Operating Instructions

Cultivators

Thorit 9 KA

Version 2004

- 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 9 KA and its operations before putting the implement to work. Therefore use this instruction book with the „General Health- and Safety precautions“!

- The LEMKEN Thorit 9 KA 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 9 KA 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 lin-

kage 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!

Mounted implements

- Mount implements as advised and only to the advised devices!
- When mounting or detaching the implement bring the supporting devices into the corresponding position (standing safety)!
- Fit and check transport devices like traffic lights, warning guards and protection devices!
- On all pivoting parts actuated by various power sources (e.g. hydraulics) exists danger of injury by bruising and crushing!
- Before mounting or detaching the implement the lifting control lever should be locked against unintentional lowering or lifting!
- Special care should be taken when the implement is mounted or detached from the tractor.

Trailed implements

- Secure implement and tractor against unintended rolling!
- Never exceed the maximum permissible load of the drawbar or hitch!
- When fitting the implement to a drawbar or hitch, ensure sufficient movement at the hitch-point.

Hydraulic equipment

- The hydraulic pipes are under pressure!
- When connecting hydraulic rams, the pipes must be connected as directed!

- Always release hydraulic pressure from both tractor and implement before coupling!
- When connecting hydraulic pipes to the tractor ensure that incorrect use is avoided. If the connections are reversed, the opposite function is carried out (e.g. raising/lowering) and there is a risk of accidents!
- Regularly check the hydraulic pipes and replace them in the event of damage or signs of ageing. The replacement pipes must comply with the technical specification as laid down by Lemken!
- When searching for leaks appropriate equipment should be used because of the danger of injury!
- Hydraulic oil escaping at high pressure can penetrate the skin and cause serious injury! When injured see a doctor immediately! Danger of infection!
- Before working on any hydraulic equipment - lower all implements/attachments, release hydraulic pressure where possible and switch off the tractor engine!

Tyres

- When working on the tyres make sure that the implement has been placed on the ground safely and that it is secured by chocks against unintentional rolling!
- Fitting tyres requires knowledge and special tools!
- Repairwork on tyres may only be conducted by trained staff and with suitable tools!
- Check air pressure regularly and adhere to the advised air pressure!

Brakes

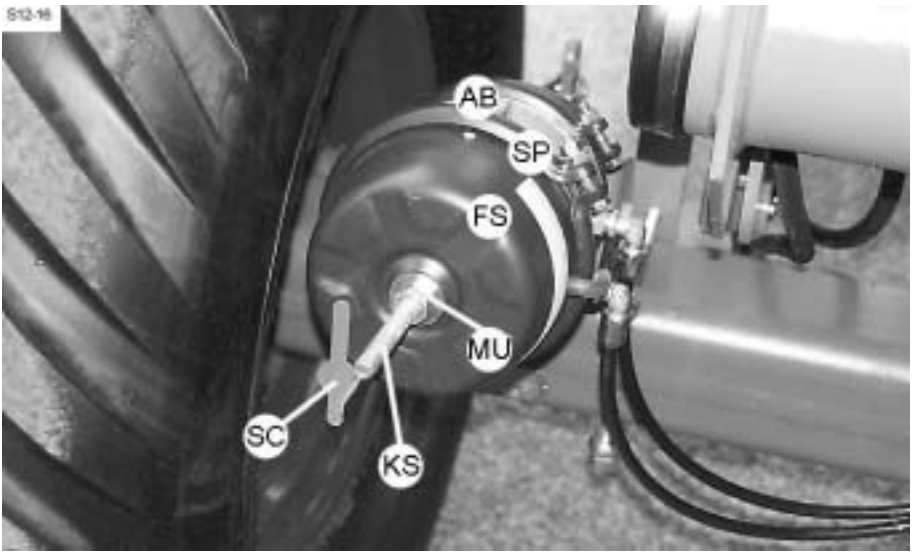
- Check function of brakes before each drive!
- The braking systems must be checked regularly!
- Repairwork on brakes may only be conducted by trained staff and with suitable tools!

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 USE OF SPRING LOADED BRAKE RAM

In order to make unloading and manoeuvring possible without air pressure supply, the spring loaded brake rams (FS) and therewith the complete braking assembly have been locked out of use by means of a key bolt (KS).



Before the first use, the braking assembly must be set under pressure, the nut of the key bolt (KS) loosened, the key bolt turned by 90° and finally removed. (If it is not possible to set the braking system under pressure, the nut of the spring loa-ded key bolt must be loosened until it is free and can be removed.)

After that close the opening of the spring loaded brake ram by means of a protec-tion cap (SC).

Finally fit the key bolt into the top bore (AB) of the braking ram and secure it by means of nut and peg.

Never loosen the outer tightening straps (SP) of the spring loaded brake rams (FS), as the ram is under pressure.

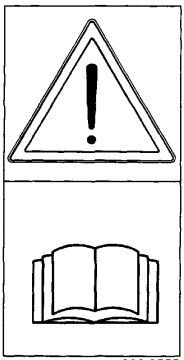
3 WARNING STICKERS

3.1 General Instructions

The LEMKEN Thorit 9 KA 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. Damaged, lost or unreadable warning stickers must be replaced immediately. The stated numbers are used as order numbers.

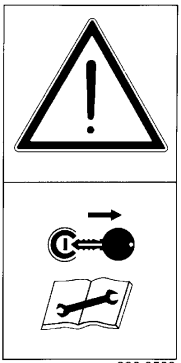
3.2 Understanding the stickers

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



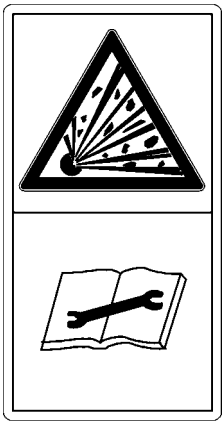
390 0555

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



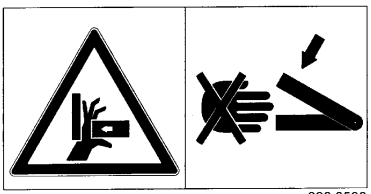
390 0509

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



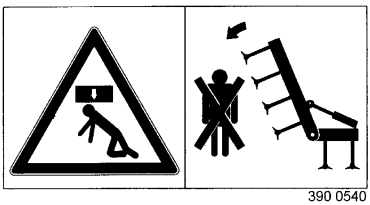
390 0591

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



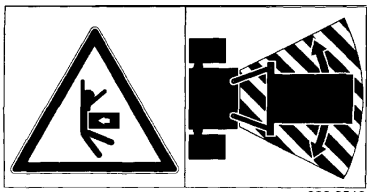
390 0506

WARNING! Pinch point!



390 0540

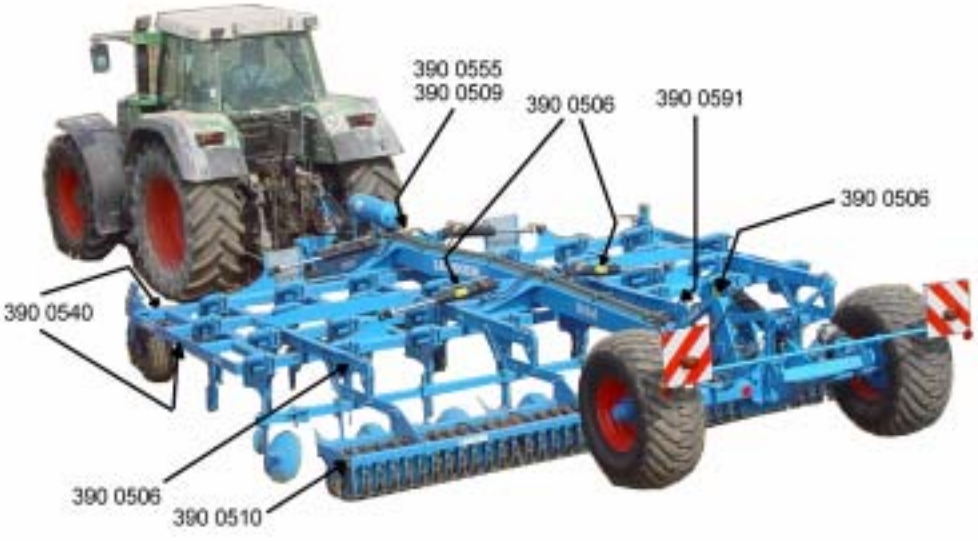
WARNING! Keep well clear of the folding area of the implement!

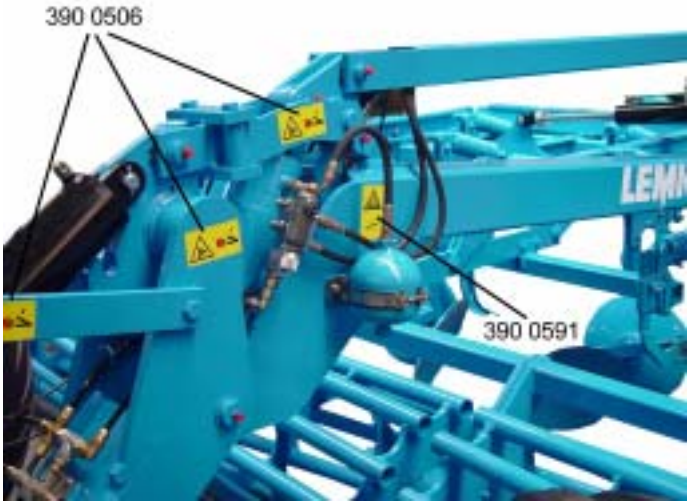


390 0510

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

3.3 Position of the warning stickers



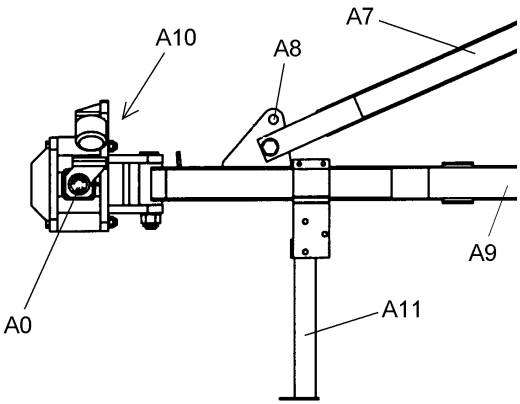


4 COMPACT INSTRUCTIONS

The following instructions must be done to use the Thorit 9 KA effective and optimal.

4.1 Lower links

The lower links must be locked laterally.



4.2 Lift rods

The pendulum balance of the lower links (slotted holes inside the lift rods) must be locked to prevent a negative effect on the tip-angle limiter (A10).

4.3 Drawbar

The drawbar (A0) must be set to the lower position. Therefore the stay (A7) will be connected to the upper hole (A8) of the pole (A9).

4.4 Working depth of the tines

The working depth will be adjusted in front by means of the tractor hydraulics and at the rear by means of the pins (S1) of the pin adjuster (V1). Range of working depth = 5 cm to 30 cm.

4.5 Depth control wheels

After the adjustment of the working depth of the tines the depth control wheels (I0) will be adjusted so that they touch the ground, but are loaded with low load, only.

4.6 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.

4.7 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).

4.8 Hydraulics

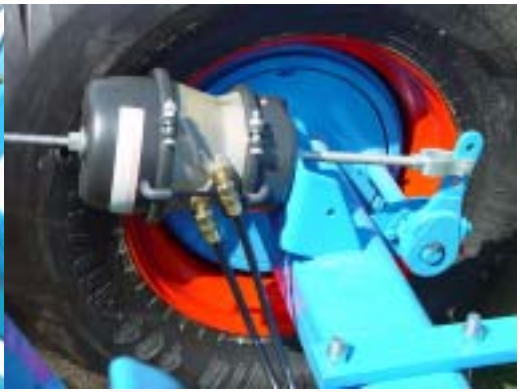
The tractor hydraulics must be set to position control.

5 AXLES AND POLE

5.1 Axles

The Thorit 9 KA is available with a transport axle for the solo use, only or with a combination axle for the combination use with a seed drill, press or other suitable implements.

Transport axle



Combination axle

5.2 Pole

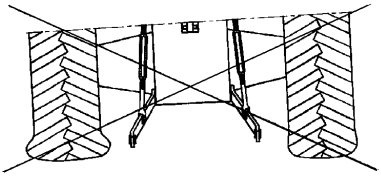
The Thorit 9 KA cultivators are equipped either with a short or a long pole. The following table shows, which pole will be fitted in dependence of the depth wheel and the working width.

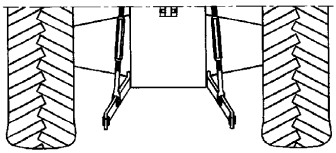
Type	Version of depth control wheel	Note
Thorit 9/400 KA and 450 KA	- rigid depth control wheels tail wheels	short pole short pole not available
Thorit 9/500 KA	- rigid depth control wheels tail wheels	short pole short pole long pole
Thorit 9/600 KA	- rigid depth control wheels tail wheels	long pole long pole long pole

6 PREPARATION OF TRACTOR

6.1 Tyres

Ensure that all tyres- especially the rear ones - are at identical pressure. See manufacturer instructions!





6.2 Lift rods

Adjust lift rods to equal length by means of the adjuster device. They must be set rigid = lock slotted holes!

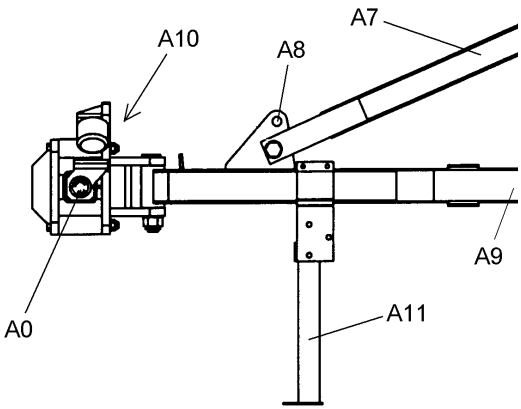
WARNING! Without locked slotted holes (locked pendulum balance) the tip-angle limiter (A10) does not prevent a tipping over of the implement in extreme situations.

6.3 Check chains or sway blocks

It is essential that the check chains or sway blocks are adjusted so that the lower links are fixed laterally when in working position.

6.4 Lower link connection

The categorie of the lower link connection of the implement and the tractor must correspond to each other. If they are not corresponding, either the three point linkage of the tractor must be altered or the drawbar (A0) of the cultivator must be replaced by a suitable version.



6.5 Tractor hydraulics

During work the tractor hydraulics must be set to "position control".

6.6 Required power sources and sockets

For the electric use of the Thorit 9 KA 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
Seed drill control (with fitted or mounted Solitair 9 K or -KA)	12	x	-
Electromagnetic control	12	-	according to DIN 9680
Electronic control	12	-	according to DIN 9680

Excess voltage and undervoltage lead to a breakdown and can destroy electric components.

Furthermore it must be ensured that there is a power covering of the power supply of at least 40 A.

6.7 Required spool valves at the tractor

The Thorit 9 KA will be delivered with separate hydraulic hoses for each use as standard.

If required the Thorit 9 KA can be equipped with 6/2 way connection, an electromagnetical or an electrical control valve. The protection caps of the hydraulic connections are marked in colours and the hydraulic connections alphanumerically.

It is recommended to use the 6/2 valve, the electromagnetical or the electrical control valve when the Thorit 9 KA is used in connection with the Solitair for example and not sufficient spool valves are available with the tractor for each use.

The electronic control includes additionally an automatic headland management. With this management the track markers, the soil cultivation implement and also the coulter bar of a fitted or mounted Solitair will be lifted and lowered automatically and in time.

WARNING! The electronic control requires the connection to a Load-Sensing-System with load response.

For the operation of the listed devices, the following spool valves are required with the tractor.

6.7.1 Thorit 9 KA with separate hydraulic connection for each use (with solo use)

Function	single acting spool valve	double acting spool valve	Tractor/Implement	
			Colour	Code
Folding device	-	x	red	P1 T1
Hydr. folding locking device	-	-	-	-
Chassis	-	x	green	P2 T2
Track marker (accessory)	-	-	black	P4

6.7.2 Thorit 9 KA with 6/2 way connection in combination with pneumatic seed drill Solitair 9

Function	single acting spool valve	double acting spool valve	Tractor / Implement		Connection bracket	
			colour	code	colour	code
Hydraulic motor for fan	x with pressureless return connection	-	pressure = yellow return = white	P6 T6	-	-
Folding device	-	x	red (with 6/2 way connection)	P1 T1	-	-
Folding device of the coulter bar	-				red	P1 T1
Coulter bar lifting device or hydr. three point linkage	-				blue	P3 T3
Chassis	-	x	green	P2 T2	-	-
Track marker	x	-	black	P4	-	-
Hydr. pre-emergence marker, double acting - left, central	-	-	-	-	black	P9 T9
Hydr. pre-emergence marker, double acting - right	-	-	-	-	black	P10 T10
Hydr. pre-emergence marker, single acting - left, central	-	-	-	-	black	P9 T9
Hydr. pre-emergence marker, single acting - right	-	-	-	-	black	P10 T10
Hydr. harrow lifting device	x	-	-	-	-	-

6.7.3 Thorit 9 KA with electromagnetic or electronic control in combination with pneumatic seed drill Solitair

Function	single acting spool valve	double acting spool valve	Tractor / Implement		Connection bracket	
			colour	code	colour	code
Hydraulic motor for fan	x with pressure-less return connection	-	pressure = yellow return = white	P6 T6	-	-
Folding device	-	x a) b)	red (with control box or operation terminal)	P1 T1	-	-
Folding device of the coulter bar					red	P1 T1
Coulter bar lifting device or hydr. three point linkage					blue	P3 T3
Chassis					-	-
Track marker					-	-
Hydr. pre-emergence marker, double acting - left, central	-	-	-	-	black	P9 T9
Hydr. pre-emergence marker, double acting - right	-	-	-	-	black	P10 T10
Hydr. pre-emergence marker, single acting - left, central	-	-	-	-	black	P9 T9
Hydr. pre-emergence marker, single acting - right	-	-	-	-	black	P10 T10
Hydr. harrow lifting device	x	-	-	-	-	-

a) For the electromagnetical control valve, a constant flow-, constant pressure or load-sensing-system with load response is required at the tractor.

b) Generally the electronic control requires a load-sensing-system with load response at the tractor.

6.8 Brake assembly

The tractor must be equipped with either a two line air pressure brake system or a hydrauilc brake system.

The tractor must show a dead weight which is at least twice as high as the axle load of the Thorit 9 KÜA, when the Thorit 9 KA is not equipped with a brake assembly and its axle load under 3 t.

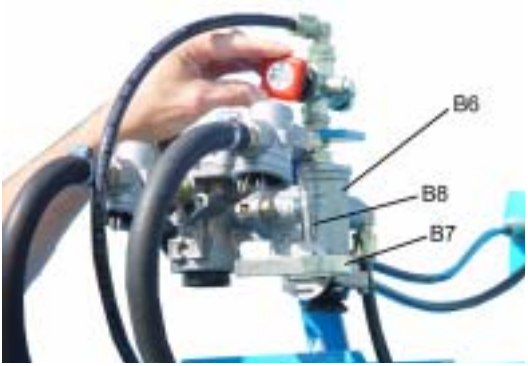
- Read and adhere to the General Safety Instructions!

7 PREPARATION OF THE THORIT 9 KA

7.1 Brake pressure regulator

Depending on the existing axle load the brake power must be adjusted by means of the brake pressure regulator (B6) according to the following table. For the adjustment the lever (B7) must be turned.

Four different brake pressure adjustments are possible.



The arrow (B8) points to the chosen setting.

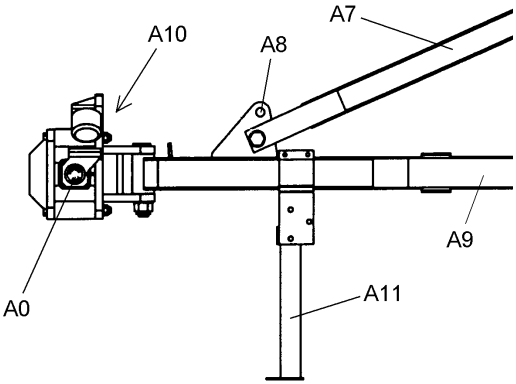
Axle load	Minimum air pressure of the wheels 550/60-22.5 with			Adjustment of the brake pressure regulator	
	30 km/h	40 km/h	50 km/h		
up to 3.000 kg	0,8 bar	0,8 bar	1,0 bar		For manoeuvring with a tractor without air pressure supply. Before manoeuvring the system must be pressurised to a pressure of at least 3,5 bar.
3.000 kg up to 4.000 kg	0,9 bar	1,0 bar	1,3 bar	0 	
4.000 kg up to 6.000 kg	1,2 bar	1,4 bar	1,8 bar	1/2 	
6.000 kg up to 8.000 kg	1,9 bar	2,2 bar	2,9 bar	1/1 	

7.2 Wheels

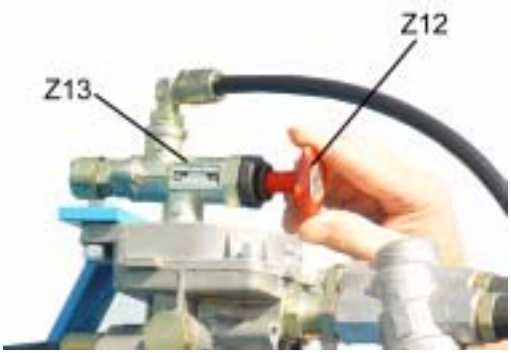
Adjust tyre pressure according to speed of travel and axle load in accordance to the above table. The maximum allowed air pressure is 2,9 bar. This pressure must not be exceeded.

8 ATTACHING AND DETACHING THE THORIT 9 KA

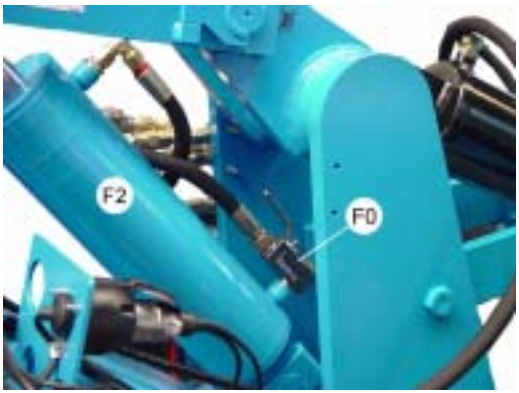
8.1 Attaching



- For attaching the Thorit 9 KA the hydraulics of the tractor must be set to position control!
- Connect the tractor lower link to the drawbar (A0) and secure!
- Swing stand (A11) upwards and secure!
- Connect hydraulic hoses!
- Connect electric cables.
  If available place control box or operation terminal with cable in the tractor cab and connect to the socket!
- Connect braking hoses and put wheel chocks (Z14) into the holders (Z15) and secure.



- Release the parking brake by operating the red button (Z12) of the parking valve (Z13).
- For transport the lock valve (F0) at the chassis must be closed!

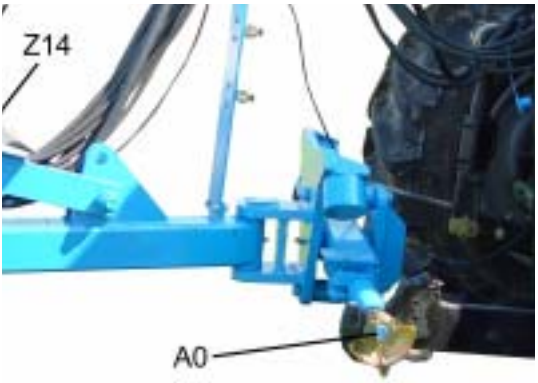


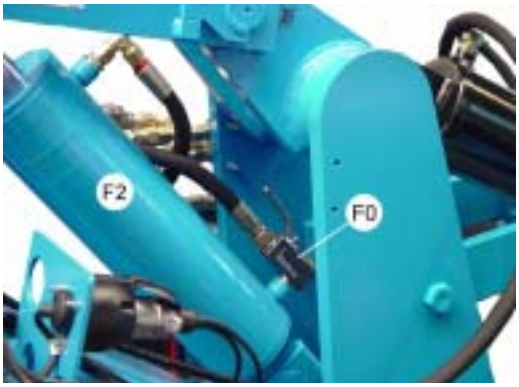
WARNING! If an implement will be fitted or mounted to the Thorit 9 KA, also the instructions of the corresponding operators manual must be adhered to!

8.2 Detaching

The cultivator must always be parked on level and firm ground!

- Set tractor hydraulics to position control before detaching the implement!
- Fold-out the lateral sections completely!
- Remove the wheel chocks (Z14) out of the holders (Z15) and secure!
- Disconnect braking hoses!
- Activate the parking brake by means of pressing the red button (Z12) of the parking valve (Z13)!
- Disconnect electric cables!
- Open lock valve (F0)!
- Lower the implement and disconnect the lower links from the drawbar (A0)!
- Stop engine and move the operation lever of the spool valve several times to and fro, in order to release the hydraulic hoses!
- Disconnect hydraulic hoses and fit protection cap!





8.3 Transport, transport height

Before transport, the Thorit 9 KA must be folded-in completely. See section „Folding-in and -out the lateral sections“.

After that the protection devices must be fitted and it must be ensured, that the lighting equipment is fitted either at the Thorit 9 KA or at the fitted or mounted implement.

Finally lower the Thorit 9/600 KA and 9/600 KÜA , the front as well as the rear, so that

1. the maximum admitted transport height of 4 m will not be exceeded and

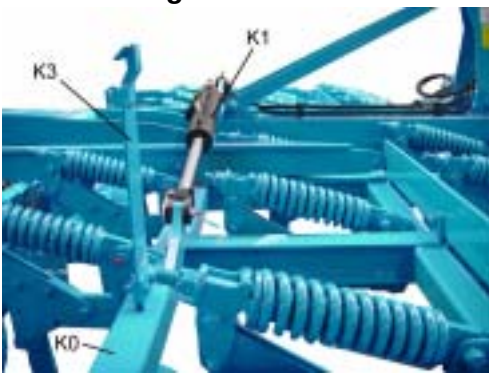
2. enough clearance will remain between soil and tines.

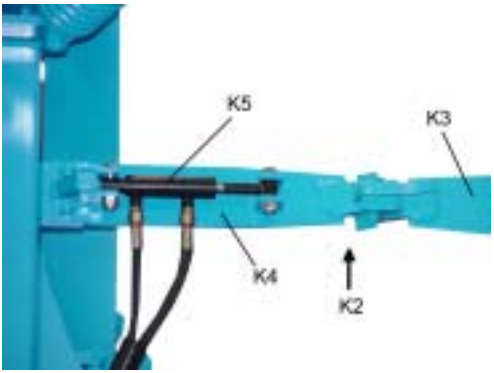
WARNING! The centre of gravity of the folded-in Thorit 9 KA is extremely high, therefore there is an increased risk of tipping. Ensure appropriate driving!

- Read and adhere to the General Safety Instructions as well as to the Instructions „Trailed implement“, „Mounted implement“ and „Attached implement“!

9 FOLDING-IN AND -OUT

9.1 Folding-in the lateral sections



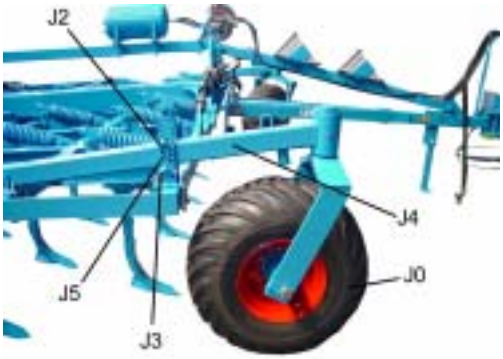


For transport the lateral sections (K0) must be folded-in. The lateral sections may be folded-in and -out only, when the implement is fitted to the tractor.

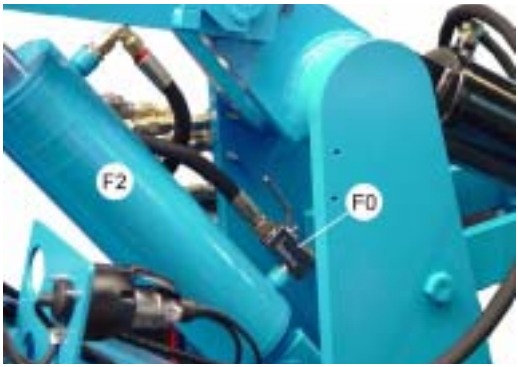
The hydraulic rams (K1) of the folding device must be connected to a separate double acting tractor spool valve.

WARNING!

If the depth wheels are set to a working depth deeper than 20 cm (8 inches), the corresponding pin (J3) must be dismounted and fitted again and that above the pin (J2) in the guiding (J5) and secured.



The Thorit 9 KA will be folded-in as follows:



- Before folding-in, lift the cultivator in front and rear completely.
- By means of setting the spool valve to „folding-in position“ = 1st pressure position, the lateral sections will be folded-in until their end stops. Now the hydraulic folding locking device (K2) locks automatically.
- Check, whether the hooks (K3) and (K4) of the hydraulic folding locking device are locked correctly and whether the hydraulic ram (K5) is opened completely.
- Lock tractor spool valve to avoid an unintentional folding-out of the lateral sections.

For driving on public roads, the lighting equipment with warning boards and the protection devices must be fitted.

9.2 Folding-out the lateral sections

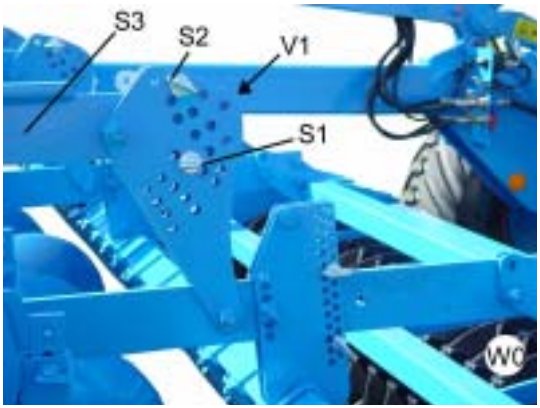
- Before folding-out the lateral sections (K0) the cultivator must be lifted completely in front and the rear and the protection devices must be removed.
- Unlock tractor spool valve and set it into the 1st pressure position = folding-in position and afterwards into the 2nd pressure position = folding-out position.
- The lateral sections will be unlocked automatically via the hydraulic ram (K5) and folded-out now.

- Read and adhere to the General Safety Instructions as well as the Instructions „Hydraulic Assembly“!
- Never fold-in and -out the lateral sections when being under a power line!

10 ADJUSTMENTS

10.1 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.

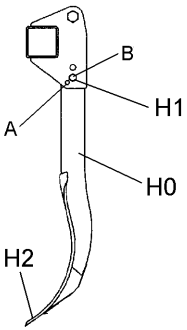
Placing the lower pin (S1) in an upper hole
=> reduced working depth.

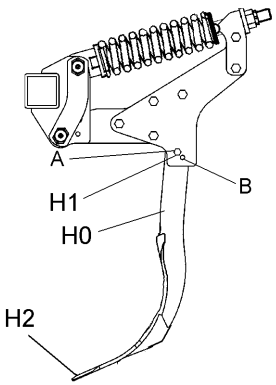
With the upper pins (S2) the clearance between the ground and the rollers (W0) will be adjusted with raised cultivator.

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).

10.2 Tine position

The tine position respectively the shares 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).

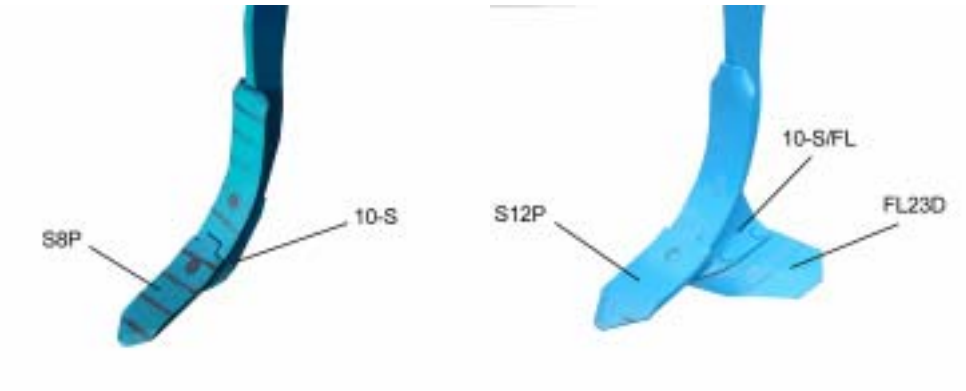
Hole A = flat position (especially for heavy sticky soils = easier to pull)

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

10.3 Shares

The Thorit 9 KA is available with points S8P (80 mm wide) or S12 P (120 mm wide). These points will be bolted to the sahre foot 10-S.

Alternatively also change wing shares are available with points S12P and wing shares FL23D (RH and LH), which will be bolted to the foot 10-S/FL. This foot is provided with additonal holders for the wing shares.

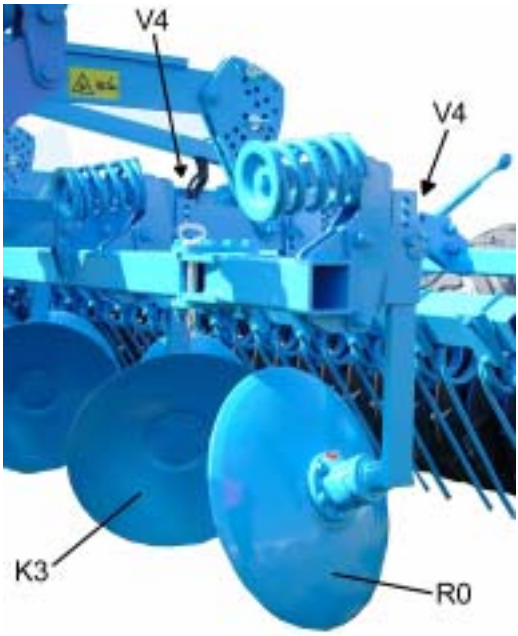


If it is required to work deep, it will be recommended to use points S8P with foot 10-S; if it is required to work over the complete working width and shallow, the use of the change wing shares is recommended.

10.4 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.

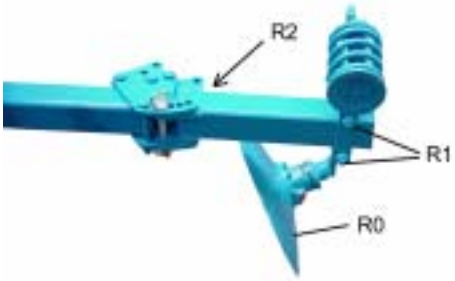
The working depth of the hollow discs will be adjusted by means of the pin adjuster (V4).



10.5 Outer discs

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

They should not work so deep as the inner discs; 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.



The throwing angle of the outer discs can additionnally be optimised by means of the angle adjustment (R2).

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

10.6 Depth control wheels

10.6.1 General Instructions

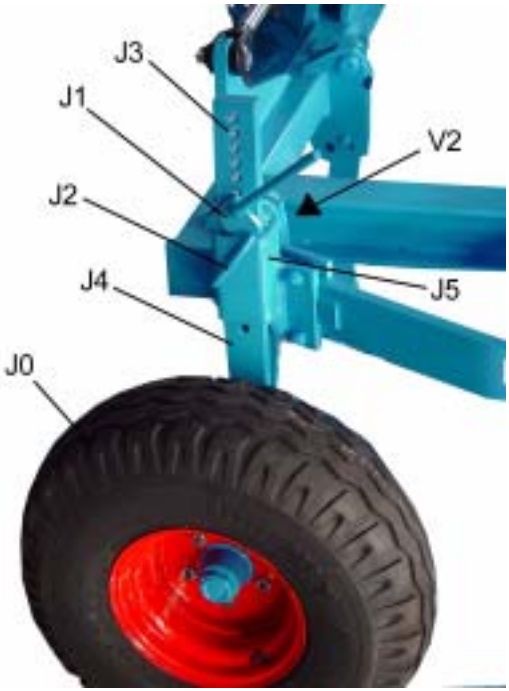
The Thorit 9 KA is available with rigid depth control wheels or tail wheels. See section „Axles and pole“.

The depth wheels prevent the outer tines working too deeply.

They should not be loaded with too much weight of the cultivator.

10.6.2 Rigid depth control wheels

The depth will be adjusted by means of the pin adjuster (V2) and the eccentric lever (J1). Before dismounting the pin (J2), it must be unloaded by means of the eccentric lever (J1). Therefore the eccentric lever will be fitted to one of the holes (J3) of the wheel stalk (J4) directly above the bracket (J5), secured and pressed down.



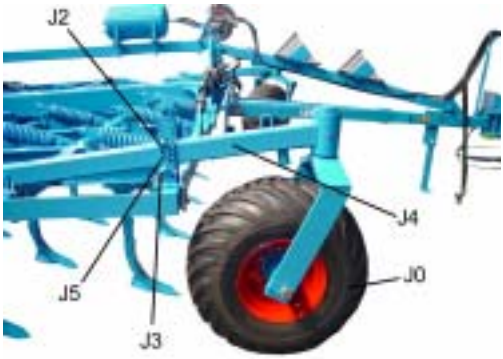
WARNING! The weel stalk (J4) must always be held by the eccentric lever (J1) or the pin (J2)! Never dismount eccentric lever and pin at the same time!

After each depth adjustment the pin (J2) must be secured again.

10.6.3 Tail wheels

The depth will be adjusted by means of the pins (J2 and J3). Put the pin (J3) always directly below the carrier (J4) to prevent a wearing of the carriers (J4) and the guiding (J5) of the carriers.

After each depth adjustment the pins (J2 and J3) must be secured again.



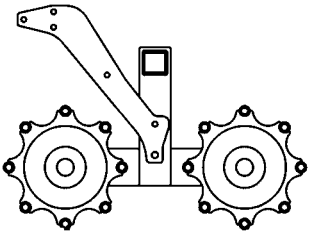
- Read and adhere to the General Safety Instructions as well as to the Instructions „Hydraulic assembly“, „Tyres“ and „Maintenance“!

10.7 Rollers

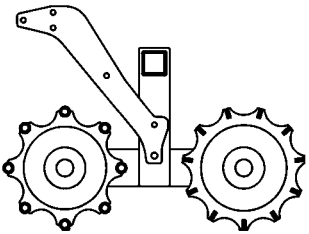
10.7.1 General Instruction

The Thorit 9 KA can be equipped with tube bar rollers RSW 540 or RSW 600, double rollers DRR 400, DRR 540/400 or DRF 400, trapeze ring roller TRW 500, packer roller ZPW 500, trapeze packer roller TPW 500, trapeze disc roller TSW 500, knife roller MSW 600 or rubber ring roller GRW 590.

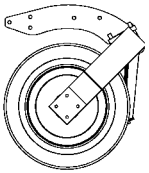
- The tube bar -, double - and trapeze ring rollers are maintenance-free.
- The trapeze packer roller, trapeze disc roller, packer roller and rubber ring roller are equipped with adjustable scrapers, which must be re-adjusted from time to time.
- The knife roller is equipped with a bar with knifes as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



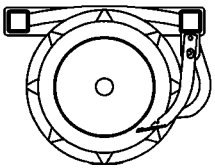
DRR 400



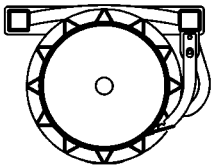
DRF 400



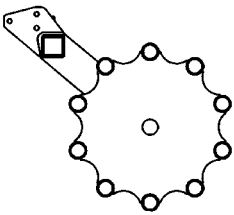
GRW 590



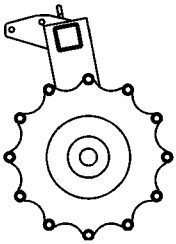
TSW 500



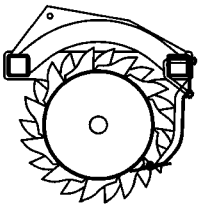
TPW 500



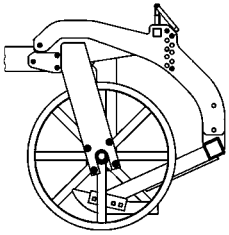
RSW 600



RSW 540



ZPW 500



MSW 600

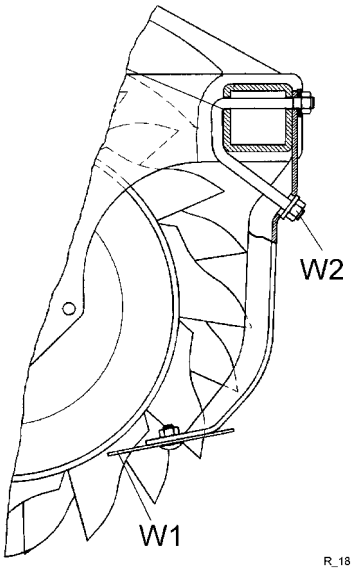
10.7.2 Adjustment of the scrapers

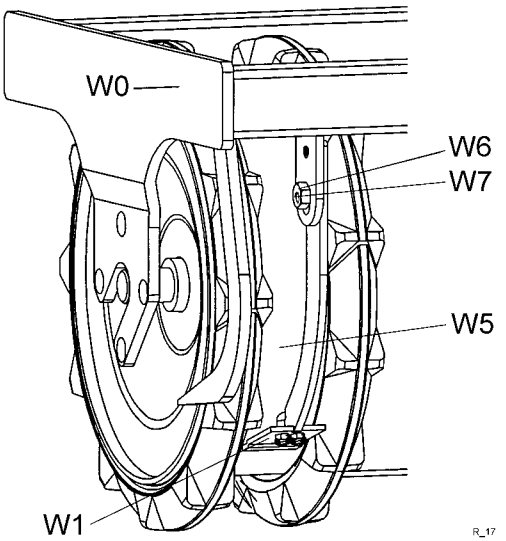
The adjustable scrapers (W1) of the rollers will be adjusted by means of nuts (W2) or eccentric nuts (W6).

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.

The scrapers of the rubber ring rollers are provided with slotted holes, which enable a re-adjustment.

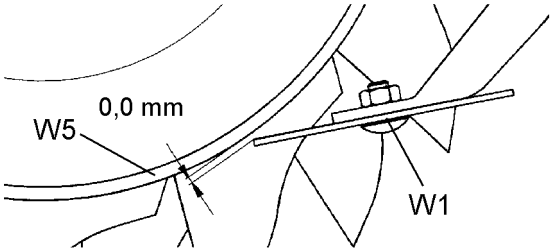




10.7.3 Distance between scraper and roller surface

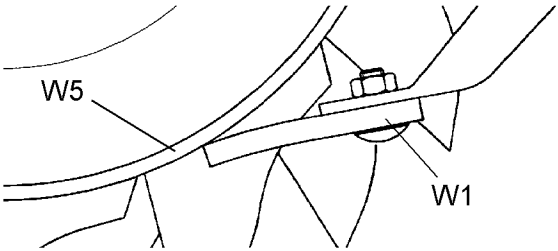
The distance between scraper (W1) and roller surface (W5) must be adjusted as follows. The setting instructions are valid for all packer rollers, trapeze packer rollers and trapeze disc rollers.

Each scraper of the rubber ring roller must be adjusted so that it is positioned in a distance of 8 to 12 mm to the rubber rings.



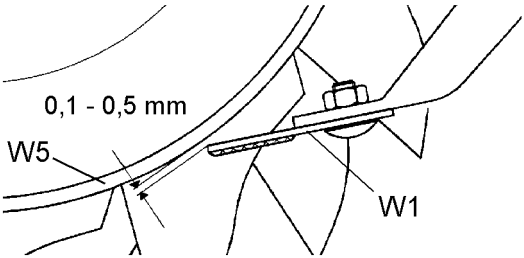
R_19

Heat treated scrapers



R_20

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



R_21

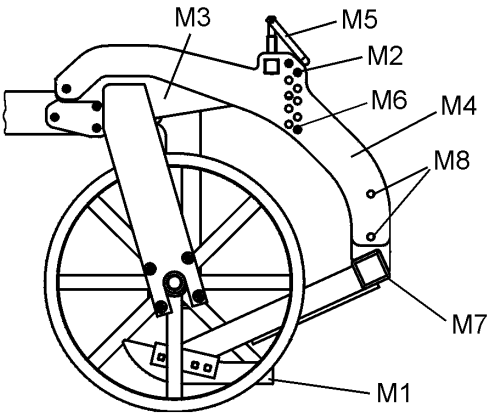
Hard-faced scrapers
or scrapers with hard metal plates

10.7.4 Knife roller

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.

Giving way of the knifes

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

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 soil conditions it is recommended to adjust the knifes in a higher position. This will be done by re-positioning the knife frame.

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.

10.8 Pressure load on the rollers

10.8.1 Combination axle

By means of the hydraulic ram (F2) weight can be transfered from the chassis to the rollers. Therefore the lock valve (F0) must be opened. The amount of weight transfer will be adjusted by means of the adjuster wheel (F6) of the relief valve (F5).

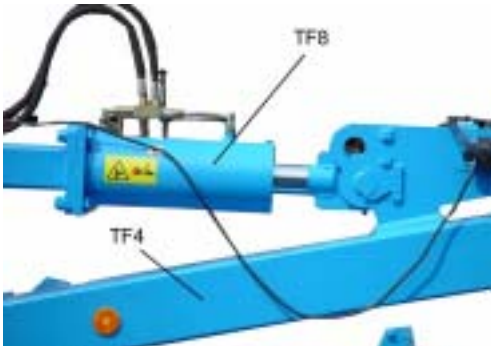
Turning the adjuster wheel (F6) clockwise
=> higher pressure load

Turning the adjuster wheel (F6) anti-clockwise
=> lower pressure load

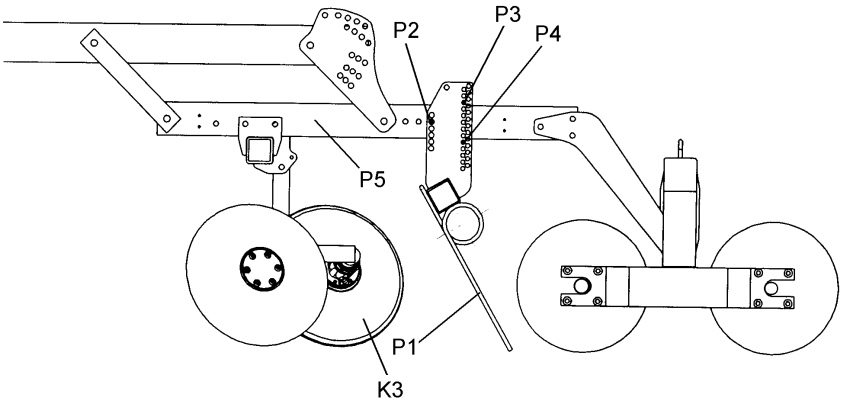
Each pressure load ajustment can be read at the marking lines of the adjuster wheel of the relief valve.
The hydro accumulator (F3) ensures that the cultivator can adapt to the ground independently from the chassis.
When the cultivator is lowered again after reversing on headlands, the spool valve concerned must be held in this pressure position for approximately 5 seconds, so that the pre-adjusted pressure inside the hydraulic system can be reached again.

10.8.2 Transport axle

When the Thorit 9 KA is equipped with a transport axle, the chassis (TF4) can be lifted during work via the hydraulic ram (TF8) completely.



10.9 Straw harrow STR 80



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.

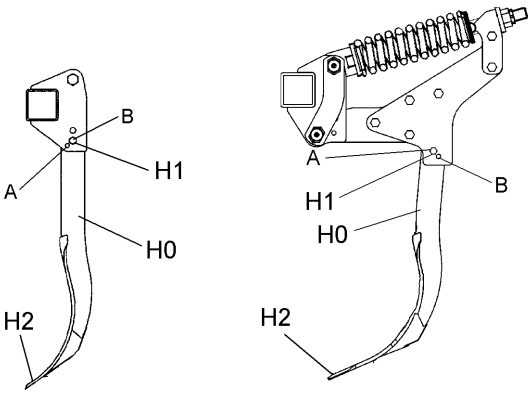
For work the straw harrow must be adjusted, so that the straw will be distributed very well, but not pile up. It must be ensured, that the tines (P1) of the straw harrow do not touch the rollers.

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!

11 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.

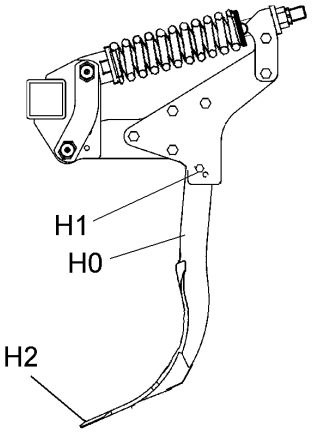
Only shearbolts according to the schedule below should be used. Otherwise there is a serious risk of damage to frame, tine or disc carrier or a premature failure may be experienced.

	Tines	**Disc carrier with shearbolt device**
Thorit 9 KA	301 7342 M12 x 65 B = 15/8.8	301 3240 M10 x 45 B = 10/8.8
Thorit 9 KÜA	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!

12 AUTOMATIC OVERLOAD SAFETY DEVICE

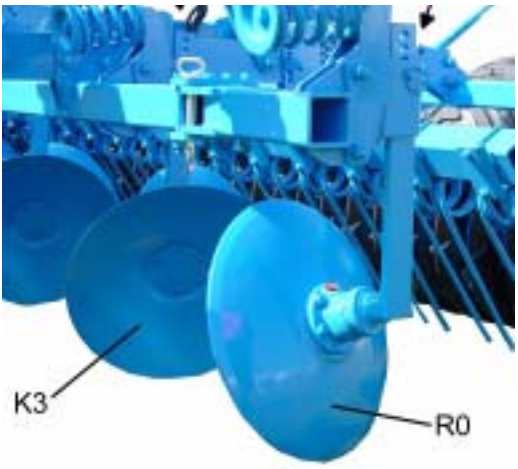
The Thorit 9 KA cultivator is especially designed for stony soils, and the tines (H0) are equipped with an automatic overload safety device with springs, protecting the implement from damage when an obstacle is encountered.



The tines trip back upon impact 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!

13 CONTROLS

- **in combination with pneumatic seed drill** -

13.1 6/2 way connection

By means of the lever (W3) the way connection (W1) can be switched over so that either the Thorit 9 KA and the coulter bar will be folded-in and -out or for work the hydraulic three point linkage or the coulter bar lifted or lowered.

For to the 6/2 way connection (W1) one double acting spool valve is less required.

13.2 Electromagnetic control

Using a control box with four operating levers all functions with the exception of the fan are activated through a valve block (L8S).

In this way, 2-3 double-acting spool valves and one single acting spool valve on the tractor can be spared.

The spool valve must be permanently supplied with oil (constant pressure, constant flow or load-sensing system with load response).

A = Cultivator lifting device

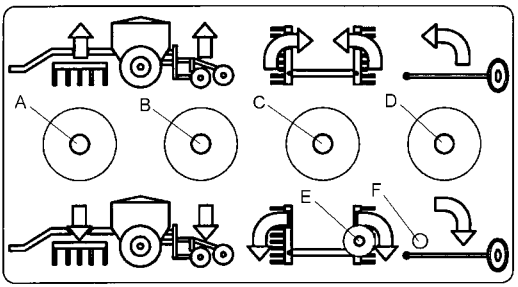
B = Coulter bar lifting device

C = Folding device

D = Track marker operation

E = ON, OFF

F = Control light

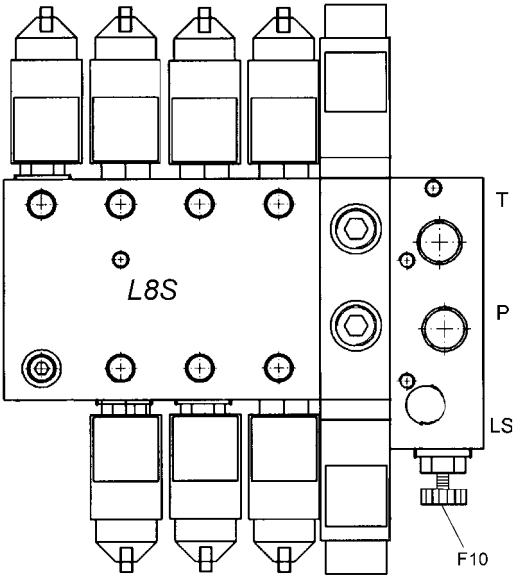


Via an adjuster screw (F10) the control block can be adjusted to the hydraulic system of the tractor.

a) Operation with constant oil supply

The adjuster screw (F10) must be screwed out to the stop, in order to get into the constant oil supply mode.

In this position the oil is flowing back freely from the pump via the control valve from P to T into the tank. The simultaneous operation of the other uses at the tractor like fan, rear hydraulic and front hydraulic is not possible.



b) Operation with constant pressure

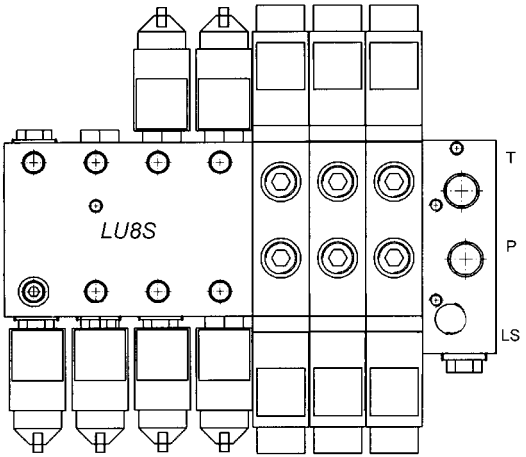
The adjuster screw (F10) must be screwed in to the stop, in order to get into the constant pressure mode.

The control valve is steadily under pressure. Now each use of the Thorit 9 KA and the Solitair 9 KA can be operated.

The simultaneous fan drive via an additional spool valve is possible.

If the LS-connection of the control valve is used, a load sensing operation with load response is possible.

13.3 Electronic control



Via an operator terminal all functions of the Thorit 9 KA are operated with pressure balance over a valve block (LU8S).

The weight transfer onto the rollers and the coulter pressure are monitored and constantly regulated.

At the press of a button on the headland the track markers, the coulter bar and the soil cultivation implement are automatically lifted at the correct time and lowered accordingly.

The valve block requires a connection to a load sensing system with load repose and not to a tractor spool valve.

Further information can be learned from the corresponding operators manual of the electronic control.

13.3.1 Joystickbox

Because of the Joystickbox, the track markers, the coulter bar and the soil tilling implement can be lifted and lowered by means of a „Joystick“ instead of a push of a button.

- Read and adhere to the General Safety Instructions as well as to the instructions „Hydraulic assembly“!

14 TRACK MARKERS

Before operating the track markers (SP1), they must be unlocked and adjusted.

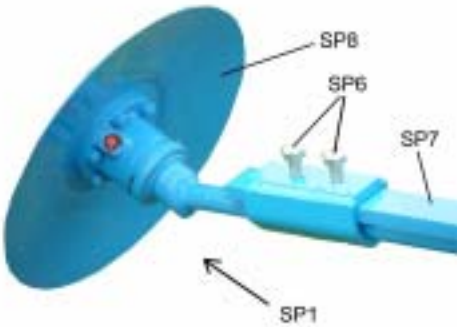
Therefore the pins (SP3) must be removed and fit into the hole (SP2) and secured.

Via the hydraulic rams (SP5) the track markers will be lifted alternatetly and lowered into working position.

The track markers must be adjusted to the centre of the tractor track according to the following table.

(Photo shows Rubin 9 KÜA)
Track marker (SP1) secured. Pin (SP3) is fitted to the hole (SP4).

After loosening the clamp screw (SP6) the length of the track marker arm (SP7) and the angle of the track marker discs (SP8) can be adjusted. After the adjustment the corresponding clamp screw (SP6) will be tightened again carefully.
For transport, the track marker arms (SP7) must be swung-in and secured by means of the hydraulic rams (SP4).



Thorit	Distance from the centre of the seed drill to the track marking	Distance from the outer seeding coulter
9/400 KA (-KÜA)	400 cm	200 cm + 1/2 row distance
9/500 KA (-KÜA)	500 cm	250 cm + 1/2 row distance
9/600 KA (-KÜA)	600 cm	300 cm + 1/2 row distance

The track markers are protected against overload by means of a shear bolts (SP0).

(Photo shows Rubin 9 KÜA)

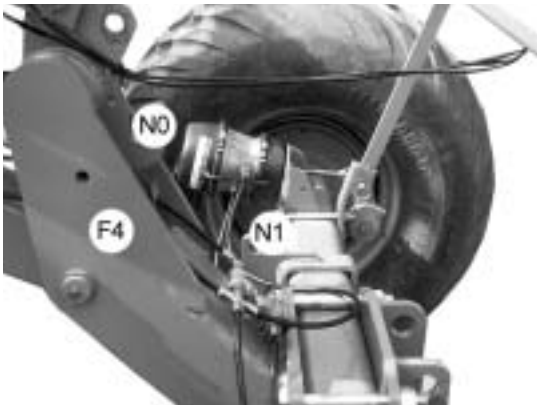
- Read and adhere to the General Safety Instructions as well as to the Instructions „Hydraulic assembly“!

15 ATTACHING OR DETACHING THE SOLITAIR

15.1 General Instructions

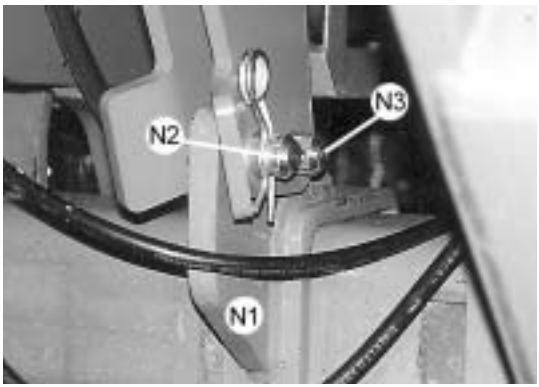
The Thorit 9 KA cultivator is available with coupling parts for mounting the Lemken Solitair seed drill.

The coupling parts include an upper catch hook (N0) and two supporting plates (N1) fitted to the chassis as shown in the sketch. With these parts it is simple to mount the Lemken Solitair to the chassis (F4).

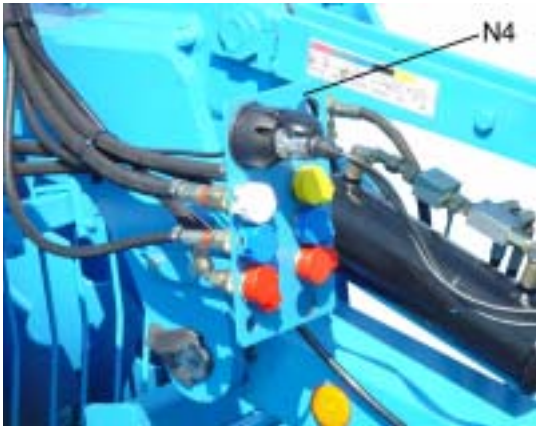


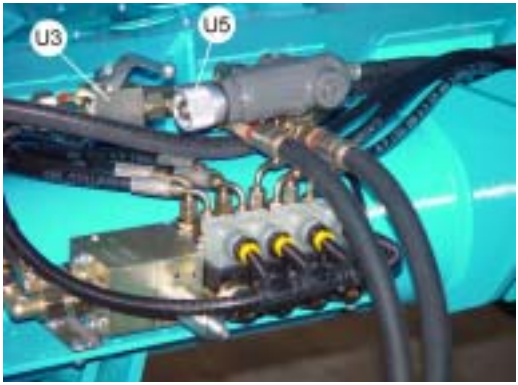
15.2 Attaching the seed drill

- Unsecure and remove the front pin (N2).
- Drive carefully with the cultivator to the parked Solitair seed drill until the catch hook (N0) is positioned below the top link pin and the supporting plates (N1) are below the rear pins (N3).



- Connect hydraulic hoses of the Solitair 9 KA to the connection bracket (N4) of the Thorit 9 KA.
- Unlock coulter bar of the Solitair and open lock valve (U3).
- Lower the Solitair a little by means of the hydraulic rams of the coulter bar lifting device until the top link pin hooks into the catch hook (N0) and the pins (N3) support on the supporting plates (N1).
- Fit front pin (N2) and secure by means of the spring pin.
- Connect electric cables.
- Lift coulter bar, remove outer stands (U1) and unsecure, lift and secure again the middle stand.





15.3 Detaching the seed drill

The Solitair seed drill must always be parked on level and firm ground.

- Before detaching, the hopper must be emptied completely and the lock valve (U3) of the coulter bar lifting device opened.
- Fold-out and secure coulter bar.
- Lift coulter bar by means of the hydraulic rams and move the stands (U1) laterally into the frame of the coulter bar up to the stop and lower and secure the middle stand.

- Unlock front pin (N2) and dismount.
- After that lower coulter bar and lift the Solitair 9 KA until the top link pin is a few centimeters above the catch hooks (N0).
- Close lock valve.
- Disconnect hydraulic hoses.
- Disconnect electric cables.
- Check, whether all hydraulic hoses and electric cables are disconnected. After that drive away carefully from the parked Solitair.

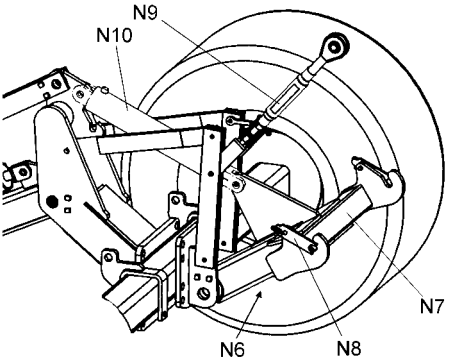
See instruction book of the Solitair 9 KA

- Read and adhere to the General Safety Instructions as well as to the Instructions "Mounted Implements"!
- The discharge valve (U4) is similar to an adjustable relief control valve. Before mounting or detaching the seed drill, the adjuster (U5) of the Solitair must be turned clockwise, as with a too low adjusted central coulter bar pressure, the Solitair cannot be lifted and sinks down without control.

16 HYDRAULIC THREE POINT LINKAGE

16.1 Attaching a seed drill

The trailed Thorit 9 KA cultivators are available with an hydraulic lift linkage (N6) (category II) for attaching a seed drill with own wheels.



The seed drill will be connected to the lower link unit (N7) of the lift linkage by means of the drawbar and secured by means of the locking bars (N8).

The locking bars will be secured by the linch pins provided.

After that attach and secure the top link (N9).

The spool valve for the hydraulic lift linkage must be set to floating position during work.

Lifting the seed drill will be carried out by means of closing the hydraulic ram (N10).

The hydraulic hoses of the Solitair will be fitted to the couplings at the rear of the connection bracket (N4).

Before driving on public roads the seed drill must be lifted completely and the lock valve (N13) of the hydraulic ram (N10) closed.

16.2 Lowering the mounted seed drill

The seed drill will be lowered as follows:

- Open lock valve of the hydraulic ram (N10) with closed tractor spool valve.
- After that set tractor spool valve to 'lowering' and lower the seed drill.

WARNING! Tighten counter nuts of the rear top link (N9) after each adjustment.

16.3 Detaching a seed drill

Prepare seed drill so that the drill can be parked safely.

- Lower the seed drill and disconnect all supply hoses and cables!
- Disconnect top link (N9) from the tractor and put it into the holder.
- Unlock and detach securing lever (N8).
- Lower three point linkage and drive away carefully with the Thorit 9 KA from the seed drill.

- Read and adhere to the General Safety Instructions!
- Read and adhere also the instructions book of the seed drill manufacturer!

17 CHASSIS

17.1 Wheels

The trailer of the Thorit 9 KA is available with the tyres 550/60-22.5 or 12.5/80-18. Ply rate and profile description are printed in the tyre. Damaged or worn tyres must be replaced immediately. The following minimum and maximum air pressures must be adhered:

Description	Part No.	Profile	Ply-rating (PR)	min. allowed air pressure (bar)	max. allowed air pressure (bar)
550/60-22.5	550 8872 (right)	T 404	12	2,0	2,9
550/60-22.5	550 8873 (left)	T 404	12	2,0	2,9
12.5/80-18	550 8874	AW	10	2,5	3,1

- Read and adhere to the General Safety Instructions as well as to the Instructions "Tyres"!
- In connection with the tyres 12.5/80-18 it is not possible to fit a seed drill at the Thorit 9 KA!

17.2 Brake assembly

If it is required to transport a Thorit 9 KA on public roads with fitted or mounted seed drill, the cultivator must be equipped with a two line air braking device.

Generally the Thorit 9 KA must be equipped with a braking device, if the pulling tractor does not reach the prescribed braking deceleration.

- Read and adhere to the General Safety Instructions as well as to the Instructions "Brakes"!

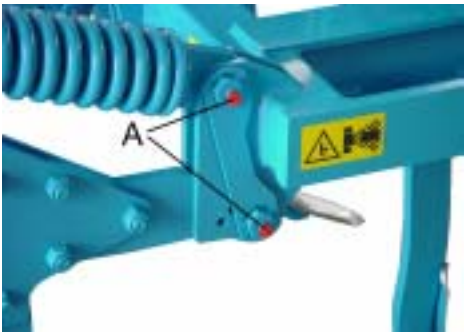
18 MAINTENANCE

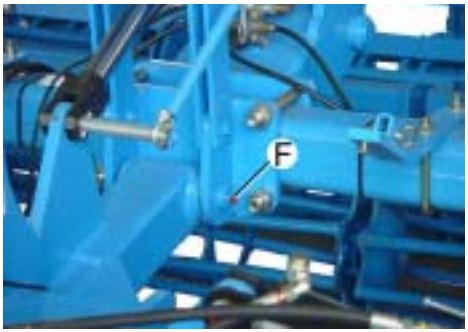
All lubrication points must be greased regularly according to the greasing table:

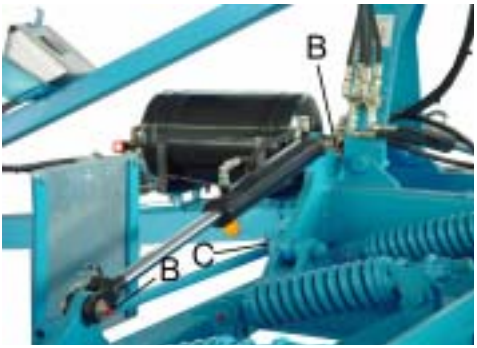
18.1 Greasing table

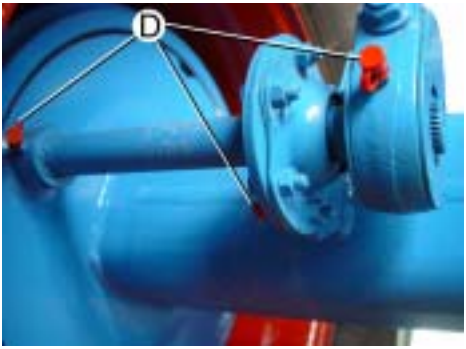
	Greasing table	Every 20 hours of use	Every 50 hours of use	Every 100 hours of use	Before winter break	After winter break
A	Overload safety device (each 2x)	x			x	x
B	Hydraulic ram for folding procedure (8x)		x		x	x
C	Folding pivots (4x)		x		x	x
R	Track markers (4x)		x		x	x
D	Brake linkage for combination axle (6x)			x	x	x
E	Brake linkage for transport axle (2x)			x	x	x
F	Hydr. three point linkage (1x)		x		x	x
I	Hydraulic ram for trailer with combination axle (2x)		x		x	x
S	Bearing of the track marker discs (2x)		x		x	x
K	Cross joint of the pole (Lower link connection)		x		x	x
M	Depth control wheels (each 1x)			x	x	
G	Castor wheels (each 3x)			x		
L	Hollow discs (eache 1x)		x		x	
J	Pole (2x)			x		
N	Outrigger of the trailer with combination axle (3x)		x			
O	Outrigger of the trailer with transport axle (2x)		x			

H	Lift cinematic with trailer for combination axle (6x)			x		
P	Hydraulic ram for trailer with transport axle (2x)		x			
	Grease pins				x	x
	Greasing table	**Every 20 hours of use**	**Every 50 hours of use**	**Every 100 hours of use**	**Before winter break**	**After winter break**
	Greasing the piston rods				x	
	Grease areas of the hollow discs, outer discs and guide-boards				x	





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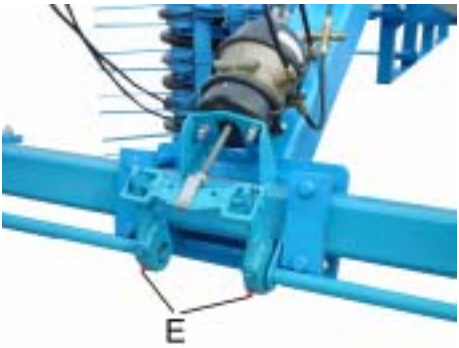
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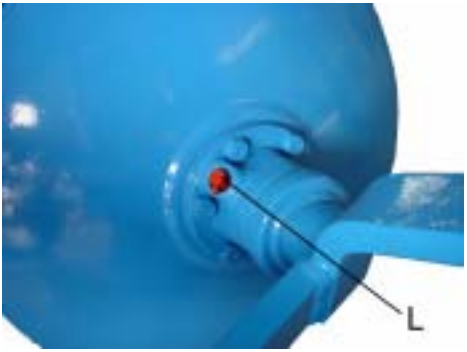
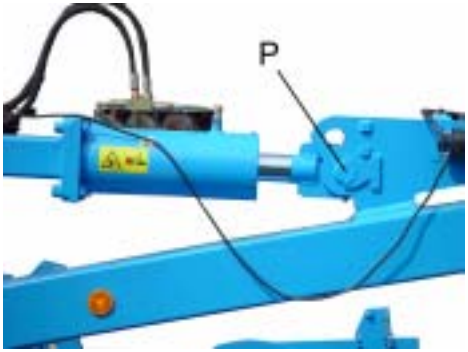




18.2 Bolts

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.

18.3 Hydraulic hoses

Regularly check the hydraulic hoses with regard to damage and leaks. Replace any that are defective. All hydraulic hoses must be exchanged after 6 years. Use genuine replacement parts, only.

18.4 Brake assembly

18.4.1 Drain valve

Operate drain valve (B1) regularly, in order to drain the air tank (B2).

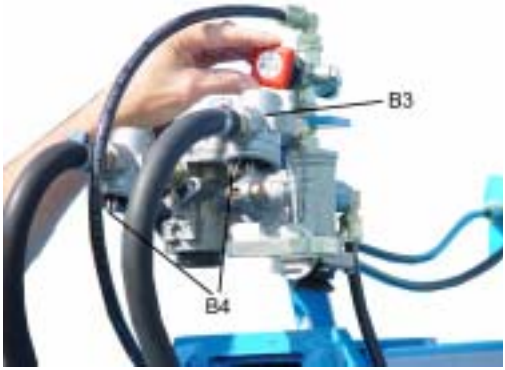
18.4.2 Brake lining

Worn brake linings must be replaced.

18.4.3 Cleaning filter

The cleaning filters (B3) must be cleaned every 50 working hours. Therefore the securing clamps (B4) must be removed by pressing.

After cleaning (by air pressure) the filter, the filter can be fitted again and secured by the securing clamp.

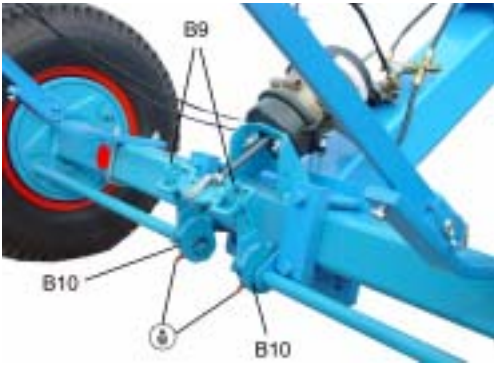


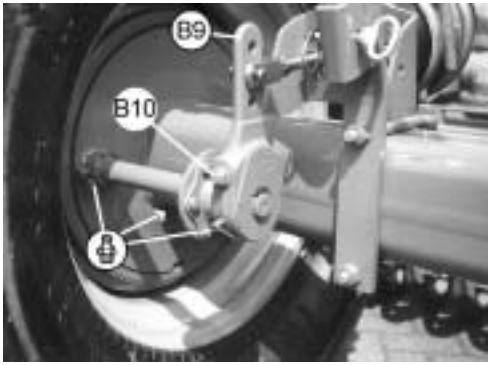
18.4.4 Disconnecting the brake hoses

After disconnection of the red connection coupling the braking procedure starts = automatic braking.

18.4.5 Re-adjusting the brake

When the brake lever (B9) opens with a braking more than 60 mm, the brake must be re-adjusted, so that the lever opens about 40 mm. The adjustment will be done by means of the adjuster device (B10).





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 pressure and 50° C temperature.

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

19 DRIVING ON PUBLIC ROADS

19.1 General Instructions

The Thorit 9 KA may only be transported on public roads, if warning boards and lighting equipments are fitted. Also the laws and regulations concerning transport on public roads must be adhered to.

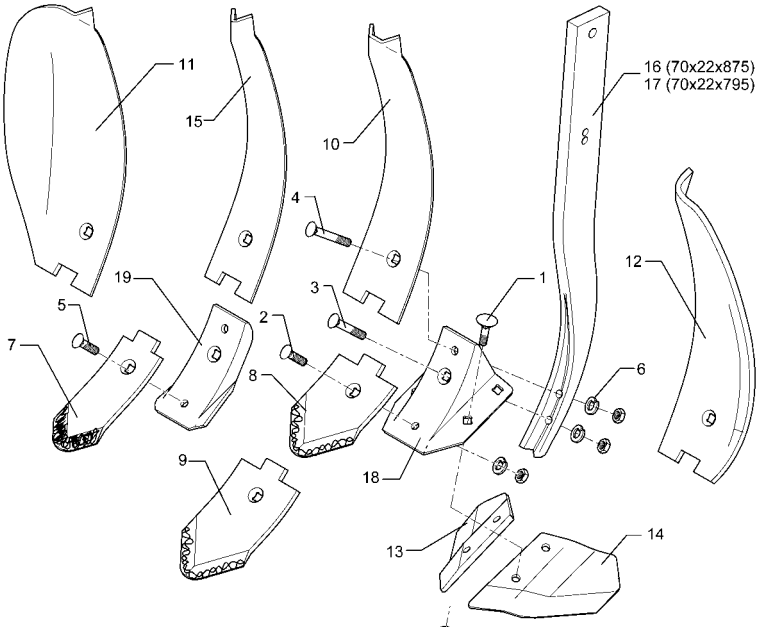
19.2 Allowed transport speed

The maximum allowed transport speed amounts 30 km/h.

19.3 Brake assembly

With an axle load of 3000 kg and more the implement must be equipped with a braking system. When the implement is not equipped with a braking system it may only be attached to a tractor showing a death weight which is double the weight of the axle load of the Thorit 9 KA and which is able to reach the prescribed braking declaration.

20 MAIN WEARING PAR.TS



1	301 1805	Flat bolt M12x30-10.9-MU DIN603
2	301 5785	Countersunk screw M12x33-12.9-MU-10
3	301 5786	Countersunk screw M12x55x20-12.9-MU
4	301 5787	Countersunk screw M12x65x20-12.9-MU
5	301 5789	Countersunk screw M12x36-12.9-MU-10
6	305 9885	Spring ring 12 DIN127
7	337 4386	Point S8P 80x12x230
8	337 4391	Point S12PK 120x12x200
9	337 4392	Point S12P 120x12x230
10	337 4395	Guideboard LB1 100x8x305
11	337 4398	Outer guideboard LBR2 RE
12	337 4399	Outer guideboard LBR2 LI
13	337 4428	Wing share FL23D GEK RE
14	337 4429	Wing share FL23D GEK LI
15	337 4401	Guideboard LB3 80x8x305
16	465 3680	Tine 70x22x875
17	465 3681	Tine 70x22x795-D16
18	467 9106	Foot 10-S/FL
19	467 9107	Foot 10-S 10x100x207

21 TECHNICAL DATA

Thorit	9/400 KA	9/400 KÜA	9/450 KA	9/500 KA
Weight (ca.)*	5320 kg	5960 kg	kg	5670 kg
Axle load *	3200 kg	3580 kg	3300 kg	3400 kg
Load at the drawbar *	2120 kg	2380 kg	2195 kg	2270 kg
Transport width	300 cm	300 cm	300 cm	300 cm
Height	300 cm	300 cm	325 cm	350 cm
Working width	400 cm	400 cm	450 cm	500 cm
up to KW (PS)	143 (195)	143 (195)	170 (230)	191 (260)
Min. working depth	5 cm	5 cm	5 cm	5 cm
Max. working depth	30 cm	30 cm	30 cm	30 cm

Thorit	9/450 KÜA	9/500 KÜA	9/600 KA	9/600KÜA
Weight (ca.)*	kg	6470 kg	6120 kg	7080 kg
Axle load *	3735 kg	3890 kg	3670 kg	4250 kg
Load at the drawbar *	2480 kg	2580 kg	2450 kg	2830 kg
Transport width	300 cm	300 cm	300 cm	300 cm
Height	325 cm	350 cm	400 cm	400 cm
Working width	450 cm	500 cm	600 cm	600 cm
up to KW (PS)	170 (230)	191 (260)	221 (300)	221 (300)
Min. working depth	5 cm	5 cm	5 cm	5 cm
Max. working depth	30 cm	30 cm	30 cm	30 cm

* with brake axle, wheels 550/60-12.5 and knife roller

22 NOISE, AIRBORNE SOUND

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

23 DISPOSAL

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

24 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.