LEMKEN

Instruction book

Compact Combination

Quarz 7 KA

GB

CE

Safety is our concern

Part-No. 175 3556
GB-1/09.01

LEMKEN GmbH & Co. KG

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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:
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 unable to guarantee poor operation and damage caused by using spurious parts!

DEFINED USE

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

Harrow sections:	with Duck-foot shares (2-rows) with Marathon tines (2-rows) with Gamma tines (3-rows) with drag tines (2-rows)
Rollers:	RSW D540 RSW D600 ZPW D500 ZPW D500 with short scrapers TRW D500 TPW D500 TSW D500
Scrapers for ZPW:	standard hard-faced version plastic version hard metal version
Wheel mark eradicators:	2 units with duck-footh shares G25 4 units with duck-footh shares G25 2 units with flat shares VS33
Levelling bar:	for harrow section
Lower link connection:	L3 Z3 K-700
Hydraulic control:	standard with 6/2 valve control block L8S (electric) control block LU8S (electronic)
Wheel size:	12.5/80-18 550/60-22.5
Hydraulic assemblies:	for pneumatic seed drill for LEMKEN Solitair for drills without hydraulic fan drive
Coupling parts:	for Solitair
Three point linkage:	Cat. II, hydraulic, single acting
Extension cable:	8 m, for LH 5000
Track markers:	hydraulic folding
Braking assembly:	Two hose air pressure braking device hydraulic braking device (not allowed in Germany)

2 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!

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.

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!

Mounted implements

- Mount implements as advised and only to the correct mountings!
- 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.

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 searching for leaks appropriate aids should be used because of the danger of injury!
- 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!
- 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

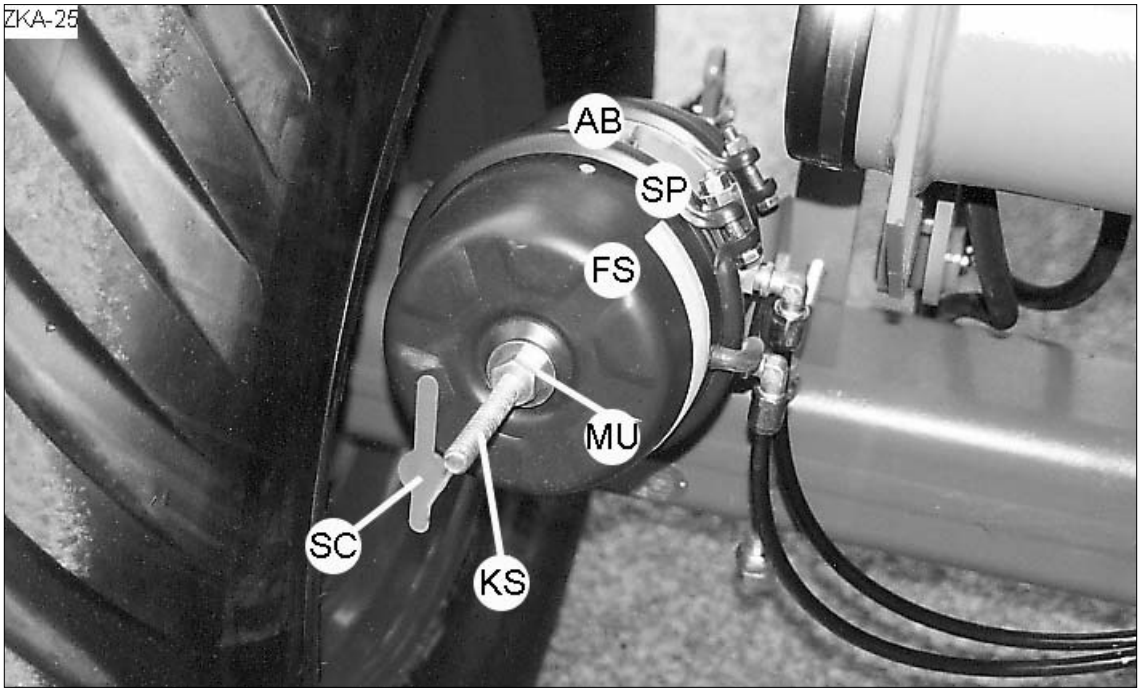
- Check function of brakes before each drive!
- The braking systems must be checked regularly!
- Repairwork on brakes may only be conducted by trained staff and with suitable tools!

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!

3 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 loaded 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 protection 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.

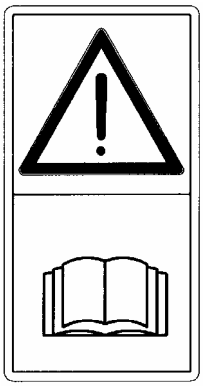
4 WARNING STICKERS

4.1 General Instructions

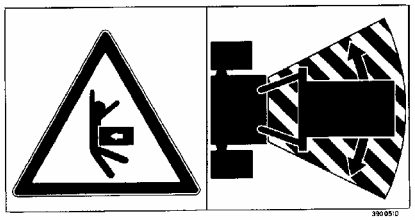
The LEMKEN Quarz is equipped with all features to ensure safe operation. Where potential danger areas of the implement can not be fully safeguarded, warning stickers are fitted which draw attention to these.

4.2 Meaning of the stickers

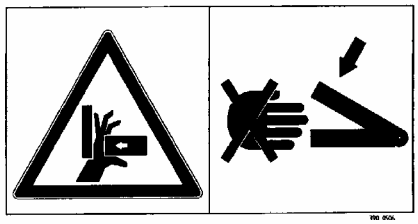
Familiarise with the meaning of the stickers. The following descriptions inform about them in detail.



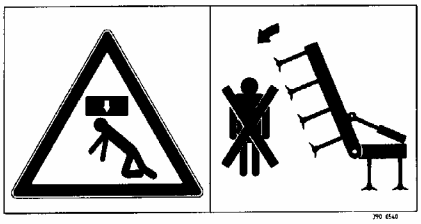
WARNING: Read and adhere to this Instruction book and these "General Health- and Safety precautions", before putting the implement to work!



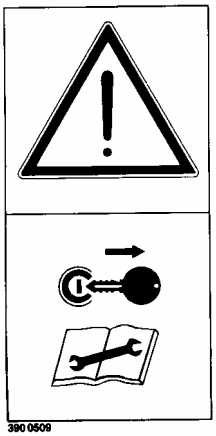
WARNING! Keep well clear of the working and swinging area of the implement.



WARNING! Pinch point.



WARNING! Keep distance to the folding area of the implement.



WARNING! Shut off engine and remove key before performing maintenance or repair work!

5 PREPARATION OF TRACTOR

5.1 Tyres

Ensure that all tyres- especially the rear ones - are at identical pressures. See also tractor manufacturer's instructions.

5.2 Lift rods

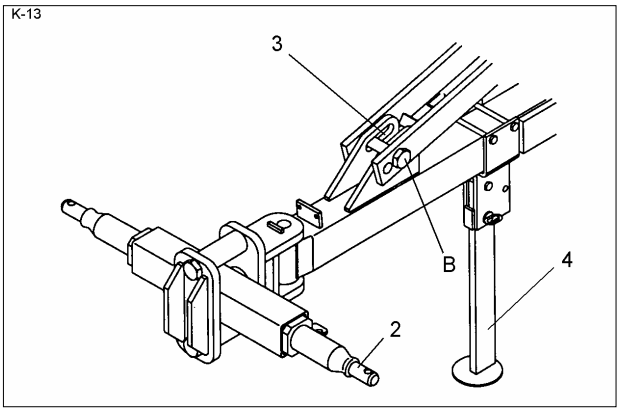
Adjust lift rods to equal length.

5.3 Check chains or sway blocks

It is essential that the check chains or sway blocks are adjusted so that the lower links may not move sideways when in working position.

5.4 Lower link connection

The category of the lower link connection and the tractor must correspond to each other. If they do not correspond, either the three point linkage of the tractor must be adapted or the drawbar (2) of the compact combination must be replaced by a suitable version. See section 6.3.



5.5 Tractor hydraulics

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

5.6 Socket

For the electrical uses the following sockets must be available at the tractor:

	Volt	Socket
Lighting equipment	12	according to DIN-ISO 1724
Control box for electrical control valve L8S (option)	12	according to DIN 9680
Operation terminal for electronical control valve LU8S (option)	12	according to DIN 9680

The range of tolerance is between 10 V and 15 V. Excess voltage and undervoltage lead to operational malfunctions and can damage electric parts. Furthermore a fuse protection of the power supply of 25 A must be ensured.

5.7 Braking assembly

The tractor must be equipped with a two line air pressure braking device, when it should be used with a Quarz KA with two line air pressure braking device. The tractor must have a dead weight of at least 6.000 kg, when it is used with a Quarz KA without braking device. (Hydraulic braking device is available on request).

5.8 Required spool valves at the tractor

The Quarz KA will be delivered with separate hydraulic hoses for each use as standard.
If required the Quarz can be equipped with 6/2 valve, an electrical control valve L8S or an electronic control valve LU8S. The protection caps of the hydraulic hoses are marked in colours and the hydraulic hoses alphanumerically.

It is recommended to use the 6/2 valve, the electrical control valve L8S or the electronical control valve LU8S when the Quarz is used in connection with the Solitair and no suitable spool valves are available for each use.
The control valve L8S can be operated electrically via an control box and the control valve LU8S electronically via an operation terminal with job computer. The operation instructions for the operation terminal with job computer can be found in a separate instruction book.
For the operation of the listed devices, the following spool valves are required with the tractor.

5.8.1 Quarz KA with separate spool valves for each user

	Single acting spool valve	**Double acting spool valve**	**Implement sided colour coding**	**Coding**
Folding-in device		x	red	P1, T1
Lifting device		x	green	P2, T2
Lift linkage	x		blue	P3, T3
Track marker	x		black	P4
Drag tine adjustment	x		black	P5
Additional spool valves for the use in connection with the Solitair seed drill				
Fan drive		x	Oil supply = yellow Return pipe =white	P6 T6
Coulter bar lifting device		x	blue	
Folding device of the coulter bar	No additional spool valve is required, as the hydraulic rams of the folding device are connected to the folding device of the Quarz		red	P1, T1

5.8.2 Quarz 9 KA with 6/2 valve in combination with Solitair 9 KA

	Single acting spool valve	Double acting spool valve	Implement sided colour coding	Coding
6/2 valve		x	red	P1, T1
Lifting device		x	green	P2, T2
Track marker	x		black	P4
Drag tine adjustment	x		black	P5
Fan drive		x	Oil supply = yellow Return pipe =white	P6 T6

By means of the 6/2 valve it is possible to operate the folding device of the Quarz and the coulter bar or the coulter bar lifting device (lift linkage).

5.8.3 Quarz KA with electric control valve L8S in combination with the Solitair 9 KA

	Single acting spool valve	Double acting spool valve	Implement sided coloured coding	Coding
Electrical control valve		x	red	P1, T1
Fan drive		x	Oil supply = yellow Return pipe =white	P6 T6
Drag tine adjustment	x		black	P5, T5

By means of the control valve all other uses can be operated electrically by the control box from the tractor seat.

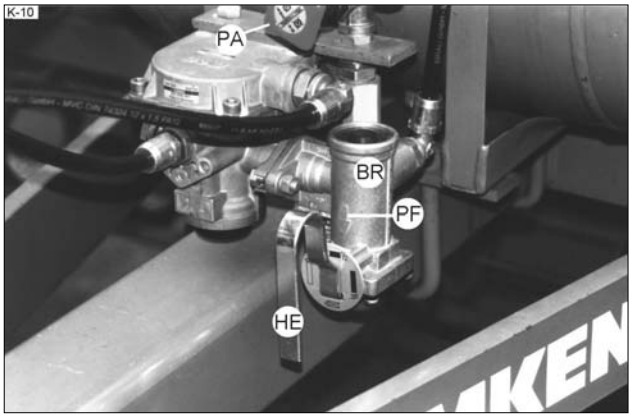
5.8.4 Quarz KA with electric control valve L8S or electronic control valve LU8S in Load Sensing mode in combination with the Solitair 9 KA

Quarz KA				
	Single acting spool valve		**Implement sided coloured coding**	**Coding**
Control valve		Pressure connection Return pipe connection Load Sense connection	Oil supply = red Return pipe = red LS-pipe = red	P1 T1 LS
Fan drive		Double acting spool valve	Oil supply = yellow Return pipe =white	P6 T6
Drag tine adjustment	x		black	P5, T5

By means of the control valve all other uses can be operated electrically by the control box or electronically by the operation terminal from the tractor seat.

6 PREPARATION OF THE QUARZ KA

6.1 Brake pressure regulator

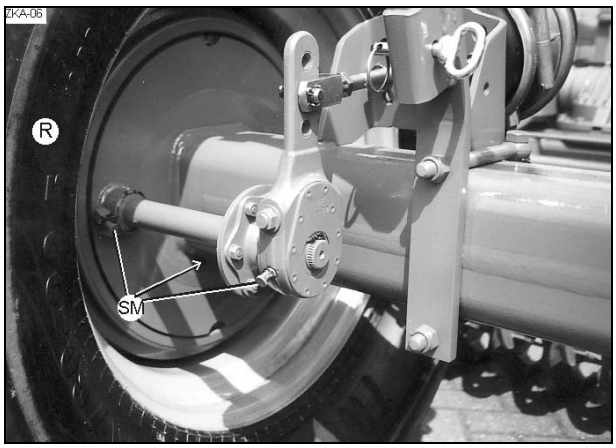


Depending on the existing axle load the brake power must be adjusted by means of the brake pressure regulator (BR) according to the following table. For the adjustment the lever (HE) must be turned. Four different brake pressure adjustments are possible: 1/1, ½, O and ⊠ .

The arrow points to the chosen setting.

Axle load	Minimum air pressure with 30 km/h	40 km/h	50 km/h	Adjustment of the air brake regulator	
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.
3.000kg - 4.000 kg	0,9 bar	1,0 bar	1,3 bar	O	
4.000 kg - 6.000 kg	1,2 bar	1,4 bar	1,8 bar	1/2	
6.000 kg - 8.000 kg	1,9 bar	2,2 bar	2,9 bar	1/1	

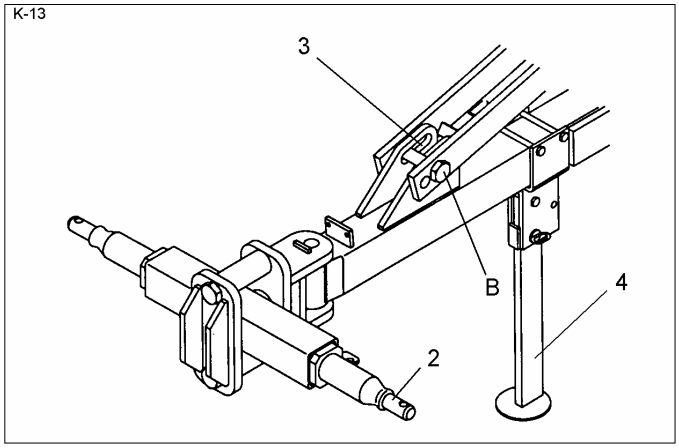
6.2 Air pressure of the wheels



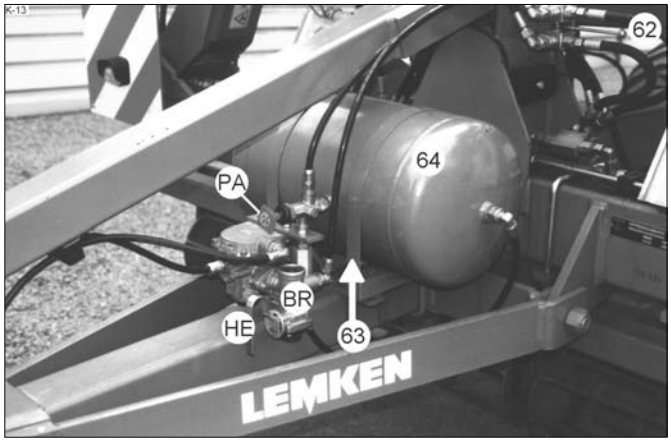
Adjust tyre pressure according to speed of travel and axle load in accordance to the above table.
The maximum allowed air pressure is 2,9 bar.
This pressure must not be exceeded.

7 ATTACHING AND DETACHING THE QUARZ KA

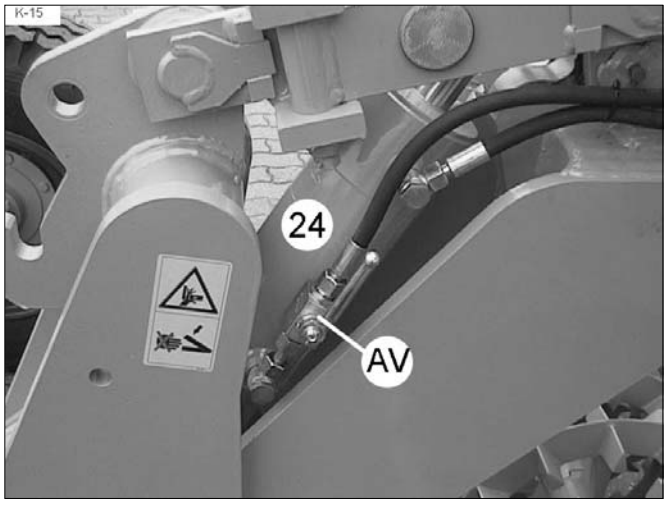
7.1 Attaching the compact combination



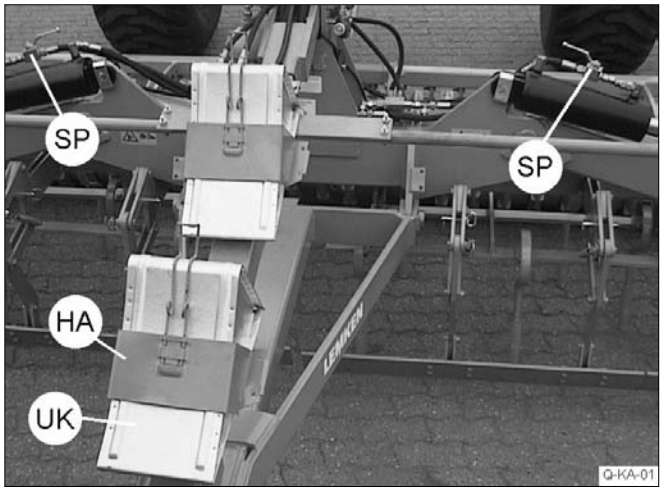
- For attaching the Quarz KA the hydraulics of the tractor must be set to position control!
- Connect the tractor lower link to the drawbar (1) and secure!
- Swing stand (4) upwards and secure!



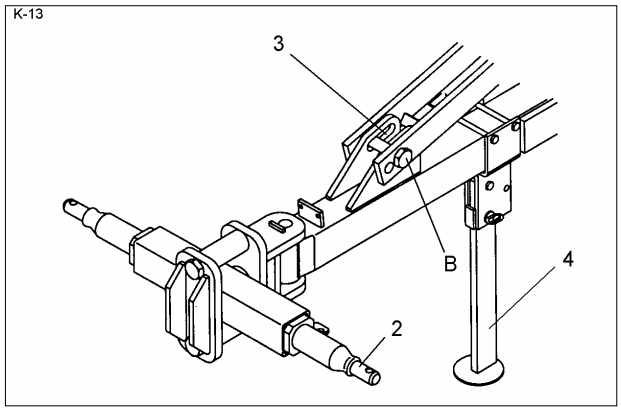
- Connect hydraulic hoses!
- Connect electric cables. If available place control box or operator terminal with cable in the tractor cab and connect to the socket!
- Connect braking hoses – if available - and put wheel chocks (UK) into the holders (HA) and secure.
- Release the parking brake by operating the red button of the parking valve (PA).
- Lift the implement in the front as well as in the rear and then fold-in the lateral sections.

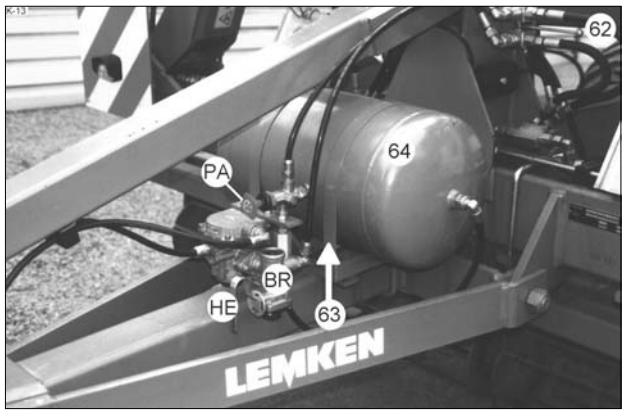


Before transport the lock valves (AV) and (SP) must be locked and the protection devices for the tines and the packer roller – if available – must be fitted!



7.2 Detaching the compact combination





- The compact combination must always be parked on level and firm ground!
- Swing down stand (4) and secure!
- Set tractor hydraulics to position control before detaching the implement!
- Open lock valves (AV) and (SP)!
- Lift the implement completely in the front and rear!
- Fold-out the lateral sections completely!
- Remove the wheel chocks (UK) out of the holders (HL) and secure!
- Disconnect braking hoses!
- Activate the parking brake by means of pressing the red button (PA) of the parking valve!
- Disconnect electric cables!
- Lower the implement and disconnect the lower links from the drawbar (2)!
- 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!

7.3 Pull point adjustment

The drawbar (2) can be adjusted in relation to the carrier frame of the compact combination in two different height positions = pull point adjustment. Therefore the bolt (B) must be fitted either to the front pair of holes or to the rear pair of holes of the drawbar stay.

Front pair of holes = deep pull point

Rear pair of holes = high pull point

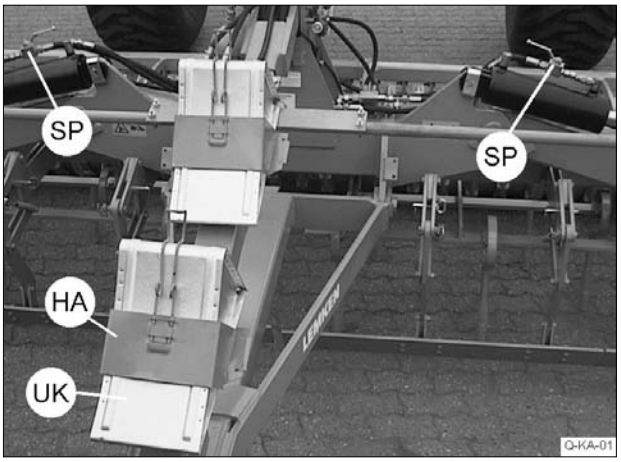
The deep pull point is recommended when working with a crawler or when the tractor becomes too light at the front.
When the tractor is showing too much slippage, the high pull point must be chosen. The bolt (B) must be tightened so that the drawbar stay still shows a little play.

- Read and adhere to the General Safety Instructions as well as to the Instructions 'Trailed implements'!
- Raise the implement fully in the rear, before folding! Never lower the rear of the implement in folded-in position!
- The protection devices for the tines and the packer rollers must be fitted, when the implement will be transported or parked in folded-in position!

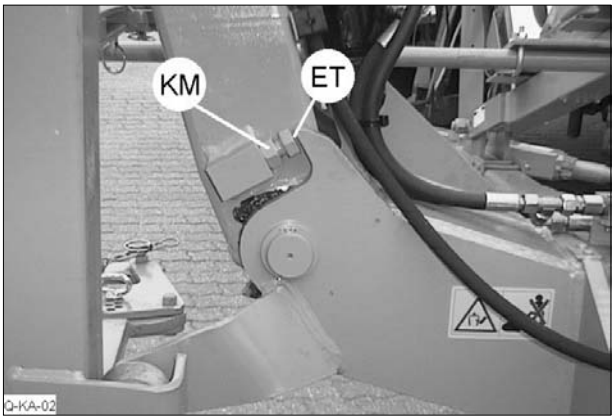
8 FOLDING OF THE WING SECTIONS

For transport the QUARZ KA compact combinations must be folded-in hydraulically. For the folding-in device a double acting spool valve is needed.
By moving the spool valve into the first pressure position, the wing sections will be folded-in. By moving the spool valve into the opposite position, the wing sections will be folded-out.

ATTENTION: After folding-in the spool valves (SP) and (AV) of the hydraulic ram must be closed, in order to avoid an unintentional folding-out of the wing sections. After that the protection devices for the tines and the packer rollers (if available) must be fitted again.

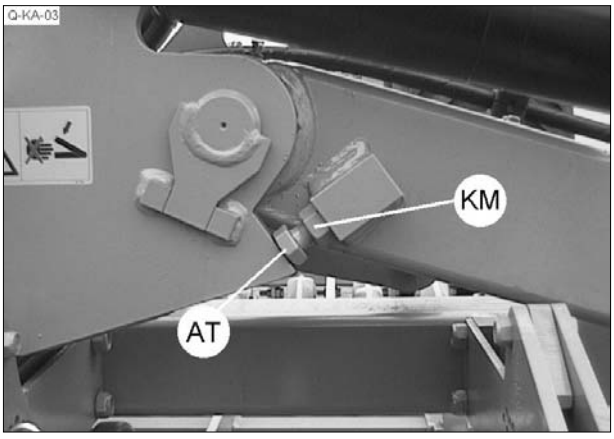


In folded-in position the Quarz may not be wider than 3 m. By means of the adjuster screws (ET) the corresponding folding-in position has already been adjusted by the factory.



In folded-out position either the centre frame as well as the lateral sections must be positioned straight to each other. By means of the adjuster screws (AT) the corresponding folding-out position has already been adjusted by the factory.

Possibly required adjustment corrections can be done by the adjuster screws (ET) or (AT). After the adjustment tighten counter nut (KM) carefully.



- Read and adhere to the General Safety Instructions as well as to the Instructions ‘Hydraulic equipment’!

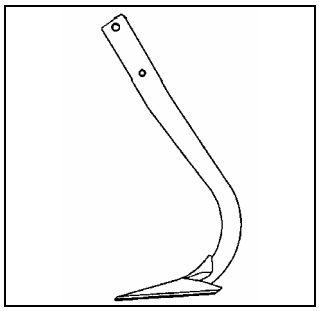
9 ADJUSTMENTS

9.1 General Instructions

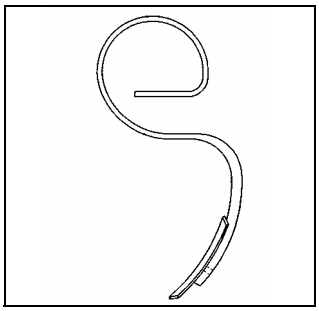
The semi-mounted compact combination Quarz KA is available with a number of tine sections and roller variants.

9.2 Tine sections

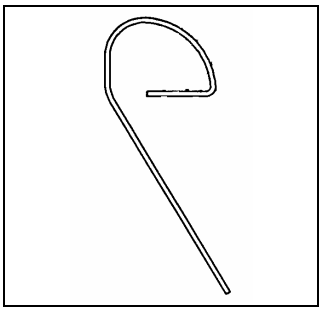
The choice consists out of tines sectins with 2 rows of duck-foot shars, 2 rows of marathon tines, 3 rows of Gamma tines or 2 rows of drag tines.



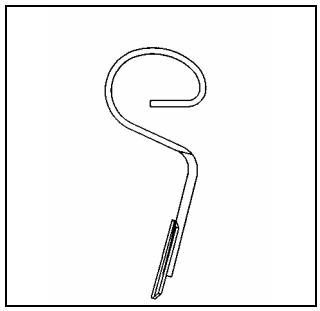
Duck-foot share



Marathon tines



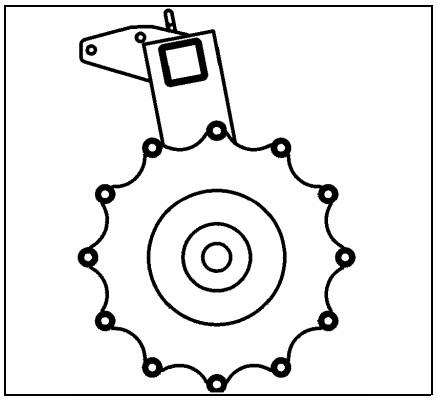
Drag tines



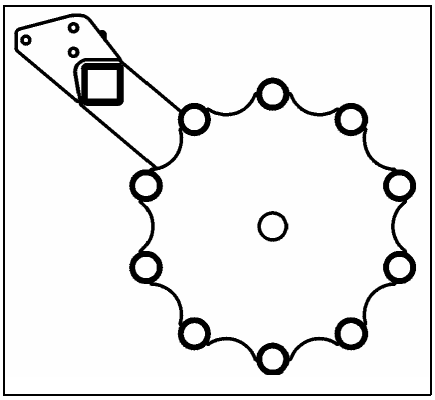
Gamma tines

9.3 Rollers

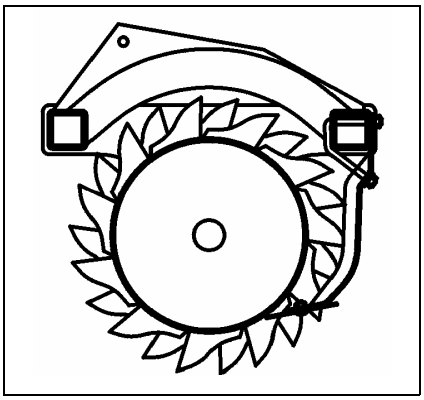
There is a choice of tube bar roller with ø 540 mm or ø 600 mm, packer rollers with ø 500 mm, Trapezring rollers with ø 500 mm, Trapezpacker rollers with ø 500 mm and Trapez disc rollers with ø 500 mm.



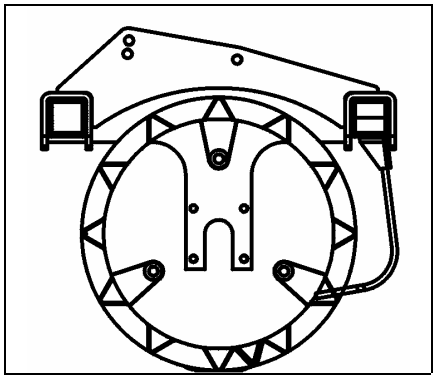
Tube bar roller ø 540



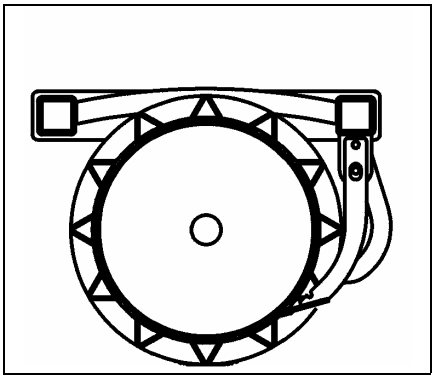
Tube bar roller ø 600



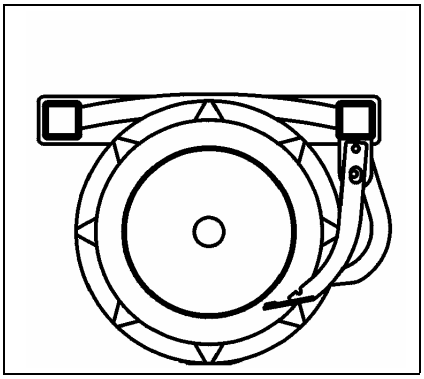
Packer roller ø 500



Trapeze ring roller ø 500

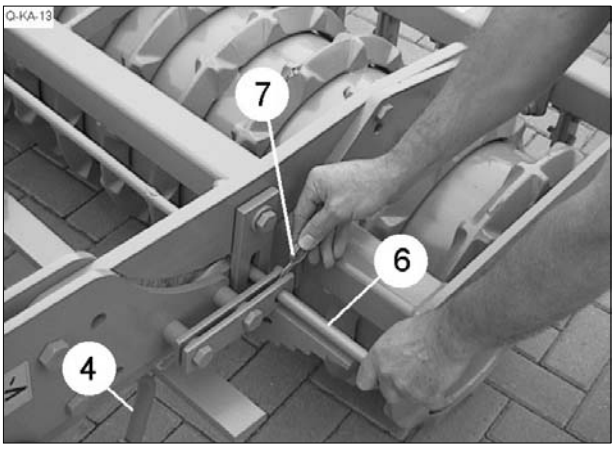


Trapeze packer roller ø 500

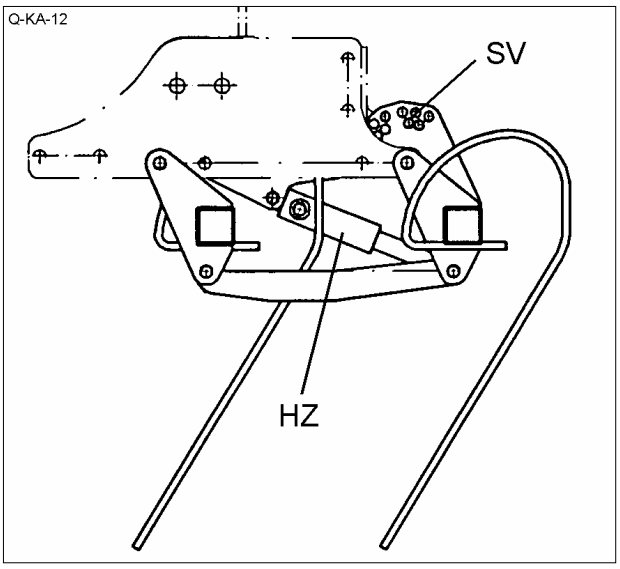


Trapeze disc roller ø 500

9.4 Working depth of the tines



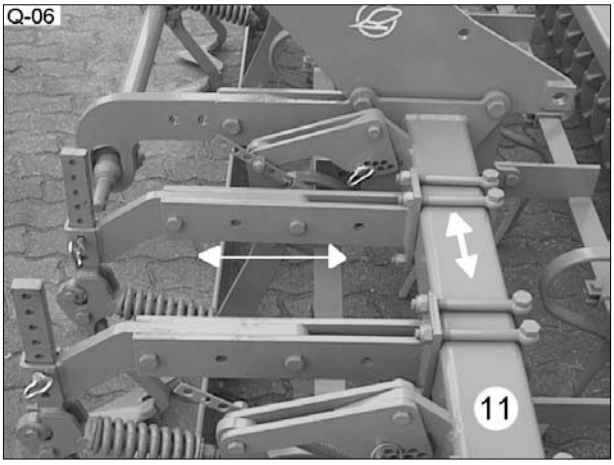
By moving the adjusting rod (6) inwards, an increased working depth of the tines (4) will be reached. By means of moving the adjusting rod (6) to the outside, a shallower working depth will be reached.
The left hand and right hand adjusting rod must be adjusted by the same amount.
After the adjustment secure the adjusting rod by means of the securing pin (7).



Additionally the levelling tines can also be adjusted in their angle via the pin adjustment (SV). This angle adjustment can be adjusted additionally via hydraulic rams (HZ) during work.
If the levelling tines clogg, this can be eliminated at once by means of operating the hydraulic rams, and that without stopping work.

9.5 Track scraper

9.5.1 Basic adjustment



The track scrapers are fitted to the frame (11) laterally moveable. Additionally they can be fitted to the frame in a front and rear position.
Laterally they must be adjusted so that they are set behind the tractor rear wheels.
The front position must be chosen, if the compact combination is equipped with a levelling bar.

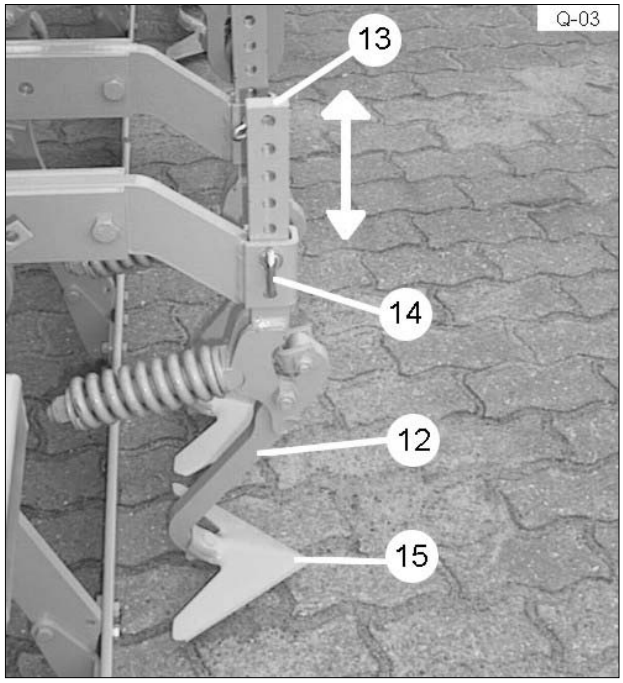
9.5.2 Working depth of the track scrapers

The working depth of the track scrapers (12) will be adjusted by means of the pin adjustment (13) with pin (14).

The track scrapers being equipped with 25 cm wide duck-foot shares G25 (15) may not be set too deep, as otherwise wet subsoil would be moved to the top.

The track scrapers, being equipped with the 4 cm wide shares S4 are especially suitable for a deeper loosening of the tractor tracks.

The track scrapers being equipped with 33 cm wide flat shares VS33, are especially suitable for a wide and shallow loosening of the tractor track.



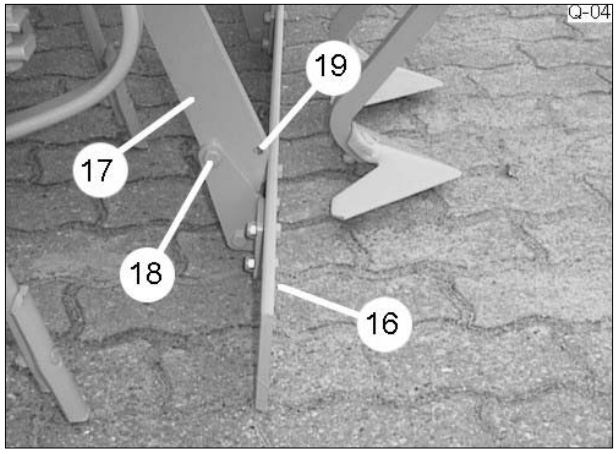
9.6 Levelling bar

9.6.1 General Instructions

The levelling bar (16) can be bolted in two different working positions to the carrier (17).

a) Grading position (see picture)
b) Sliding position (connect screw (18) with hole (19))

In stony soil conditions the grading position should not be chosen to avoid overloading of the levelling bar.



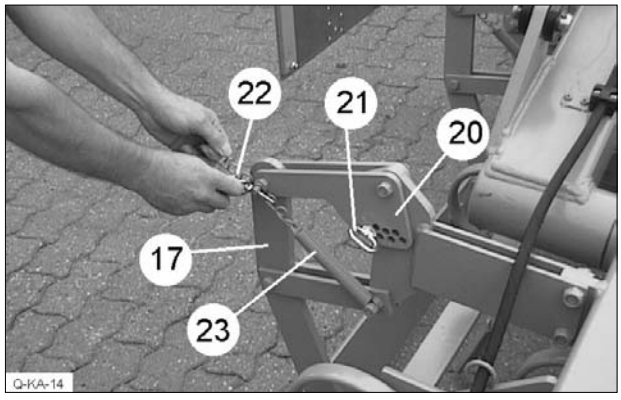
9.6.2 Depth adjustment

By means of the pin adjustment (20) with pin (21) the depth of the levelling bar can be adjusted corresponding to the working conditions.

9.6.3 Spring pressure of the levelling bar

By means of the coil unit (22) with spring (23) the spring pressure and therewith the reset force of the levelling bar can be adjusted in steps.

It is recommended to work with low spring force when set in grading position and with higher spring force when set in sliding position.

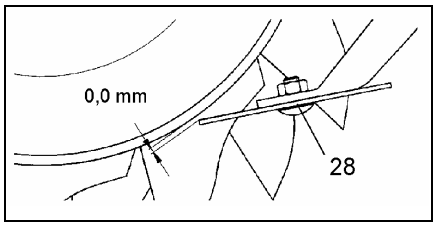


9.7 Scrapers for rollers

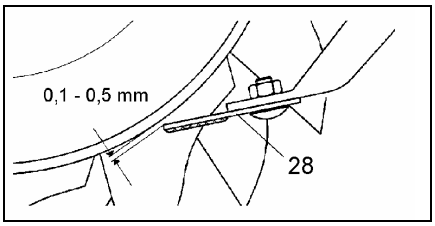
The trapeze rollers as well as the packer rollers are equipped with scrapers (28) or (AB). The scrapers of the trapeze ring rollers must not be adjusted.

The scrapers of the packer rollers, the trapeze packer rollers and the trapeze disc rollers must be re-adjusted from time to time.

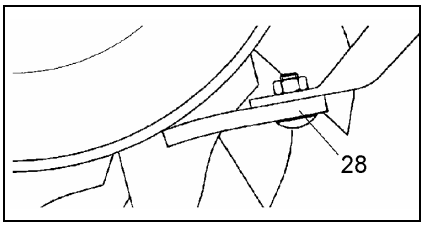
a) Packer roller



Standard scrapers

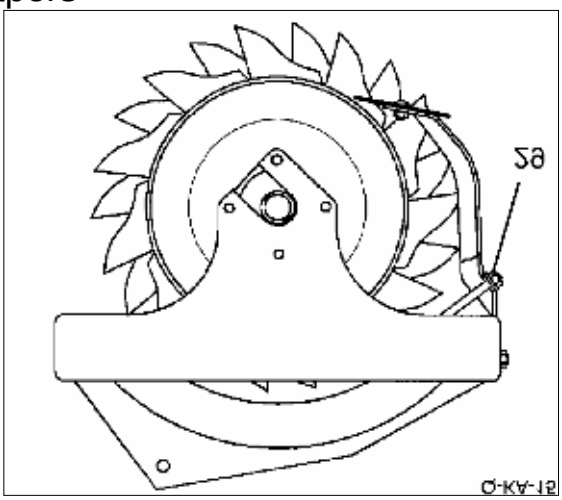


Hard metal scrapers or hard-faced scrapers



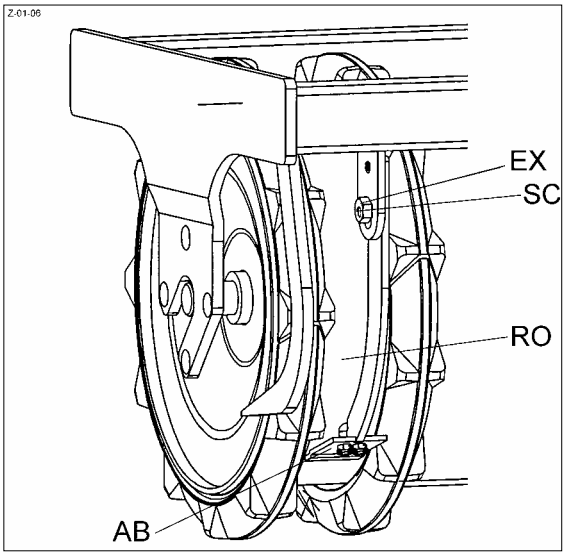
Plastic scrapers

By means of the adjuster nut (29) the scrapers can be adjusted individually.



b) Trapeze packer roller

The scrapers must be adjusted as close as possible to the roller by means of the eccentric nut (EX). But they may not touch the tube (RO). For the adjustment the screw (SC) must be loosened, the eccentric nut (EC) adjusted correspondingly and finally the screw tightened carefully again.



c) Trapeze disc roller

The scrapers (AB) will be adjusted by means of the eccentric nuts in the same way as with the trapeze packer roller. The scrapers of the trapeze disc rollers are made out of plastic and must always touch the tube (RO) of the roller with low tension.

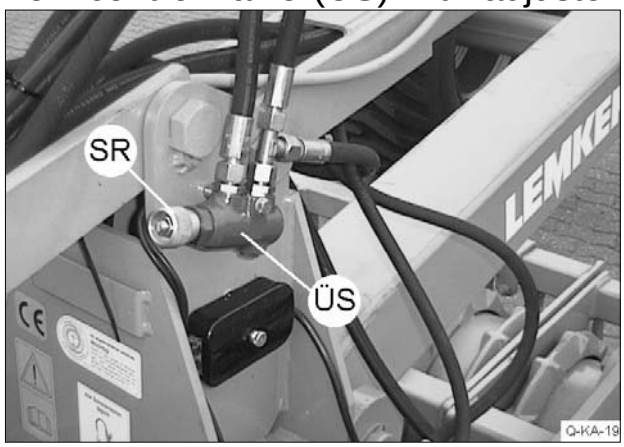
9.8 Pressure load on the rollers

a) Trailer without flow control valve

During work the trailer is lifted a little, so that the rollers will be loaded with additional pressure.
When the pressure load is too high and the rollers block or sink into the soil too much, it is recommended to set the hydraulic system of the trailer to floating position. Then the trailer leaves tracks in the field, which are not relevant due to its low weight.

b) Trailer with flow control valve

The pressure load on the rollers and therewith the weight transfer from the trailer wheels to the rollers will be adjusted by the flow control valve (ÜS) with adjuster knob (SR).



Turning the adjuster knob (SR) clockwise
⇨ more weight transfer to the rollers.

Turning the adjuster knob (SR) anti-clockwise
⇨ less weight transfer to the rollers.

The corresponding adjustment of the weight transfer can be red from the marking gaps on the knob (SR) of the flow control valve (ÜS).
An hydraulic accumulator ensures, that the compact combination follows the ground contour independently from the trailer. If after reversing on the headland the compact combination is lowered again, the spool valve must be set to lowering position for 5 seconds, so the pre-adjusted pressure can be build up again in the hydraulic system.

- Read and adhere to the General Safety Instructions!

10 HYDRAULIC SWITCH DEVICE

Depending on the number of available tractor spool valves and the desired use comfort, the compact combination Quarz KA is available with different hydraulic controls:

Standard equipment = for each use one tractor spool valve is required.

Version with 6/2 valve = one double acting tractor spool valve less than with the standard version is required.

Version with electric control box = with one spool valve 4 functions can be operated, and that with one control box.

Version with electronic operation terminal = with one control valve 4 functions can be operated fully automatically, and that via an operation terminal with job computer.

10.1 6/2 valve

By means of the 6/2 valve one tractor spool valve (62) can be saved. With this valve the compact combinationcan be folded-in or-out and the coulter bar lifting device (lift linkage) can be operated.

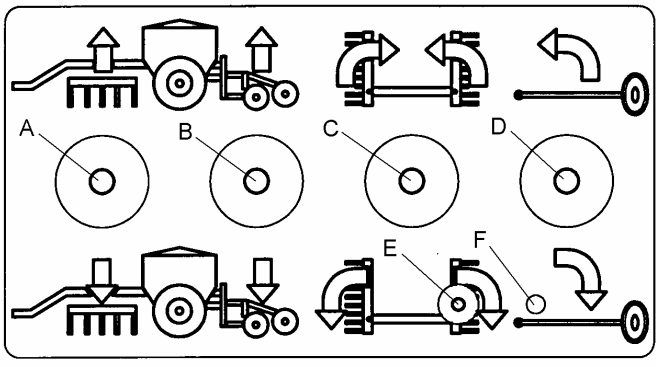
10.2 Control valve L8S and LU8S

The control valve L8S (SB) will be operated via the control box (BX) and the control valve LU8S via the operation terminal from the tractor seat. With these valves the compact combination can be lifted and lowered, the coulter bar lifted and lowered, the compact combination and the coulter bar folded-in or –out and the track markers operated.

Following the operation of the control box is described. The operation of the operation terminal can be found in a separate instruction book.

For the use of the control valve an hydraulic assembly with constant power, constant pressure or Load Sensing must be available. The electronical control valve LU8S can be used with a Load Sensing system, only.

ZKA-31

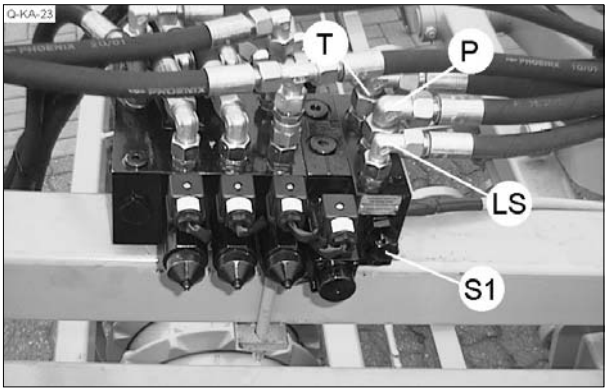


Control box operation levers

A = Quarz lifting device
B = Coulter bar lifting device
C = Folding device
D = Track marker operation
E = ON, OFF
F = Control light

Two operation positions are possible, which can be pre-adjusted by means of the adjuster screw (S1) at the control valve.

a) Operation with constant oil supply



The adjuster screw (S1) must be screwed out until its internal stop, in order to get into the constant oil supply setting. 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.

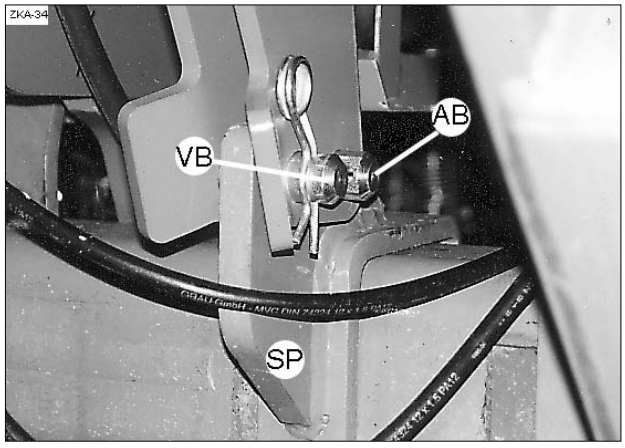
b) Operation with constant pressure

The adjuster screw (S1) must be screwed in until its internal stop, in order to get into the constant pressure setting. The control valve is steadily under pressure. Now each use of the Quarz 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 remote is possible.

11 ATTACHING OR DETACHING THE SOLITAIR

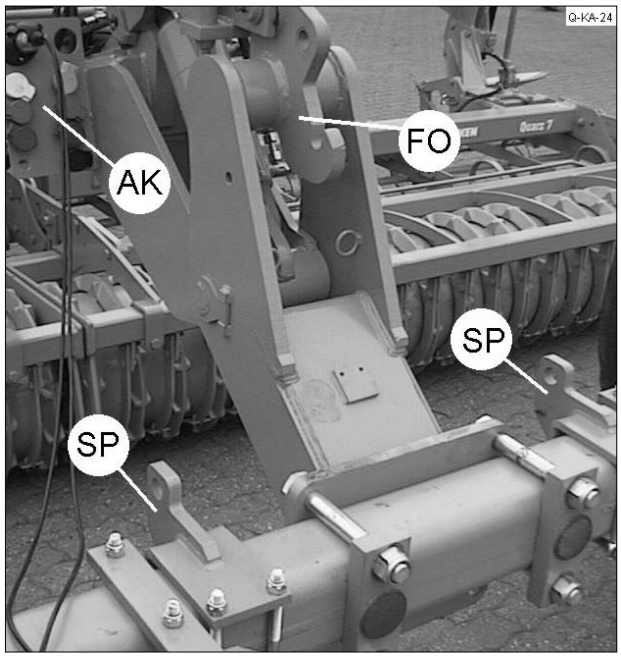
11.1 General Instructions

The Quarz KA compact combination is available with coupling parts for mounting the Lemken Solitair seed drill. The coupling parts include two supporting plates (SP) fitted to the trailer frame as shown in the sketch. With these parts it is simple to mount the Lemken Solitair to the trailer frame (11).

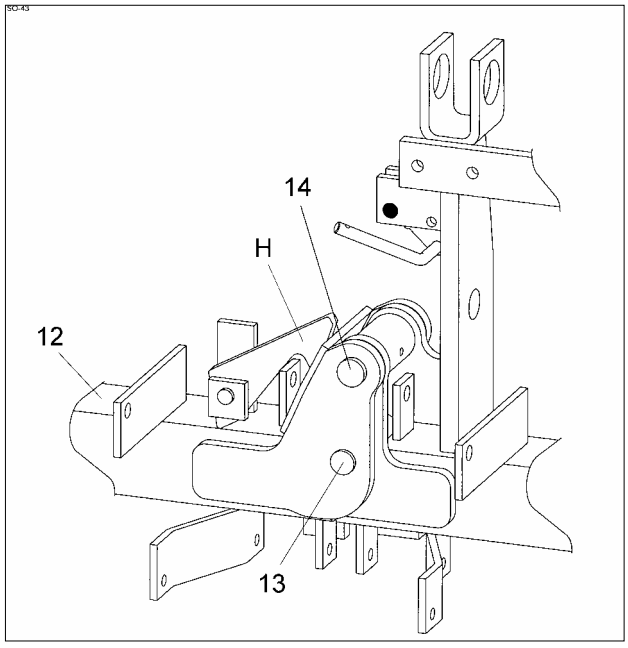


11.2 Mounting the Solitair seed drill

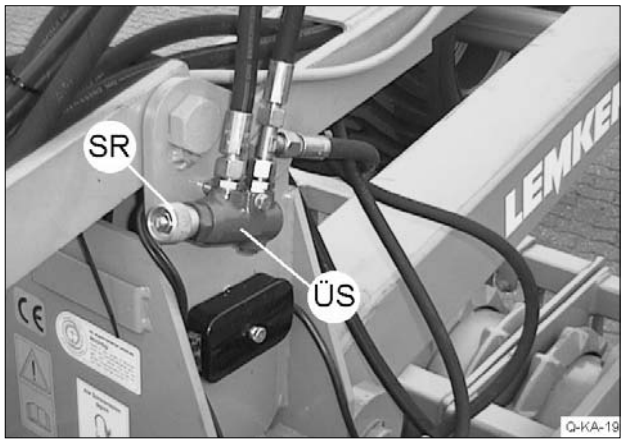
- Unsecure and remove the front pin (VB).
- Drive carefully with the compact combinationto the parked Solitair seed drill until the catch hook (FO) is positioned below the top link (OB) and the supporting plates (SP) are below the lower pins (AB).
- Connect hydraulic hoses of the Solitair 9 KA to the connection bracket (25) with hose couplings of the Quarz KA.
- Unlock coulter bar (12)
- 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 (FO) and the pins (AB) support on the supporting plates.
- Fit front pin (V) and secure by means of the spring pin.
- Connect cable.
- Lift coulter bar, remove outer stands (9) and unsecure, lift and secure again the middle stand.



See instruction book of the Solitair 9 KA.



11.3 Detaching the Solitair seed drill



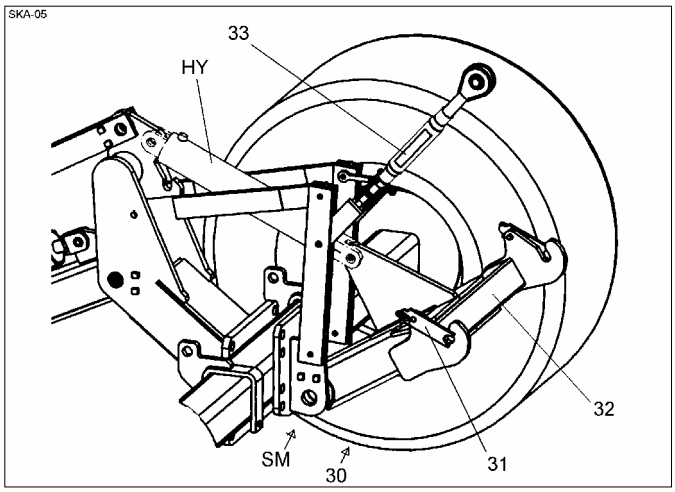
- The Solitair seed drill must always be parked on level and firm ground.
- Before detaching, the hopper must be emptied completely and the lock valve of the coulter bar lifting device opened.
- Fold-out and secure coulter bar.
- Lift coulter bar by means of the hydraulic rams and move the stands (9) laterally into the frame of the coulter bar up to the stop and lower and secure the middle stand.
- Unlock front pin (VB) and dismount.
- After that lower coulter bar and lift the Solitair 9 KA until the top link pin (OB) is a few centimeters above the catch hooks (FO).
- 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 (ÜS) is similar to an adjustable relief control valve. Before mounting or detaching the seed drill, the adjuster (SR) 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.

12 HYDRAULIC LIFT LINKAGE

12.1 Attaching a seed drill



The trailed Quarz KA seedbed combinations are available with an hydraulic lift linkage (30) (category II) for attaching a seed drill (only in connection with the braking device and the tyres 550/60-22.5). The seed drill will be connected to the lower link unit (32) of the lift linkage by means of the mounting pins and secured by means of the locking bars (31). The locking bars will be secured by the linch pins provided. After that attach and secure the top link (33).
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 (HY).
Before driving on public roads the seed drill must be lifted completely and the lock valve (AH) of the hydraulic ram (HY) closed.

12.2 Lowering the mounted seed drill

The seed drill will be lowered as follows:
- Open lock valve of the hydraulic ram (HY) with closed tractor spool valve.
- After that set tractor spool valve to ‘lowering’ and lower the seed drill.

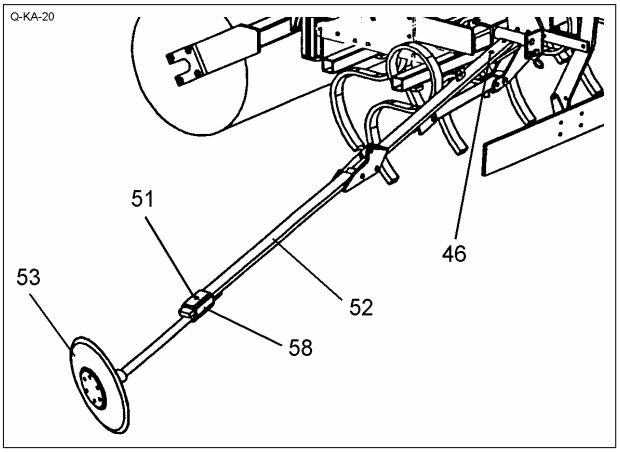
Attention: Tighten counter nuts of the rear top link after each adjustment.

- Read and adhere to the General Safety Instructions as well as to the Instructions ‘Hydraulic equipment’!
- Read and adhere also the instruction book of the seed drill manufacturer!

13 TRACK MARKERS

The Quarz KA is available with track markers being adjustable to the centre of the tractor track. This happened as follows:

After loosening the clamping screw (51) of the clamp piece (58) the length of the track marker arms (52) and the angle of the track marker discs (53) can be adjusted.
After the adjustment each clamping screw (51) must be tightened again carefully.
The shear bolt (46) protects against overload.
For transport the track marker arms (52) must be swung-in and secured against swinging-back by means of pins .



Quarz	Distance from the centre of the compact combination to the track furrow	Distance to the outer seeding row
7/400 KA	400	200 cm + ½ Strichabstand
7/500 KA	500	200 cm + ½ Strichabstand
7/600 KA	600	300 cm + ½ Strichabstand

- Read and adhere to the General Safety Instructions as well as to the instructions „Hydraulic Equipment“!
- Read and adhere also the Safety Instructions of the seed drill instruction book!

14 MAINTENANCE

14.1 General Instructions

All pivot points must be lubricated with an environmentally friendly high-quality grease according to the lubrication chart.

The lubrication points (SM) will be found as following described:
- 3 lubricating nipples at the front of the cross union of the lower link connection,
- 2 lubricating nipples at the folding frame,
- 1 lubricating nipple an the pivot union of the trailer,
- 5 lubricating nipples at the trailer linkage,
- 6 lubricating nipples at the braking linkage and
- 1 lubricating nipple at the hydraulic three point linkage
- 4 lubricating nipples at the pivot linkage of the track marker

Before and after a long break (winter break) all grease points and pivot points must be greased and it is recommendable to put some grease on the adjuster pins and -screws.

The shares, levelling bars and tines must be greased after use, in order to prevent getting rusty. Furthermore the piston rods must be greased with a non-acid grease, if the Quarz is not used for a longer time.

Tighten all bolts and nuts first after 10 working hours and then every 20 working hours.

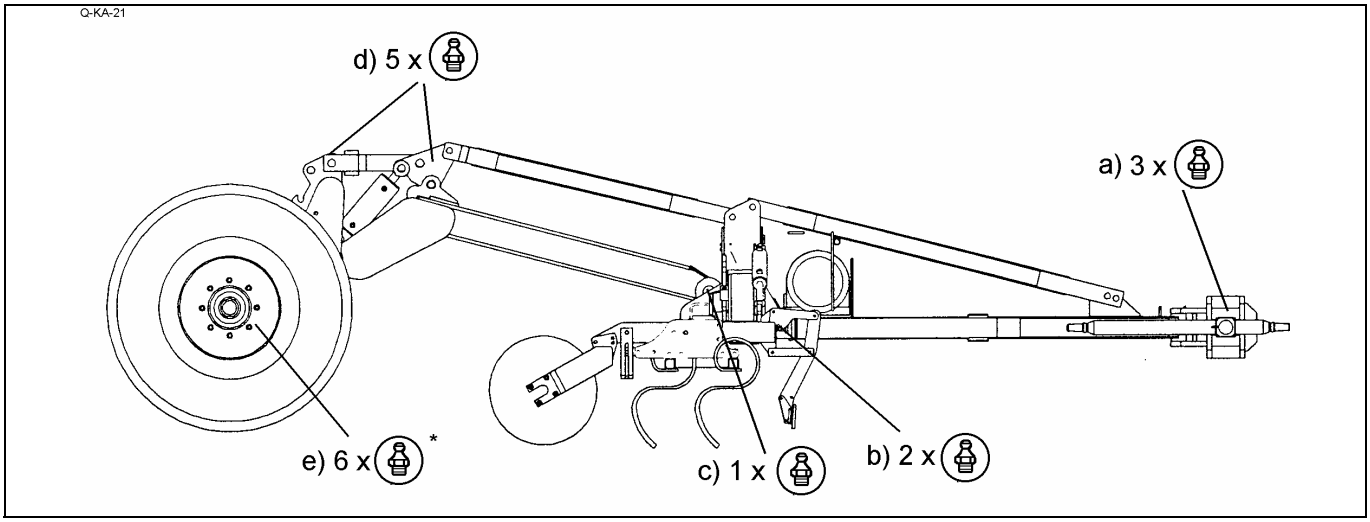
Worn shares, levelling bars and tines must be replaced in time, so that the carrying parts will not be damaged or worn. Use genuine-Lemken-spare parts, only.

Bearings of the rollers are free of maintenance; there is no need to grease them.

Check hydraulic hoses regularly. Defect hydraulic hoses must be replaced immediately.

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.

14.2 Lubrication chart



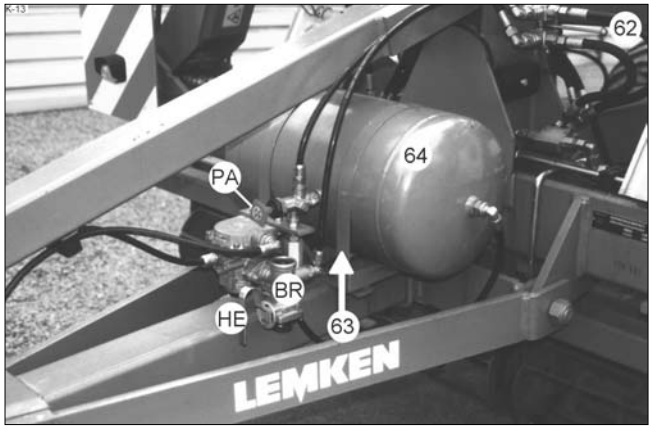
* with braking device, only

a) Grease every 8 working hours
b) Grease every 40 working hours
c) Grease every 8 working hours
d) Grease every 8 working hours
e) Grease every 40 working hours

14.3 Braking assembly

Drain valve

Operate drain valve (63) regularly, in order to drain the air tank (64).

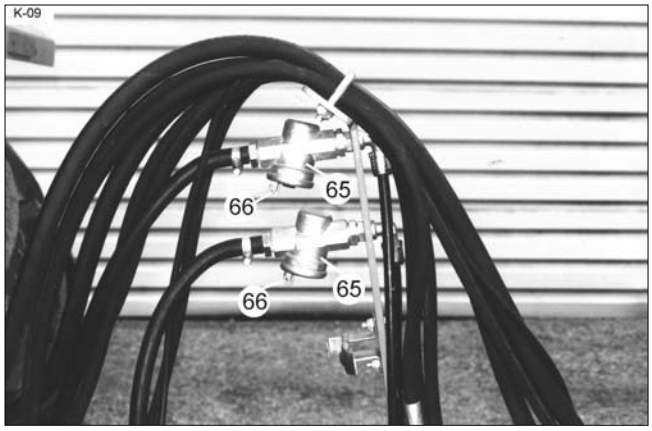


Brake lining

Worn brake linings must be replaced.

Cleaning filter

The cleaning filters (65) must be cleaned every 50 working hours. Therefore the securing clamps (66) must be removed by pressing. After cleaning (by air pressure) the filter, the filter can be fitted again and secured by securing clamps.



Disconnecting the brake hoses

After disconnection of the red connection coupling the braking procedure starts = automatic braking.
In isolated cases the brake can be loosened by means of using the brake pressure regulator.

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

15 TRAILER

15.1 Tyres

The semi-mounted device of the compact combination QUARZ is available with 550/60-22.5 or 12.5/80-18 tyres.
When the Quarz is use in combination with a seed drill, the tyres 550/60-22.5 must be use.
The PR No. and the profile description are printed on the tyre. Damaged or worn down tyres must be replaced at once. The following stated minimum and maximum allowed air pressure must be adhered.

Tyres	Ply-rating	Art.-No.	Profile	Air pressure (bar) Min.	max.
12.5/80-18	10	550 8874	AW	1,5	3,1
550/60-22.5	12	550 8872 (RE)	T404	0,8	2,9
550/60-22.5	12	550 8873 (LI)	T404	0,8	2,9

- Read and adhere to the 'General Safety Instructions as well as the instructions 'Tyres'!
- In connection with the Tyres 12.5/80-18 no seed drill ca be fitted to the Quarz KA.

15.2 Brakes

If it is required to transport a Quarz KA on public roads with fitted or mounted seed drill, the disc cultivator must be equipped with a two line air braking device.
Generally the Quarz must be equipped with a braking device, if the pulling tractor does not reach the prescribed braking deceleration. See section 4.7 and 5.

- Read and adhere to the 'General Safety Instructions as well as the instructions ‘Brakes’!

16 DRIVING ON PUBLIC ROADS

16.1 General Instructions

The prescribed lighting equipment and protection devices are standard with the Quarz KA.

Attention: The protection devices for the tines and the packer rollers (if fitted) must be fitted before transport!

16.2 Allowed transport speed

a) With the tyres 550/60-22.5 and in connection with a two line air braking device the Quarz KA is allowed to be driven up to 40 km/h, also with mounted or attached seed drill.
b) With the tyres 550/60-22.5 and without a braking device the Quarz KA is only allowed to be driven up to 30 km/h. A seed drill may not be attached or mounted.
c) With the tyres 12.5/80-18 the maximum allowed transport speed is 30 km/h. A seed drill may not be attached or mounted.

17 TECHNICAL DATA

Quarz KA with braking device

Quarz	**Weight ca. kg** (with duck foot shares G25)	**Tyres 550/60-22.5**		
		Support load ca. kg	allowed total weight kg	allowed axle load kg
7/400 KA	1.986	600	8.500	8.000
7/500 KA	2.136	700	8.500	8.000
7/600 KA	2.286	800	8.500	8.000

Quarz KA without braking device

Quarz	**Weight ca. kg** (with duck foot shares G25)	**Tyres 550/60-22.5 or 12.5/80-18**		
		Support load ca. kg	allowed total weight kg	allowed axle load kg
7/400 KA	1.986	600	5.000	3.000
7/500 KA	2.136	700	5.000	3.000
7/600 KA	2.286	800	5.000	3.000

18 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.

19 NOISE, AIRBORNE SOUND

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

20 PRODUCT REGISTRATION / GUARANTEE

We would like to point out that the guarantee period starts, only when the completely filled-in and signed product registration has been returned to us .