Operating Instructions

Cultivators

Thorit 8

- EN -

SAFETY IS OUR CONCERN!

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Dear customer!

We would like to thank you for the confidence in buying this implement.

The advantages of this implement will be shown, only, when operated and used with due care and attention.

When handing over this implement your dealer has already instructed you with regard to operation, adjustment and maintenance. But this short introduction requires an additional detailed study of the instruction book.

Therefore read this instruction book carefully before the first use. Please pay attention to the safety instructions mentioned in this instruction book.

Any changes and modifications carried out not being mentioned expressly in this instruction book, may only be carried out with a written agreement of the manufacturer.

Ordering spare-parts

When ordering spare-parts please state type and serial No. of the implement. This information will be found on the identification plate.

Put down this data on the following table so that it is always available.

Type of implement: _____

Fabrication No.: _____

Only use genuine Lemken spare-parts. Spurious parts negatively influence the function of the implement, show a shorter lifetime and increase in nearly all cases additional maintenance.

We trust that you will understand that LEMKEN is unable to guarantee poor operation and damage caused by using spurious parts!

DEFINED USE

- Please familiarise yourself with the LEMKEN Thorit 8 and its operations before putting the implement to work. Therefore use this instruction book with the „General Health- and Safety precautions“!

- The LEMKEN Thorit 8 have been designed purely for the agricultural use!
- Any use beyond the one stipulated above is no longer considered as defined use!
- Under „defined use“ the manufacturer’s prescribed operation-, maintenance- and repair conditions are to be adhered to!
- The LEMKEN Thorit 8 may only be operated, maintained and repaired by such persons who have been made acquainted with it and who have been advised about the dangers!
- The applicable accident prevention advice as well as the generally accepted safety technical, working, medical and road traffic rules should be adhered to!

CONTENTS

1 SAFETY INSTRUCTIONS

General Safety Instructions

- Before using the machine, always check both it and the tractor for roadworthiness and operational safety!
- As well as the notes in these instructions the operator is advised to comply with the generally applicable safety at work regulations and those relating to use of the public highway!

- The implement may only be operated, maintained and repaired by such persons who have been made acquainted with it and who have been advised about the dangers!
- When driving on public roads with a raised machine the lifting control lever should be locked against unintentional lowering!
- The fitted warning and advisory plates give important information for safe operation; adhering to these increases your own security!
- When using public roads adhere to applicable traffic rules!
- The operator should familiarise him-/herself with all controls and their functions before starting work. During work could be too late!
- The clothing of the operator should fit tight. Avoid wearing any loose clothing!
- To avoid danger of fire keep the implement clean!
- Before beginning to drive check surroundings area (children)!
- Sitting or standing on the implement during operation or during transport is not permissible.
- Attach implements as advised and only to the stipulated positions!
- Special care should be taken when the implement is coupled to or uncoupled from the tractor.
- When coupling or uncoupling the implement bring the supporting stands into the corresponding position (standing safety)!
- Fit weights only to the fixing points provided for that purposes!
- Adhere to the maximum permissible axle loads, total weights and transport width!
- Fit and check transport gear, road lights and warning guards!
- The release ropes for quick coupler latches should hang freely and in the lowered position must not release the quick coupling by themselves.
- Never leave the driver's seat whilst in motion!

- Handling behaviour, steerability and braking are influenced by mounted implements, trailers and ballast weights. Check for sufficient steerability and braking!
- When driving round bends note the width of the machine and/or changing centre of gravity of the implement.
- Put implement into operation only when all guards are fixed in position!
- Never stay or allow anyone to stay within the operating area!
- Never stay in the turning and slew area of the implement!
- Do not operate any hydraulic controls while anybody is in the operating area!
- On all pivoting parts actuated by power assistance (e.g. hydraulics) exists danger of injury by bruising and crushing!
- Before leaving the tractor lower the machine to the ground. Apply the parking brake, stop the engine and remove the ignition key!
- Do not allow anybody between the tractor and implement if the parking brakes are not applied!

Attached implements

- Before mounting or dismounting implements on/from the three-point linkage, move the raise / lower control to the position at which accidental raising or lowering cannot take place!
- In the case of three-point linkage mounting, ensure that the tractor balls and the mounting pins of the implement are of the same category!
- There is the risk of injury from pinch and shear points in the three-point linkage area!
- When operating the external lift controls for the three-point linkage, do not stand between the tractor and implement!
- Always ensure sufficient lateral limitation for the three-point linkage of the tractor in the transport position of the implement!
- When driving on roads with the implement raised, the raise/lower control must be locked to prevent lowering!

Maintenance

- Repair-, maintenance- and cleaning operations as well as adjustments and remedy of function faults should principally be conducted with engine stopped and brakes applied. Remove ignition key!
- Check and tighten nuts and bolts regularly!
- When conducting maintenance work on a lifted implement always place suitable supports underneath!
- For replacing any tools with cutting edges always use suitable tools and gloves!
- Dispose of old oils, grease and filters as prescribed by law.
- Before working on the electric gear disconnect battery cables!
- When conducting electrical welding operations on the tractor or on the mounted implement remove cable from the generator and the battery!
- Any spare parts fitted must meet with the implement manufacturer's fixed technical standards! This is for example ensured by using genuine spare parts!

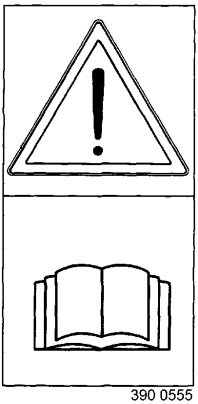
2 WARNING STICKERS

2.1 General Instructions

The LEMKEN Thorit 8 is equipped with all features to ensure safe operation. Where potential danger areas of the implement can not be fully safeguarded, warning stickers are fitted which draw attention to these.

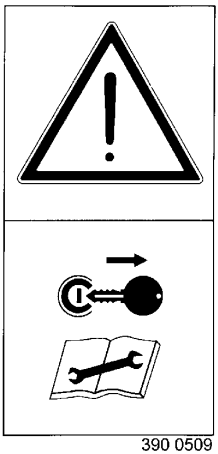
2.2 Understanding the stickers

Familiarise with the meaning of the stickers. The following descriptions inform about them in detail.



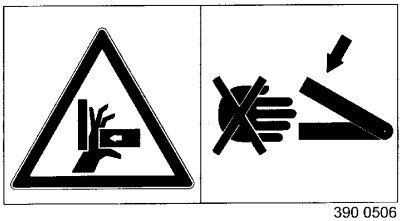
390 0555

WARNING! Read and adhere to this Instruction book and these "General Health- and Safety precautions", before putting the implement to work!



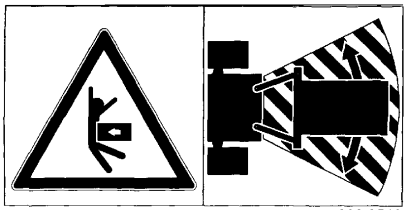
390 0509

WARNING! Before maintenance and repair work, stop tractor engine and remove ignition key!



390 0506

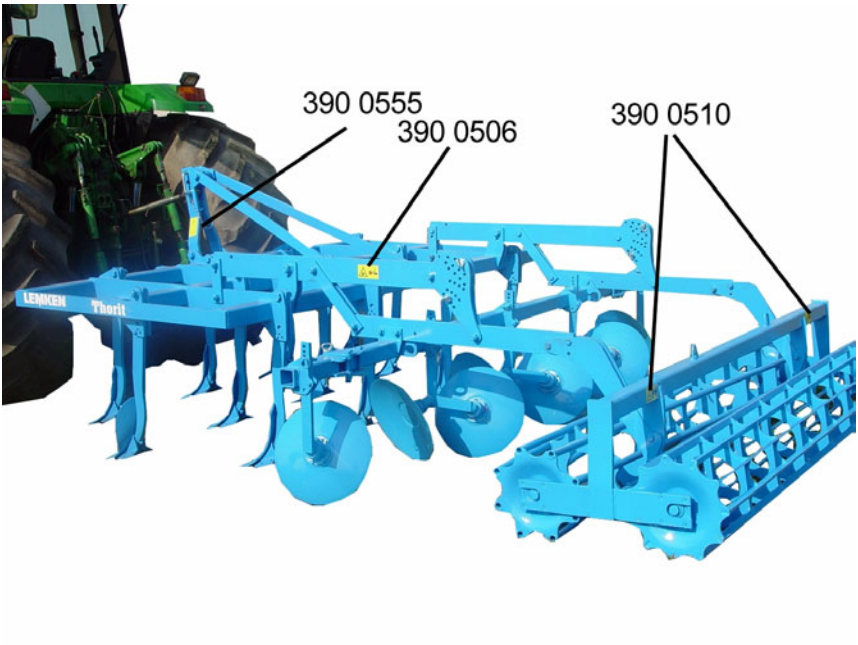
WARNING! Pinch point!

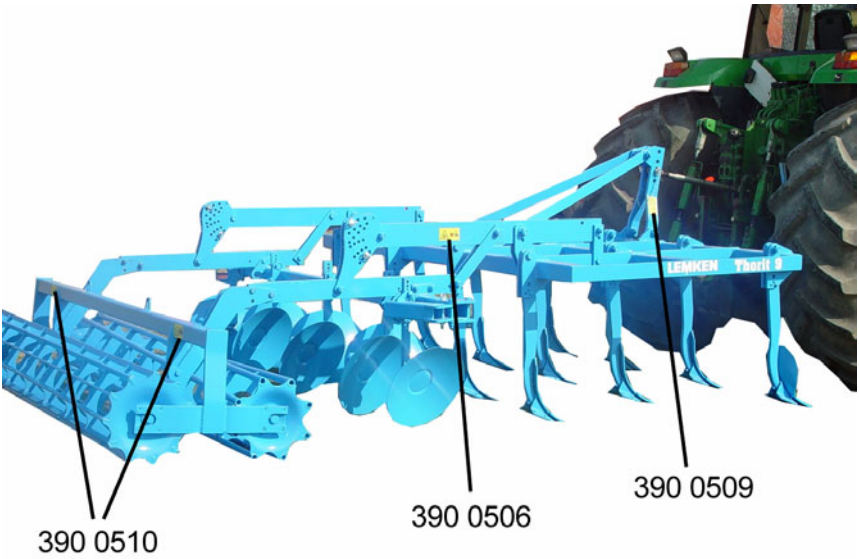


390 0510

WARNING! Keep well clear of the working and swinging area of the implement!

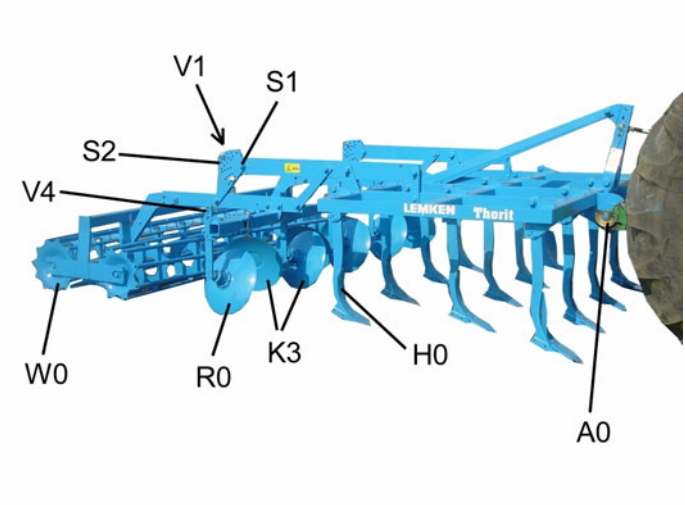
2.3 Position of the stickers





3 COMPACT INSTRUCTIONS

The following instructions must be done to use the Thorit 8 effective and optimal.

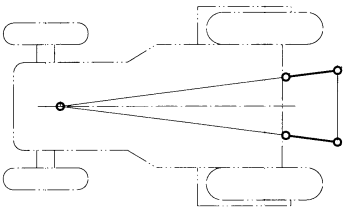


3.1 Lower- and top links

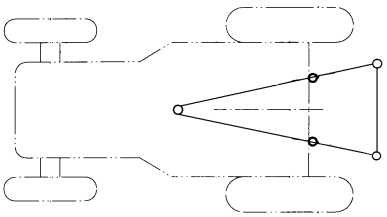
The lower links must be arranged so that they nearly intersect in the middle between the front and rear axle of the tractor.

The drawbar (A0) must be fitted in the top position to ensure a good entry.

In working position the top link must be fitted so that it raises towards the implement.



Incorrect



Correct

3.2 Working depth of the tines

The working depth will be adjusted by means of the pins (S1) and (S2) of the pin adjuster (V1). Range of working depth = 5 cm to 30 cm.

3.3 Reconsolidation effect

The reconsolidation effect of the rollers (W0) will be adjusted via the position of the top link. The top link should be positioned slightly raised towards the implement.

3.4 Hydraulics

The tractor hydraulics must be set to floating position or mixed control.

3.5 Hollow discs

The hollow discs (K3) must be adjusted in depth by means of the pin adjuster (V4), so that they level the dams, which were made by the tines (H0) of the rear row.

3.6 Outer discs

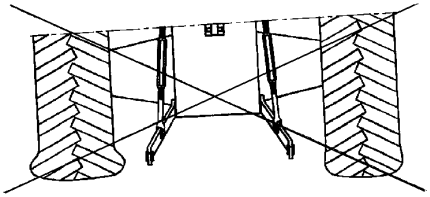
The working depth of the outer discs (R0) must be adjusted a little shallower than the hollow discs (K3), and that by means of the pin adjuster (V4).

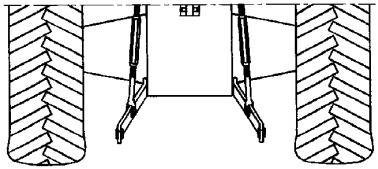
4 PREPARATION OF THE TRACTOR

4.1 Tyres

Ensure that all tyres - especially the rear ones - are at identical pressure.

(See manufacturer's instructions)!





4.2 Lift rods

Adjust lift rods to equal length. Where there are alternative positions for the lift rods on the lower links, use the rearmost position, to unload the tractor hydraulics.

4.3 Check chains or sway blocks

It is essential that the check chains or sway blocks are adjusted so that the lower links are free to move sideways when in working position.

4.4 Tractor hydraulics

During work the tractor hydraulics must be set to „floating position“ or „mixed control“.

4.5 Required power sources and sockets

For the electric use of the Thorit 8 the following power sources must be available with the tractor.

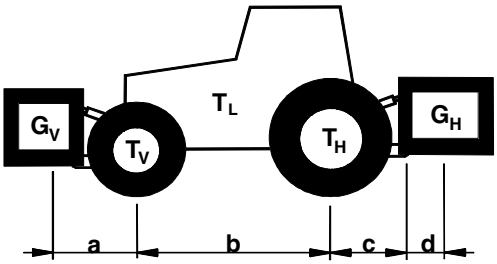
Function	Voltage	Direct connection to the battery	Socket
Lighting equipment	12	-	according to DIN-ISO 1724

4.6 Axle load

The attachment of implements to the front- and rear-three point linkage must not lead to exceeding the allowed total weight, the allowed axle load and the allowed tyre load of the tractor.

The tractor front axle must always be loaded with 20 % of the tractor dead weight at minimum.

How to calculate the minimum front ballast and the increasing of the rear axle load, is described in detail as follows:



G_V = Weigth of front ballast (front implement)

T_V = Front axle load of the tractor without mounted implement

T_L = Tractor dead weight

T_H = Rear axle load of the tractor without mounted implement

G_H = Weight of the implement combination

4.6.1 Calculation of the minimum front ballast G_V min:

$$G_{V\ \min} = \frac{G_H \bullet (c+d) - T_V \bullet b + 0{,}2 \bullet T_L \bullet b}{a+b}$$

4.6.2 Calculation of the increasing of the rear axle load:

Minimum axle load increasing $= G_H + \dfrac{G_H \bullet (c+d)}{b}$

The calculation of the required minimum front ballast and the increasing of the rear axle load requires that all above mentioned measurements and weights are known. If they are unknown and cannot be found out, there will be only one way to avoid overloads:

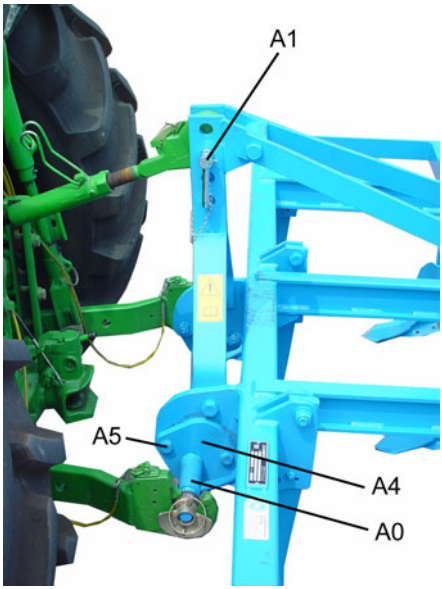
Please weigh your tractor with mounted and lifted implement to find out the actual rear axle loading and front axle unloading and that in comparison with the axle loads of the tractor without implement!

5 THREE POINT LINKAGE

5.1 General Instruction

The category of the three point linkage must be the same at the tractor and the implement. If this is not the case, either the tractor three point linkage must be adapted or the drawbar (A0) and if required the top link pin (A1) exchanged by a category corresponding version.

5.2 Height adjustment of the drawbar



The drawbar (A0) can be set in two height positions. Usually the top position should be chosen to reach a better entry of the cultivator and a better reconsolidation effect of the rollers.

The lower position should be chosen, when the roller will be loaded with too much pressure and cloggs due to the high pressure load.

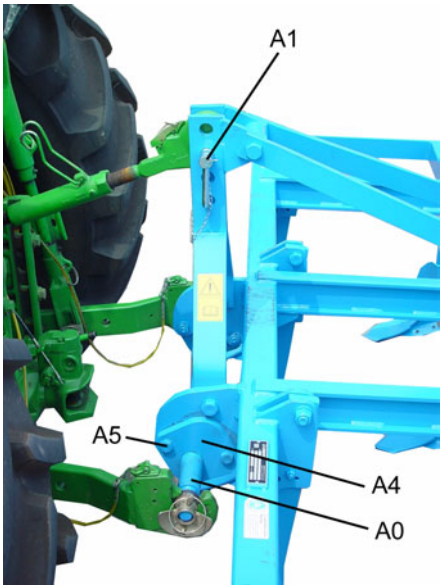
5.3 Re-positioning the drawbar

It it is required to change the height position of the drawbar, the bolts (A5) must be loosened, the drawbar plates (A4) with drawbar turned by 180° and then fitted again. The nuts of the bolts must be tightened with a torque of 580 Nm and secured with Loctite.

6 ATTACHING AND DETACHING THE RUBIN

6.1 Attaching

- Set tractor hydraulic to position control, when attaching the cultivator.
- Connect tractor lower links to the drawbar (A0) and secure!
- Connect top link so that the connection point atthe implement is higher than that of the tractor also during work!
- Secure top link pin (A1) by means of securing pin!
- Fit lighting equipment with warning boards, when driving on public roads.
- Connect electric cables!



For work the lighting equipment with warning boards must be detached, in order to avoid damages

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6.2 Detaching

- The implement must always be parked on level and firm ground!
- Set tractor hydraulics to position control!
- Lower implement and remove top link from the implement!
- Remove lower link from the drawbar (A0)!
- Disconnect electric cables!

- Read and adhere to the General Safety Instructions as well as to the Instructions „Attached Implements“!

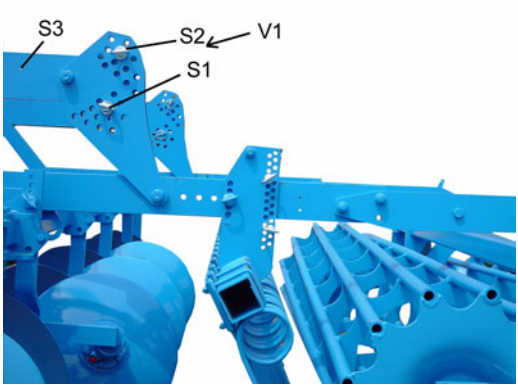
7 ADJUSTMENTS

7.1 Working depth of the tines

After raising the implement some cm the working depth of the tines will be adjusted as follows by means of the pin adjuster (V1):

Placing the lower pin (S1) in a deeper hole
=> increased working depth.

Placing the lower pin (S1) in an upper hole
=> reduced working depth.



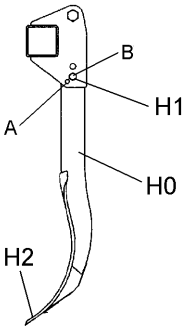
With the upper pins (S2) the clearance between the ground and the rollers will be adjusted with raised cultivator.

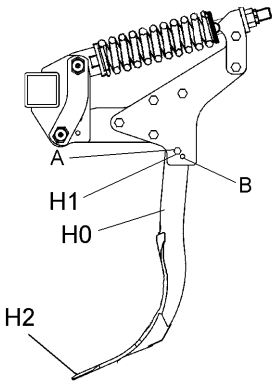
If with raised cultivator the rollers are still touching the ground or are too close to the ground, then with fully lowered cultivator the pins (S2) must be placed in a lower hole above the carrier (S3).

7.2 Share position

The share position of the implement can be altered. A flat share position reduces the traction requirement; a steep share position ensures a good penetration, even in hard and dry soil conditions.

The tine (H0) position and thus the position of the point (H2) will be altered by repositioning the shearbolt (H1).





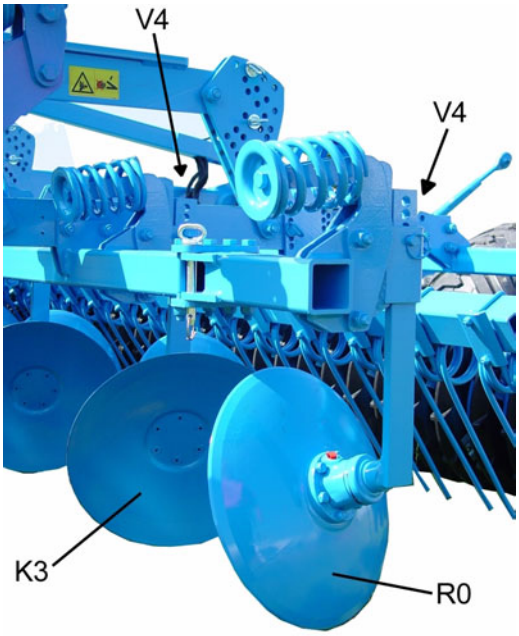
Hole A = flat position (especially for heavy sticky soils = easier to pull)

Hole B = steep position (especially for dry and hard conditions = improved penetration)

7.3 Working depth adjustment of the hollow discs

The hollow discs (K3) should be adjusted so deep that they level the ridges and grooves left by the rear tines. When working too deep, new ridges and grooves will be built, and when working too shallow, the grooves and ridges left by the tines will be levelled insufficiently.

The working depth of the hollow discs will be adjusted by means of the pin adjuster (V4).



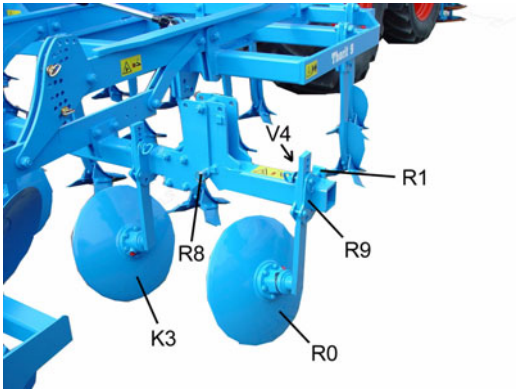
7.4 Outer discs

7.4.1 General Instructions

The outer discs (R0) will be bolted to the ends of the hollow disc carriers via its frame tube.

Each bracket (R9) is fitted to the frame tube laterally adjustable.

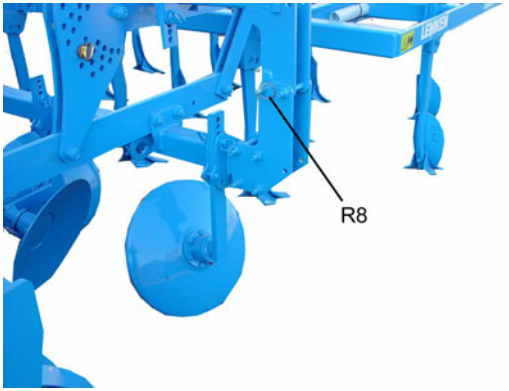
The outer discs should not work so deep as the inner hollow discs (K3); their purpose is only to move the soil which has been thrown beyond the working width, into the grooves left by the outer tines. After having loosened the clamping bolts (R1) the outer discs can be moved laterally so that they always move back the soil which has been thrown to the outside.



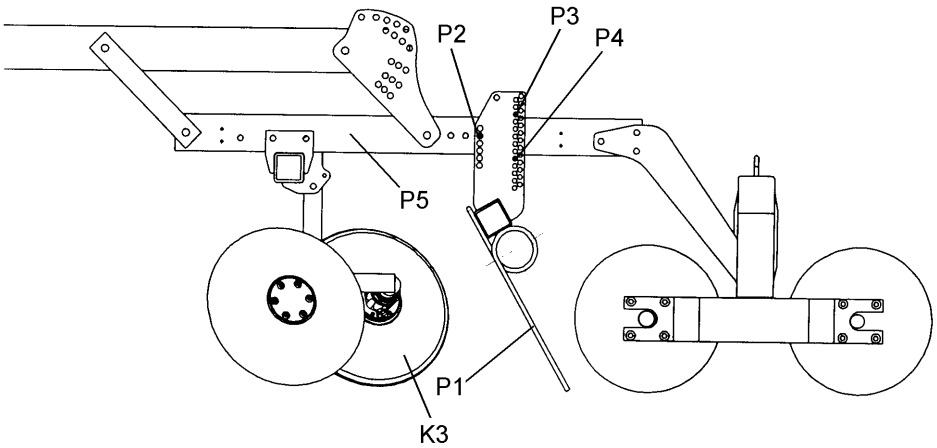
Working depth adjustment can be made by means of the pin adjuster (V4).

For transport on public roads, the outer discs must be folded-in. For folding-in each pin (R8) must be unlocked and removed, the outer disc folded-in and secured in folded-in position by means of the pins (R8). Finally the pin (R8) must also be secured.

On the field - before use - the outer discs must be folded-out and secured again.



7.5 Straw harrow



The straw harrow will be fitted to the lower carrier (P5) between the rollers and the hollow discs (K3).

By means of the pin (P2) the straw harrow can be adjusted either in working depth as well as in the distance to the hollow discs (K3).

By means of the pins (P4) the angle of the straw harrow to the soil will be adjusted. The pin (P3) prevents a swinging back of the straw harrow in lifted position.

For work the straw harrow must be adjusted, so that the straw will be distributed very well, but not pile up. It must be ensured, that the tines (P1) of the straw harrow do not touch the rollers.

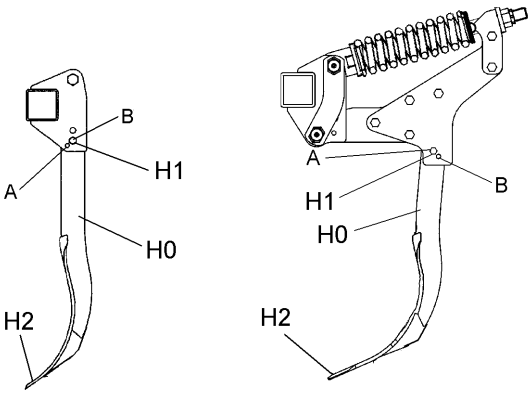
The steeper the harrow tines (P1) are positioned, the better is the crumbling.

The less steep the harrow tines (P1) are positioned, the less is the risk of clogging.

Straw, which will be taken along by the harrow tines, can be taken out by the rollers again. Therewith the risk of clogging will be minimised.

- Read and adhere to the General Safety Instructions!

8 SHEARBOLT DEVICE



Each tine (H0) and disc carrier is fitted with a shearbolt (H1) which will protect cultivator, tines, the share points (H2) and discs against overload.

Replace sheared bolt (H1) as follows:

a) Raise cultivator a few cm.

b) Remove all remains of the shearbolt.

c) Swing tine and/or disc carrier back into position.

d) Fit new shearbolt into hole concerned and tighten carefully.

Only shearbolts according to the schedule below should be used. Otherwise there is a serious risk of damage to frame, tine or disc carrier or a premature failure may be experienced.

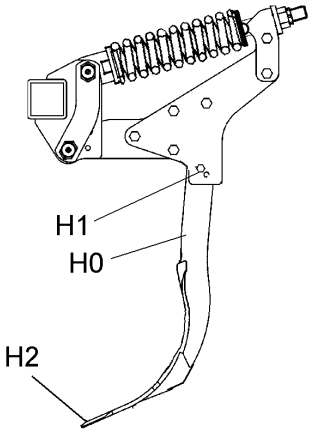
	Tines	**Disc carrier with shearbolt device**
Thorit 8	301 7342 M12 x 65 B = 15/8.8	301 3240 M10 x 45 B = 10/8.8
Thorit 8 Ü	301 3391 M12 x 60 B = 15/10.9	301 3240 M10 x 45 B = 10/8.8

- Read and adhere to the General Safety Instructions!
- When changing shearbolts, use suitable tools, only!

9 AUTOMATIC OVERLOAD SAFETY DEVICE

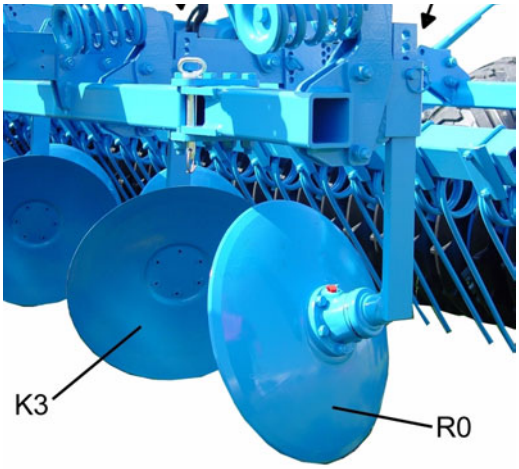
The tines (H0) of the Thorit 8 cultivator is equipped with an automatic overload safety device which is especially designed for stony soil conditions.

The tines trip back and upwards when touching an obstacle and automatically return to the working position once the obstacle has been passed.



The cultivator is additionally protected by means of shearbolts (H1).

As option also the pairs of hollow discs (K3) and the outer discs (R0) are available with automatic overload safety device.

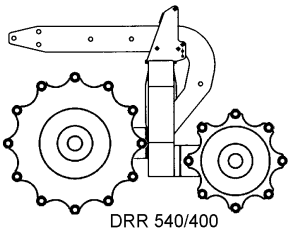


- Read and adhere to the General Safety Instructions!
- Coil springs are under load!
- The tines trip to the rear and upwards!

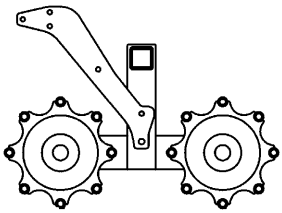
10 ROLLERS

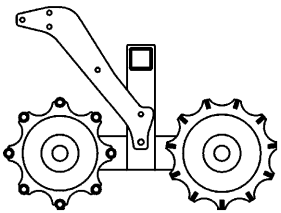
10.1 General Instruction

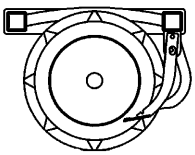
The Thorit 8 can be equipped with a number of rollers (W0):
Tube bar rollers RSW 400 or RSW 540, double rollers DRR 400, DRR 540/400 or DRF 400, packer roller ZPW 500, trapeze packer roller TPW 500, trapeze disc roller TSW 500 and knife roller MSW 600.

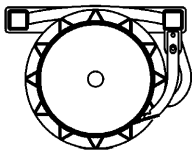

DRR 540/400

- The tube bar rollers, double rollers and trapeze ring roller are maintenence-free.
- The trapeze packer roller, trapeze disc roller and packer roller are equipped with adjustable scrapers, which must be re-adjusted from time to time.
- The knife roller is equipped with a bar with knifes as scrapers which is multiple adjustable.


DRR 400


DRF 400


TSW 500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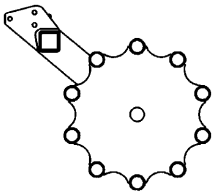
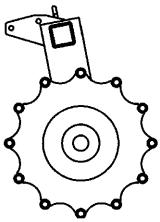

RSW 600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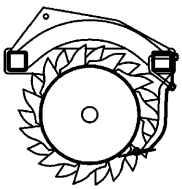
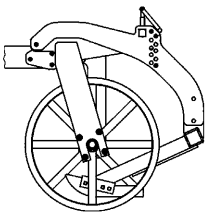

ZPW 500

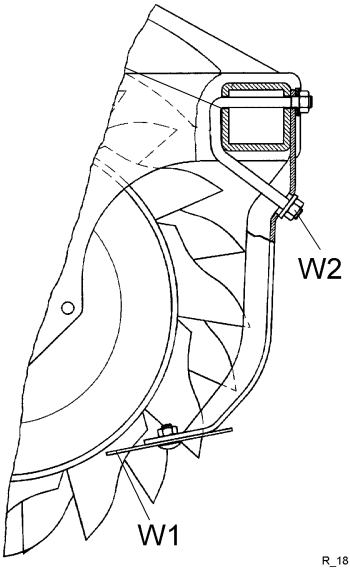

MSW 600

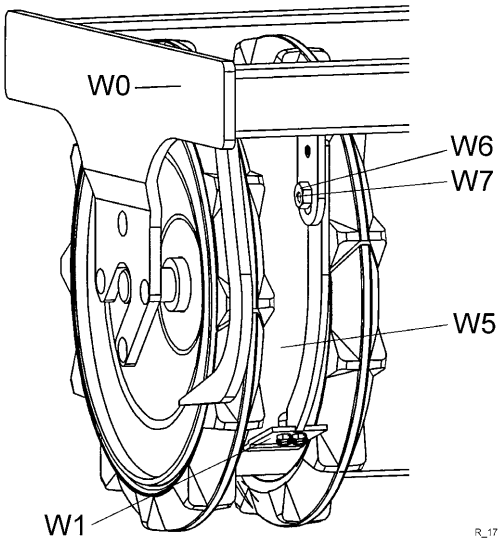
10.1.1 Adjustment of the scraper

The adjustable scrapers (W1) of the rollers will be adjusted by means of nuts (W2) or eccentric nuts (W6).

Whilst the nuts (W2) of the packer roller can be adjusted by means of a 19 mm spanner, the eccentric nuts (W6) will be adjusted by a 24 mm spanner.

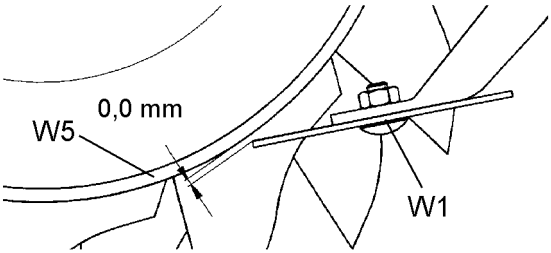
Before adjusting the eccentric nut, the corresponding screw (W7) will be loosened by means of a 19 mm spanner and after adjustment tightened again.





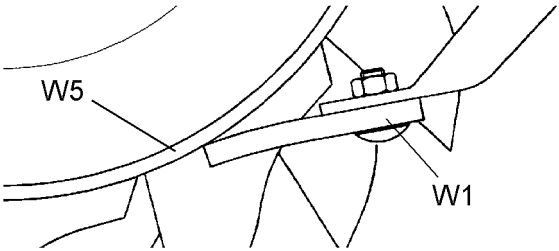
10.1.2 Distance between scraper and roller surface

The distance between scraper (W1) and roller surface (W5) must be adjusted as follows. The setting instructions are valid for all packer rollers, trapeze packer rollers and trapeze disc rollers.



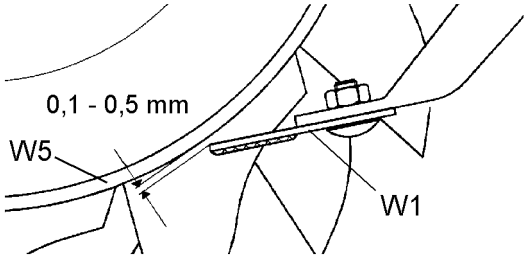
R_19

Heat treated scrapers



R_20

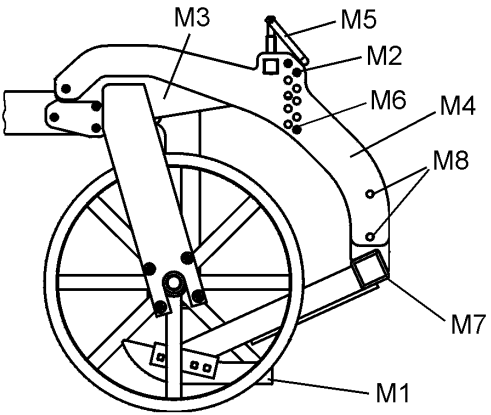
Synthetic scrapers
(fitted to the roller surface (W5) with a little pre-tension)



R_21

Hard-faced scrapers
or scrapers with hard metal plates

10.2 Knife roller



10.2.1 Working depth of the knifes

The working depth of the knifes (M1) will be adjusted by means of the pins (M2). Therefore the pins (M2) above the support plate (M3) will be fitted into one of the free holes of the carrier arms (M4). By means of the screw (M5) the carrier arms (M4) will be swung into the required position. After fitting and securing the pin, the screws will be turned a little anti-clockwise, so that they are unloaded.

10.2.2 Giving way of the knifes

The giving way of the knifes (M1) to the top is limited by the pin (M6). If required a low making way to the top is admitted.

10.2.3 Adjustment of the knife frame

When the range of adjustments by means of the pin (M2) is insufficient, the knife frame (M7) can be positioned higher in relation to the carrier arms. Therefore the bolts must be removed from the holes (M8) and the knife frame repositioned.

In extremely sticky or light soils it is recommended to adjust the knifes in a higher position. This will be done by re-positioning the knife frame.

10.2.4 Position of the knifes

Generally the knifes are fitted in front position to the knife frame (M7). When the knifes (M1) are worn, they can be set to the rear position.

10.2.5 Reconsolidation effect of the rollers

The reconsolidation effect of the roller will be changed by means of changing the position of the top link. Therewith the tractor hydraulics must be set to floating position or mixed control.

Steep positioned top link => low reconsolidaton effect

Not so steep positioned top link => medium reconsolidation effect

Flat positioned top link => high reconsolidation effect

WARNING! If the top link is positioned too steep, the entry behaviour of the cutivator will be reduced to the minimum.

- Read and adhere to the General Safety Instructions!

11 MAINTENANCE

	every 50 hours of use	every 100 hours of use	before the winter break	after the winter break
Pivots of the overload safety units (2x)		x	x	x
Hollow discs (1x)	x		x	
Greasing all pins			x	
Greasing all shiny areas of the hollow discs, outer discs and guide boards			x	

11.1 Bolts

All nuts and bolts must be tightened after the first few hours of use, at least within the first 8 hours and checked, and tightened if necessary. At least every 50 hours all bolts must be checked and tightened if necessary and secured with Loctite.

11.2 Wearing parts

Worn hollow discs, outer discs a.s.o. must be replaced in time, so that the carrying parts will not be damaged or worn.

IMPORTANT: Do not clean this implement with a Pressure Washer during the first 6 weeks. After this time a minimum nozzle distance of 60 cm must be observed with a maximum 100 bar and 50 ° C temperature!

- Read and adhere to the General Safety Instructions as well as to the Instructions „Maintenance“!

12 DRIVING ON PUBLIC ROADS

If it is required to drive on public roads with the cultivator, fit warning boards with lighting equipment.

As option for the Thorit 8 the carrier for lights (order No. 81 1640L) and warning boards with lighting equipment (order No. 80 2011L) are available.

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

The Thorit 8/400 and 8/400 Ü cultivators are wider than 3 m and therefore may not be transported on public roads.

The regulations and laws concerned must be abided by!

13 TECHNICAL DATA

Thorit	8/300	8/300 Ü	8/400	9/400 Ü
Weight (apprx.)	1368 kg	1788 kg	1768 kg	2328 kg
Length * (apprx.)	400 cm	430 cm	400 cm	430 cm
Transport height	300 cm	300 cm	400 cm	400 cm
Height (apprx.)	146 cm	146 cm	146 cm	146 cm
Working width	300 cm	300 cm	400 cm	400 cm
Centre of gravity (apprx.)	180 cm	200 cm	180 cm	200 cm
up to KW (PS)	118 (160)	118 (160	140 (190)	140 (190)
Min. working depth	5 cm	5 cm	5 cm	5 cm
Max. working depth	30 cm	30 cm	30 cm	30 cm

* with double roller

14 NOISE, AIRBORNE SOUND

The noise level of the implement does not exceed 70 dB (A) during work.

15 DISPOSAL

After useful life of the implement, it must be disposed of environment-friendly by a specialist.

16 NOTES

As the version of equipment is depending from the order, the equipment of your implement and its description concerned may deviate in some cases. To ensure a continuously updating of the technical features, we reserve the right to modify the design, equipment and technique.

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