



For the next steps, follow the sequence described below.

- Fully raise the plough.
- Move the plough into the transport position. See the operating instructions for the TurnControl Pro electronic control system.

The plough automatically adjusts (TurnControl Pro control system) to the narrowest working width and turns until the locking pin (8) engages with an audible sound.

- Check that the locking pin has engaged correctly.
- Lower the plough using the tractor hydraulics.
- Disconnect the top link from the plough headstock.
- Fully raise the front of the plough = transport position.


## 12.14.3 Moving the uniwheel from the transport position to the working position







- Connect the top link to the plough headstock.
- Secure the top link with the top link pin (9).
- Raise the plough slightly.
- Turn the locking pin (8) through approx.
   180° to remove it. The handle must lock in place in the recess at the front so that the locking pin (8) cannot slide backwards of its own accord.
- Turn the plough into the right-hand working position. See the operating instructions for the TurnControl Pro electronic control system.
- Pull the pin (7) out.
- Pivot the uniwheel through approx. 90° towards the plough frame.
- Lock the uniwheel in this position with the pin (7).
- Secure the pin (7) with the linch pin.
- Lower the plough onto the ground.
- Attach the hydraulic ram (3) to the wheel stalk (4).
- Secure the hydraulic ram using the safety pin (2).
- Raise the plough.



#### 12.14.4 Working depth



 Set the working depth with the electronic control system. See the operating instructions for the electronic control system

To prevent increased slippage or poorer depth control, we recommend that the following adjustments should be made after changing the working depth:



- Top link lengthInclination setting
- \_\_\_\_\_
- Tractor hydraulics settings

#### 13 **OVERLOAD PROTECTION**

#### 13.1 **Shearing protection**

There are crushing and shearing points in the area of the shearing protection. DANGER



- Never remain in the plough base release area during ploughing work.

The plough bases release upwards when the shear bolt is overloaded.

Ensure that an adequate safety distance is maintained.



Only shear bolts of the following dimensions and quality may be used, as these are the only bolts that provide effective protection against damage.



If a shear bolt (1) breaks, proceed as follows:

- Release the bolt (3).
- Remove the remains of the shear bolt.
- Swivel the plough base back to its working position with the raised device.
- Fit the new shear bolt.
- Carefully tighten the shear bolt (1) and the bolt (3). See «Tightening torques, page 82».

Plough types	Shear bolt	
	Leg thickness	Dimensions
Juwel 8 i V	30 mm	M 14X75 LS 56X15 8.8
	35 mm	M 14X85 LS 61x20 10.9
Juwel 8 i VT	30 mm	M 14X70 LS 51X15 10.9



#### 13.2 Hydromatic hydraulic overload safety device



#### 13.2.1 General



The overload safety device does not require any maintenance.

If the plough body hits an obstacle, it trips upwards and sideways.

#### 13.2.2 Setting the release force

Different operating pressures can be set using the hydraulic overload safety device:

- Low operating pressure for light and shallow soil conditions
- Higher operating pressure for heavy soil conditions

The settings are adjusted using the TurnControl Pro electronic control system. See the operating instructions for the electronic control system.



#### 14 ATTACHMENT ARM

BEWARE



Read and follow the "Safety and protection measures", page 15.
 The attachment arm pivots into the catch position as a result of spring tension.

- Ensure that you maintain an adequate safety distance.



- Push the attachment arm (1) at the front of the plough frame into the recess (2).
- Secure it with the pin (3).
- Connect the hydraulic lines.

See the operating instructions for the relevant attachment arm.



#### 15 PUT THE IMPLEMENT OUT OF OPERATION

#### **15.1** 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.

	Damage caused by improper storage of the implement
CAUTION	If incorrectly or improperly stored, the implement may be dam- aged, e.g. by humidity and dirt.
	The implement should be deposited on a flat and adequately sta- ble base only.
	<ul> <li>Clean the implement prior to storage.</li> </ul>
	<ul> <li>Lubricate the implement according to "Lubrication diagram".</li> </ul>

#### 15.2 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.





The clamping sleeve (1) is under high spring pressure.



 <u>Never</u> remove the clamping sleeve.



#### 16 MAINTENANCE AND REPAIRS

#### 16.1 Special safety instructions

#### 16.1.1 General

	Risk of injury when carrying out maintenance and repair work
WARNING	There is always the risk of injury when carrying out maintenance and repair work.
$\mathbf{\Lambda}$	<ul> <li>Use suitable tools, suitable climbing aids, platforms and support elements.</li> </ul>
	<ul> <li>Always wear protective clothing.</li> </ul>
	<ul> <li>Carry out maintenance and repair work only on an extended and deposited device or on a device secured by suitable sup- port elements to prevent it from extending or dropping.</li> </ul>

#### 16.1.2 Working under the raised device

	Risk of accident due to lowering and extending of compo- nents and devices
WARNING	It is extremely dangerous to work under raised or next to retracted components and devices.
٨	<ul> <li>Always secure the tractor to prevent it from rolling away.</li> </ul>
	<ul> <li>Remove the ignition key.</li> </ul>
	<ul> <li>Secure the tractor to prevent it from being started up by unau- thorised persons.</li> </ul>
	<ul> <li>Support and secure raised or retracted components and devic- es with suitable support elements.</li> </ul>

#### 16.1.3 Immobilise the implement for maintenance and repairs

	Risk of accidents when tractor starts up		
WARNING	<ul> <li>Injuries may occur if the tractor starts moving during maintenance and repair work.</li> <li>Switch off the tractor engine before carrying out any work on the implement.</li> </ul>		
<ul> <li>Secure the tractor against unintentional starting.</li> </ul>			
	<ul> <li>Remove the ignition key.</li> </ul>		
	<ul> <li>Affix a warning sign in front of the implement and in front of the tractor to advise outsiders of maintenance work.</li> </ul>		
	<ul> <li>Secure the tractor against rolling away using wheel chocks.</li> </ul>		

#### 16.1.4 Working on the hydraulics



#### 16.1.5 Personnel qualifications



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.



#### 16.1.6 Protective equipment

# CAUTIONRisk of accident due to working without protective equipmentThere is always an increased risk of accidents when carrying out

maintenance work and repairs.

- Always wear appropriate protective equipment.

#### 16.1.7 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.

#### **16.2** 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.

#### 16.3 Maintenance intervals

#### 16.3.1 After the initial start-up (at the latest after 2 hours)

Check	What to do?
Wheel nuts	<ul> <li>Retighten all wheel nuts to the appropriate torque. See section entitled "Tightening torques".</li> </ul>
Screw connections	<ul> <li>Retighten all other bolts and nuts on the device to the appropriate torque. See section entitled "Tightening torques".</li> </ul>

#### 16.3.2 Daily inspection

Check	What to do?
Tyres	<ul> <li>Check the tyres for damage and wear.</li> </ul>
	<ul> <li>Check the air pressure and, if required, correct.</li> <li>See section entitled "Tyres and air pressure".</li> </ul>
Hydraulic hoses	<ul> <li>Check hydraulic hoses for damage and leaks. Imme- diately replace damaged or defective hydraulic hoses.</li> <li>The hydraulic hoses must be replaced at the latest 6 years after the date of manufacture. Use hydraulic ho- ses authorised by LEMKEN only.</li> </ul>
Safety equipment	<ul> <li>Check that the safety equipment functions properly.</li> <li>See section entitled "Safety equipment".</li> </ul>
Soil processing tools	<ul> <li>Check all soil processing tools for damage and wear.</li> <li>Replace damaged or worn components.</li> </ul>



#### 16.3.3 Weekly inspection

Check	What to do?
Wheel nuts	<ul> <li>Check that all wheel nuts are tight and, if re- quired, retighten the wheel nuts to the appro- priate torque.</li> </ul>
Screw connections	<ul> <li>Retighten all other bolts and nuts on the device to the appropriate torque.</li> </ul>
	<ul> <li>If required, secure the screw connections with locking compound.</li> <li>See section entitled "Tightening torques".</li> </ul>

#### 16.4 Tightening torques

#### 16.4.1 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 spareparts list or the markings on the screw head.



16.4.2 Bolts and nuts made	of steel
----------------------------	----------

	Strength category		
Diameter	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<sub>g</sub> = 0,12

16.4.3 Wheel bolts and wheel nuts

Diameter / thread	[Nm]
M14	125
M18 x 1,5	290
M20 x 1,5	380
M22 x 1,5	510



#### **16.5** Air pressure of the tyres

#### WARNING Danger due to incorrect air pressure



If the air pressure in the tyres is too high, the tyres may burst and if the air pressure is too low, the tyres may become overstressed. As a result, the stable trailing of the implement may be negatively influenced. Road users are thus hindered and endangered.

The following air pressures are approved, depending on the tyre size, the profile and the PR number or load index. The PR number or load index and profile name are vulcanised into the tyres.

Tyre size	Ply ra- ting [PR]	Maximum permissible air pressure [bar]
340/55-16	12	4

#### **16.6** Check the connections to the tractor

#### 16.6.1 Hydraulic connections

#### Risk of accidents due to escaping hydraulic fluid

WARNING
 Hydraulic fluid which is ejected under high pressure (hydraulic oil) can penetrate the skin and cause serious injuries. In the event of injuries, consult a doctor immediately.



- Due to the risk of injury, always use suitable tools when looking for leaks.
- Always wear appropriate protective clothing.
- Carry out a visual inspection of the hydraulic couplings.
- Look for leaking hydraulic oil at the hydraulic couplings.
- Connect the hydraulic lines to the tractor.
- Check that the hoses are leak-free when under pressure.

Faulty or leaking couplings must be repaired or replaced immediately by a specialist workshop.

#### 16.6.2 Electrical connections

- Carry out a visual inspection of the plugs and cables.
- Look for bent or broken contact pins on the plugs and exposed areas on the cables.
- Apply anti-corrosion spray to the electrical contacts.

Faulty plugs or cables must be repaired or replaced immediately by a specialist workshop.



#### 16.6.3 Lubrication chart

	All			Before and after	
	10	50	100	long	
	perio	ds of opera	ation	Winter break	
Slewing gear bearings and cylinder adapters		x		x	
Optiquick adjustment centre	x			x	
Turn buckles				x	
Support and depth and transport wheel swivel axes		x		x	
Support and depth and transport wheel bear- ings			x	x	
Swivel brackets and control rod	x			x	



	All			Before and after
	10	50	100	long
	perio	ds of opera	ation	Winter break
Pins in the hydraulic rams	x			x



#### 17 TROUBLESHOOTING

#### 17.1 Hydraulic equipment – TurnControl

Fault	Cause	Remedy
Plough does not start to turn.	Power supply disconnected.	<ul> <li>Restore the power supply.</li> </ul>
The front furrow width chang- es while working.	The piston seal on the frame swivelling cylinder is leaking.	<ul> <li>Replace the piston seal.</li> </ul>

### 17.2 Plough intake and depth control, slippage

Fault	Cause	Remedy
Plough does not remain in the ground.	Intake force too low.	<ul> <li>Pull in the base = Reduce the distance between the share tip and the plough frame (not more than 2 cm).</li> </ul>
Plough does not move into the ground.	Share angle too low.	<ul> <li>Extend the base = Increase the distance between the share tip and the plough frame (not more than 2 cm).</li> </ul>
	Upper control link fitted too high on mast.	<ul> <li>Fit the upper control link lower on the mast.</li> </ul>
Tractor has too much slip- page.	Control hydraulics not correct- ly set, plough weight resting on support wheel.	<ul> <li>Adjust the control hydrau- lics so that sufficient plough weight is shifted onto the tractor.</li> </ul>



#### 17.3 Miscellaneous

Fault	Cause	Remedy
Shear bolt on the base fre-	Incorrect shear bolt fitted.	<ul> <li>Use an original shear bolt.</li> </ul>
quently shears off.		



The shear bolt head should always be fitted on the side of the plough that points towards the ploughed land, so that the thread is not in the shearing area.

#### 18 TRANSPORT ON PUBLIC ROADS

#### 18.1 Laws and regulations

All laws and regulations with regard to transport on public roads must be adhered to.

#### 18.2 Warning Boards and Lighting Equipment

If it is required to drive on public roads with the plough fitted to the tractor, fit warning boards and lighting equipment.

The warning boards with lighting equipment must be detached before work, so that they cannot be damaged.

#### 18.3 Transport Speed

The maximum allowed driving speed during transport with depth and transport wheel amounts to 30 km/h on even roads. In rough ground and on streets with potholes drive with reduced speed in order to avoid damages at the machine!

#### **19 TECHNICAL DATA**

#### **19.1** Model overview

Model	Turnover device	Wall thickness, frame (mm)	Underframe clearance cm	Interbody clearance cm	Number of furrows
Juwel 8 i V	G120 i	140 y 140 y 10	80 / 85	100	4,5,6
Juwel 8 i V T	G1201	140 x 140 x 10	00700	100	4,5,6

#### **19.2** Permissible power range

Description	Number of furrows	Tractor power		
		kW	hp	
Juwel 8 i V	1	91 122	110 190	
Juwel 8 i V T	4	01-132	110-100	
Juwel 8 i V	4+1	06 165	120 225	
Juwel 8 i V T	5	90-105	150-225	
Juwel 8 i V	5+1	102 100	140-270	
Juwel 8 i V T	5+1	103-199		
Juwel 8 i V	6	103-199	140-270	

#### 19.3 Weights

Number of furrows	Interbody clearance	4	4+1	5	5+1	6
Juwel 8 i V	100	1,471	1,766	1,741	2,036	2,011
Juwel 8 i V T	100	1,727	2,090	2,061	2,428	-

Approx. weights in kg



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