Order no. 9900.00.39EN03

Operating instructions

Semimounted-reversible ploughs
Marabu, Marabu A / HA 180 C *from series 5*
Marabu V, VA, VHA 180 C *from series 5*

Operating instructions

Semimounted-reversible ploughs
Marabu, Marabu Avant / HydroAvant
Marabu Variant, Marabu Vari-Avant / -HydroAvant

Please read and follow these operating instructions and safety instructions ("For your safety") carefully before putting the implement into operation.
The operator must be qualified and trained in the operation, maintenance and safety requirements and instructed about hazards. Be sure to convey all safety instructions to other user as well.
Applicable accident prevention regulations as well as other generally recognised regulations pertaining to safety, occupational health and road-traffic must be observed.

Pay attention to the “Warning signs”! (DIN 4844-W9)
Information in these instructions bearing this symbol and warning pictographs on the machine are intended to warn you of any pending danger!

Caution - Symbol indicates safety instructions. Failure to observe can result in hazards to the machine and its proper functioning.

Note - Symbol indicates particular features of the implement, which must be followed in order to insure perfect operation.

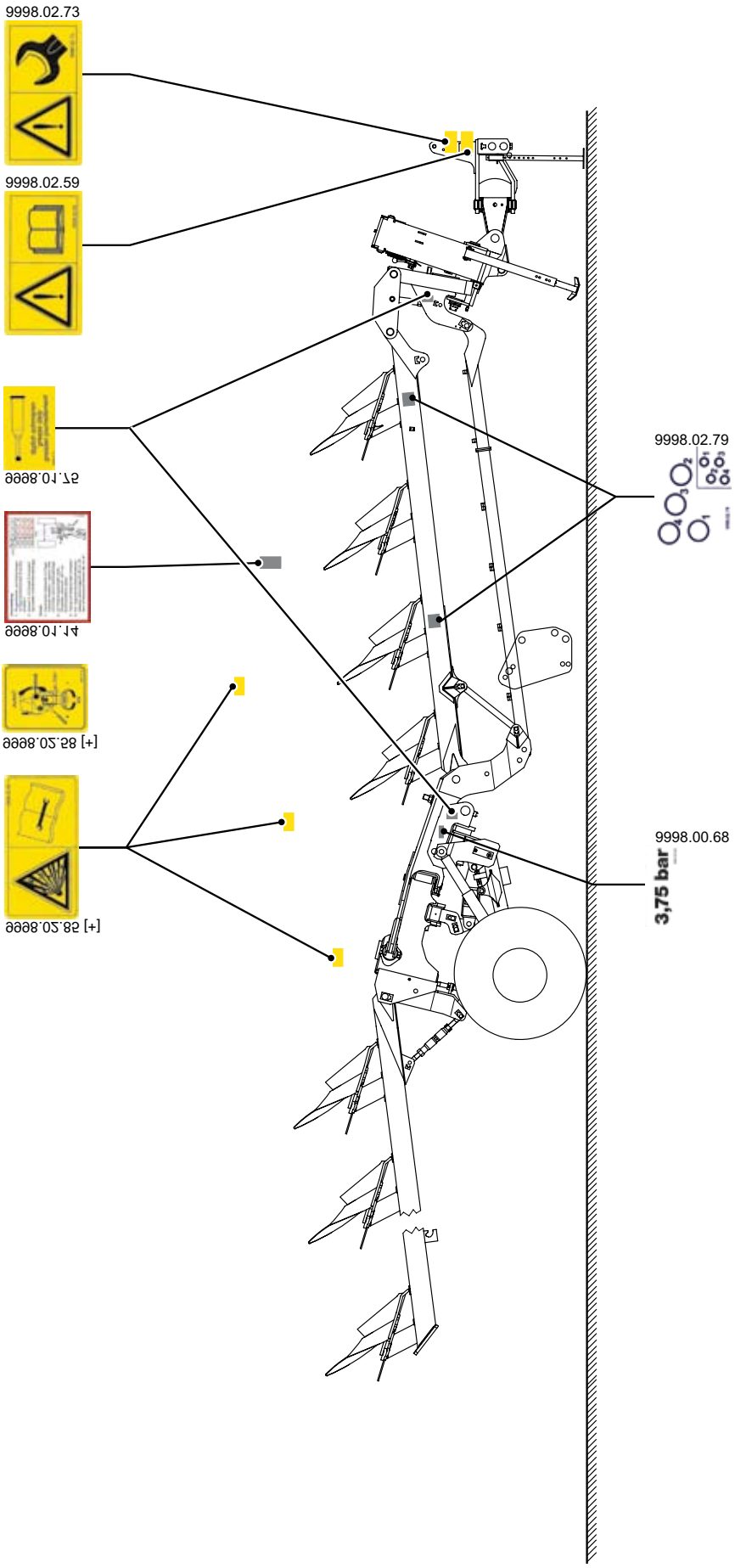
Loss of guarantee

This implement is designed exclusively for normal agricultural operation. Any other use is regarded as not intended use and liability is excluded for any damage resulting from this.
Intended use includes observance of the operating, servicing and repair conditions, as well as the condition that exclusively original spare parts must be used.

The use of third party accessories and/or third party parts (wear and spare parts) not approved by Rabe voids any guarantee.
Unauthorised repairs or modifications to the implement as well as failure to perform inspections during use shall exclude all liability for damage occurring as a result of this.
Any complaints at delivery (transport damage, completeness) must be reported immediately in writing.
Guarantee claims as well as the terms of the guarantee and the exclusion of liability are pursuant to the information in our terms of delivery.

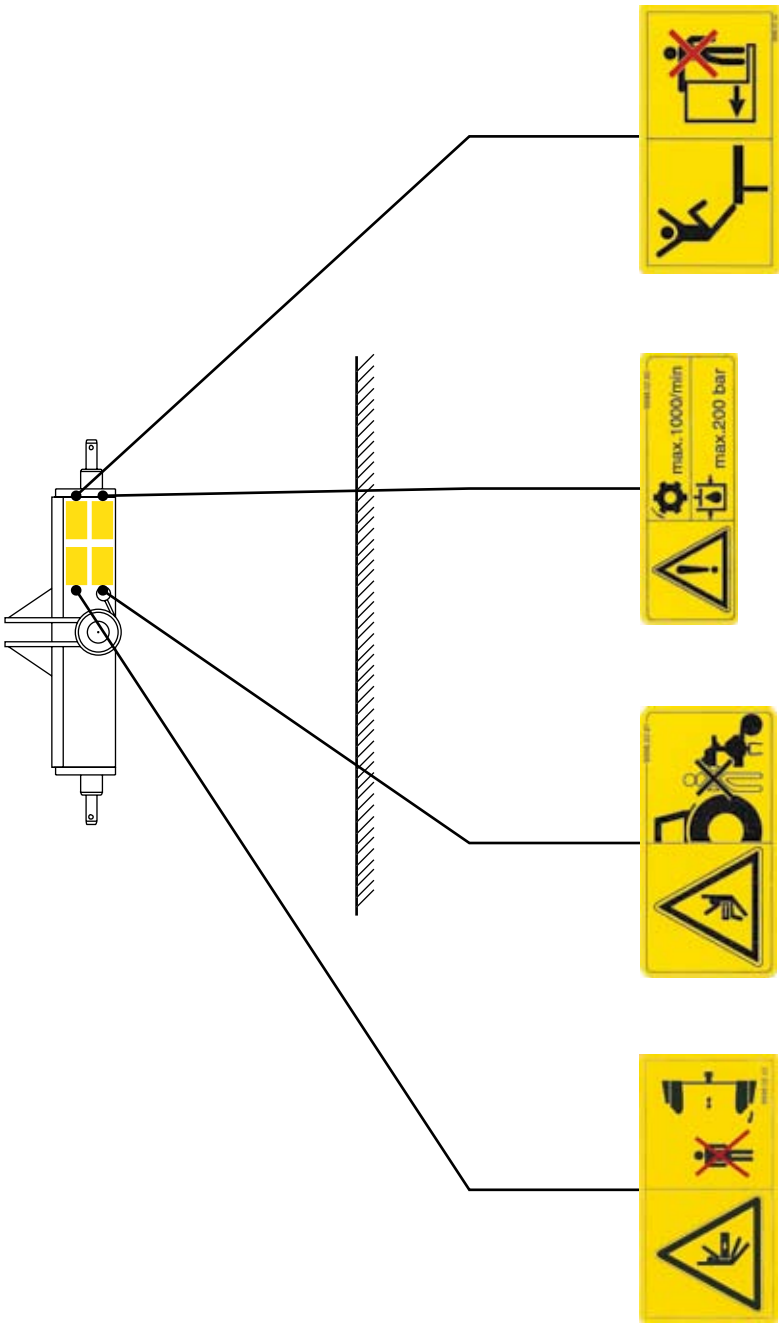
Contents

Locations of the warning signs on the implement



+ depending of model

Locations of the warning signs on the implement



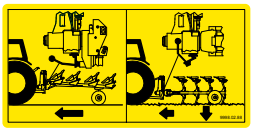
Description of the warning signs

General
Warning signs indicate potential danger points; they provide information for the safe operation of the implement.
The warning signs are component parts of the implement.
The warning signs must always be kept visible (clean) and must be replaced if damaged – they must be purchased from Rabe [for order number, see spare parts list].

Read operating instructions prior to start-up
Observe the safety instructions.
Follow the transport and assembly instructions.

The pressure tank is under pressure
It may only be removed and repairs by following the instructions in the technical manual.

Riding on the implement during operation and transport is not permitted
Only step on the loading ramp or platform while the implement is stationary, and either mounted or securely supported.



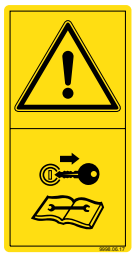
Take note of the position of the stopcock
Close stopcock during road transport.
Open stopcock during operation.

Keep your distance
The plough rotated and pivots.
Do not stand in the slewing range.

Operating pressure / rotational frequency
The operating pressure of the hydraulic system must not be above 200 bar!

The rotational frequency of the power take-off must not be above 1000 rpm!

Crushing hazard from standing between tractor and implement
When coupling the implement system to the tractor, ensure that no-one is between the tractor and the implement!
Do not step between the tractor and the implement when activating the external control for the three-point linkage.



Read the operating instructions prior to set-up, maintenance and repair
Observe the safety instructions.
Follow set-up and assembly instructions.

Retighten all bolts after first use
Check that all bolts are tightly secured on a regular basis.
For specific tightening torques, see operating instructions or spare parts list.
Use torque wrench.

For your safety

General
This section contains general instructions on the intended use of the implement, and safety instructions which must be followed for your own safety! The list is very long, and some of the instructions are not just relevant to the supplied implement. However, this summary will remind you of safety rules for the daily operation of machines and implements which are often unconsciously disregarded.

General safety instructions
During coupling and uncoupling, no person may stand between the tractor and the implement; nor should you step between tractor and implement to operate the external hydraulics control! Risk of injury!
Set tractor hydraulics to "position control' before coupling and uncoupling!

Check tractor and implement for operational and road safety each time before operation; the operator is responsible for “safety”! Ensure sufficient steering safety; if necessary install front weights to the tractor!
Beware of the risk of injury due to crushing and shearing zones in the area of the three-point linkage!
Prior to operating or starting the implement, take care that no person is in the vicinity of the implement!
Climbing or riding on the implement and standing in danger area are prohibited! Keep your distance!

Prior to leaving the tractor, lower the implement, switch off engine and take out ignition key! Only perform set-up and maintenance work when the implement is lowered! During operation, all safety devices must be attached!

Take the position of the centre of gravity into consideration when lifting in steep hillside locations (on a slope).

During transport, lock tractor hydraulics control devices against accidental operation! Prior to the first use – and after extended non-use – check all bearings for sufficient lubrication and the tightness of all screws!

-Maximum length of the combination (tractor+implement) 12m
-Width 2.55m, max. 3m
-Max. height 4m
-Max. total weight of the combination 16t, of which 20% on the front axle.

1. Intended use

The implement is designed exclusively for normal agricultural use (intended use).
Any use surpassing this is regarded as not intended use. The manufacturer is not liable for any damage resulting from this. It is solely the user who bears this risk.
The intended use also involves compliance with the operating, servicing and repair instructions specified by the manufacturer.
The implement may only be used, serviced and repaired by persons who are familiar with this and informed about the dangers. Please pass on all safety instructions to other operators.

Applicable accident prevention regulations as well as other generally recognised regulations pertaining to safety, occupational health and road-traffic must be observed.
Any unauthorised changes to the implement exclude the manufacturer from liability for any damage resulting from this.

2. General safety instructions and accident prevention regulations

•Check the implement and the tractor for road safety and operational safety each time before operation!
• Follow the generally applicable safety and accident prevention regulations!
• The warning and information signs affixed to the implement provide important information about safe operation; there should be followed in the interests of your own safety!
• When using public roads, follow the relevant regulations!
• Prior to starting work, familiarise yourself with all equipment and actuating elements and their functions. Once you are operating the implement, it is too late for this!
• The user must wear close-fitting clothing. Avoid wearing loosely-fitting clothes!
• Keep the implement clean to avoid fire hazards!
• Check the area around the implement prior to start-up and operation! (Children!) Ensure sufficient range of vision!
• Riding on the implement during operation and transport is prohibited!
• Couple the implements properly and only attach them to the specified fixtures!
• Special care is required when coupling and uncoupling implements to and from the tractor!
• Position the support equipment properly for mounting and dismounting! (Stability!)
• Always attach weights properly at the securing points provided for this!
• Comply with the admissible axle loads, total weights and transport dimensions!
• Check and install transport equipment, e.g. lighting, warning equipment and any required protection equipment!
• Triggering cables for rapid action couplings must hang loose and must not be triggered independently in a low position!
• Never leave the operator's cab when driving!
• Driving behaviour, steering and braking performance are affected by mounted and semi-mounted implements and ballast weights. Therefore, pay attention to sufficient steering and breaking performance!
• When driving round corners, pay attention to the wide working radius and the centrifugal mass of the implement!
• Operate the implements only if all safety devices is installed and are in their protective position!
• Standing in the working area is prohibited!
• Do not stand in the turning and slewing range of the implement!
• Power-operated parts (e.g. hydraulic parts) contain crushing and shearing zones!
• Prior to leaving the tractor, lower the implement to the ground, switch off the engine and take out the ignition key!
• No person may stand between the tractor and the implement without the vehicle being secured against rolling away with the parking brake and/or with wheel chocks!
• In transport position, secure folded-in frames and excavation equipment!

2.1 Mounted implements

• Prior to mounting and dismounting implements to/from the three-point linkage, position the operating implement so that unintentional lifting or lowering is impossible!
• For three-point linkage the linkage categories of tractor and implement must agree or must be adapted!
• Beware of the risk of injury from crushing and shearing zones in the area of the three-point linkage!
• Do not step between between the tractor and the implement when operating the external three-point linkage control!
• Always pay attention to sufficient side locking of the tractor three-point linkage in the transport position of the implement!
• When driving on roads with the implement raised, the operating lever must be locked to prevent lowering!

2.2 Semi-mounted implements

• Secure the implements from rolling away!
• Pay attention to the maximum permissible support load of the drawbar, swinging drawbar or hitch!
• For drawbar linkage, make sure that there is sufficient movement at the linkage point!

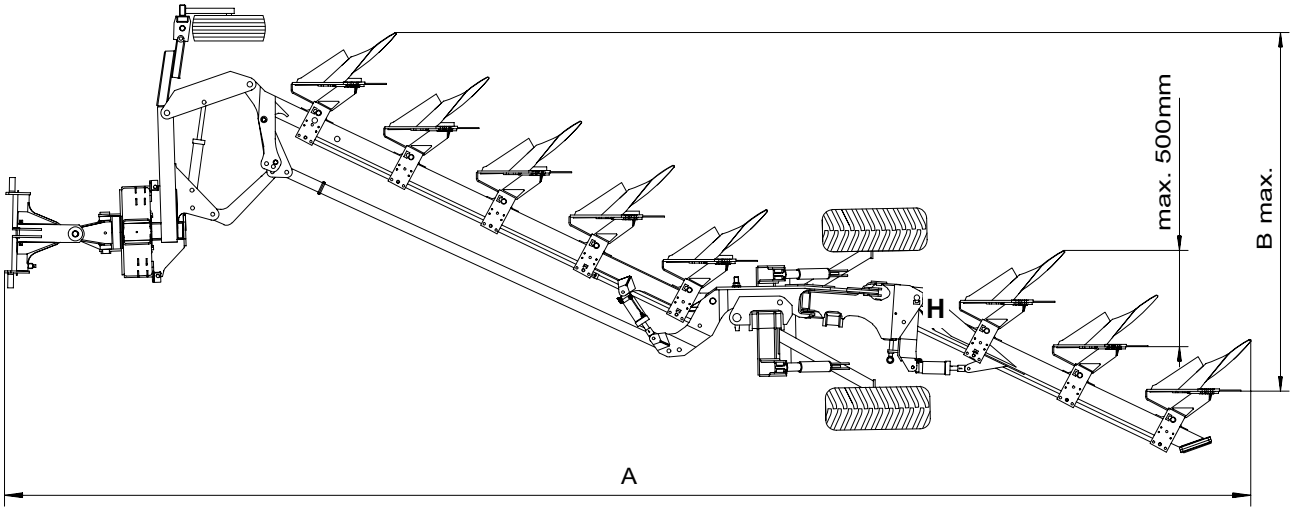
2.3 Hydraulic system

• The hydraulic system is under high pressure!
• Pay attention to the specified connection of the hydraulic hoses when connecting the hydraulic cylinders and motors!
• Pay attention to the pressure-free connection both at the tractor and at the implement when connecting hydraulic hoses to the hydraulic system of the tractor!
• The coupling sleeves and plugs of hydraulic functional connections between tractor and implement should be labelled to prevent operating errors! Mixing up the connections will cause functions to be reversed (e.g. lifting/lowering) - risk of accident!
• Check hydraulic hoses regularly and replace if damaged or showing signs of ageing! The replacement hoses must comply with the technical specifications of the implement manufacturer!
• Use suitable tools when looking for leakages because of the risk of injury!
• Liquids (hydraulic oil) escaping under high pressure may penetrate the skin and cause severe injury! In case of injury, seek immediate medical attention!
• Set down implements, depressurise the system, switch off the engine and remove the ignition key before commencing work on the hydraulic system!

2.4 Maintenance

• On principle, any repair, maintenance and cleaning work, as well as the rectification of operating errors may only be performed when the drive is switched off and the engine has come to stop! Remove ignition key!
• Check nuts and bolts regularly for tightness and retighten if necessary!
• When performing maintenance work on the implement in a lifted state, always secure the implement with suitable supports!
• Use suitable tools and gloves when replacing working tools with blades!
• Dispose of oils, greases and filters properly!
• Always disconnect power before starting any work on the electrical system!
• When performing electrical welding work on the tractor and any mounted implements, disconnect the cable from the alternator and the battery!
• Any spare parts must at least comply with the technical requirements set by the implement manufacturer! For your own safety, you should therefore use original spare parts!

Machine data



Number of furrows	6		7		8		9		10		Transport width (mm)	Height (mm)
Number of furrows, front / rear plough:	**4/2**		**4/3**		**5/3**		**6/3**		**7/3**			
Length A (mm)	11230		12130		13140		14140		15030		2300	1650
Basic variant**	**Approx. weight in kg (for tractor up to approx. kW/hp)**											
Max. working width B (mm)	-	-	2940		3360		3780		4200			
Marabu 180 C	-	-	4274	192/ 260	4567	206/ 280	4860	221/ 300	5153	236/ 320		
Marabu A/HA 180 C	-	-	4638		4988		5338		-			
Working width B, minimum - maximum (mm)	1980-3180		2310-3710		2640-4240		-		-			
Marabu V 180 C	4256	192/ 260	4549	206/ 280	4867	221/ 300	-		-			
Marabu VA/VHA 180 C	4563		4913		5288		-		-			

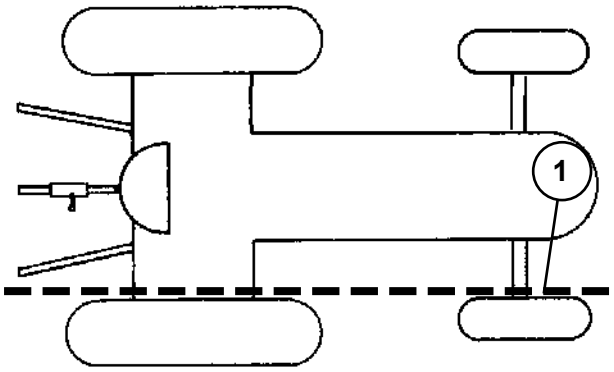
* Varies due to body size; without additional equipment

** "Marabu / -Variant" with shear protection.
"Marabu (Hydro)Avant / -Vari-(Hydro)Avant" with mechanical auto reset system.
"Marabu Variant / -Vari-(Hydro)Avant" with hydraulic, continuous working width adjustment mechanism.
All variants, even the on-land version (..N) - for operating alongside the furrow.

Equipment: three-point linkage, cat.III or for “K 700”, beam 180 mm, interbody distance 100 cm, hydraulic rotation, central barrow with hydraulic lift – also optionally with suspension – tyres 400/60-15.5 or 400/55-22.5, frame joint with adjustable spring loading for secure seating of the plough rear section and hydraulic damping during the rotation process, depth wheel for rear frame – 10.0/80-12 (also optionally on “Marabu /-Variant”), mechanical or hydraulic first furrow cutting-width adjustment, transport locks.

On-land variant: extended turning arm, hydraulic slewing and furrow wheels 10.0/80-12.

Additional equipment: standard skimmers/skimmers (approx. 33 or 36 kg per pair), trash boards (approx. 14 kg), disc coulters (“Marabu /-Variant”: for rear bodies only) – straight or serrated (approx. 36 kg) – sprung (approx. 43 kg), sward coulters (approx. 6 kg), pick-up arm/with hydraulic release facility (approx. 70 kg, for “Variant/Vari-(Hydro)Avant” 170 kg), subsoil decompactors (for “Marabu/-Variant” – approx. 26 kg), locking piece for switching off the “Avant” stone protection, compressed air braking system, indicator bracket.



1

Mounting

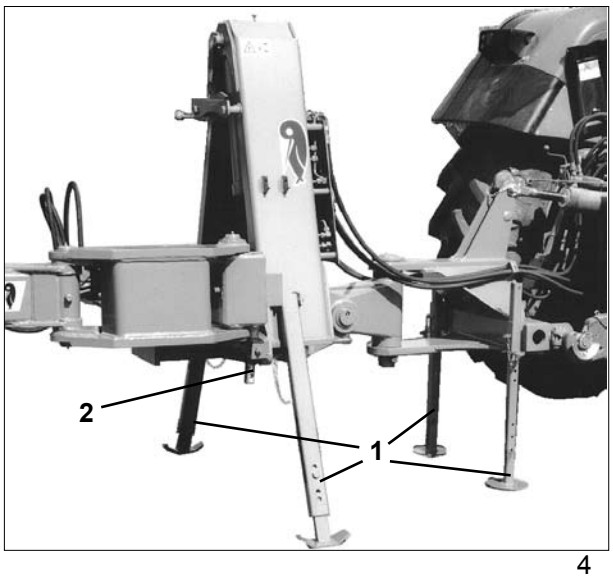
Make sure that the connection dimensions match (cat. of tractor/implement).

Set lower links of the tractor to the same height and limit them to a low lateral tolerance after mounting; attach to side for transport.

Check tractor tyre pressure and clearance between the tyres; the dimension should be equal at the front and the rear, and the inside face of the tyres should be in alignment **(1/1)**.

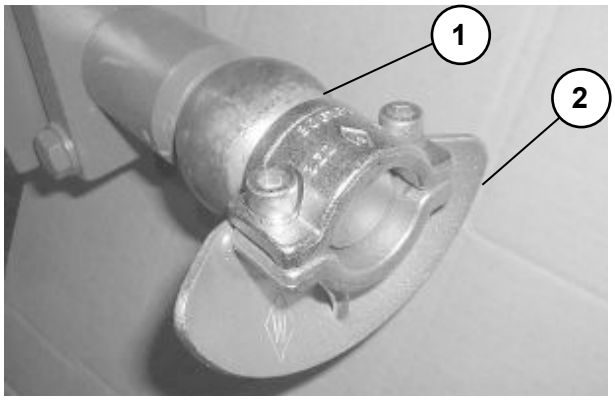
The operating pressure of the hydraulic system must not be above 200 bar!

Set the lower links to the same height.



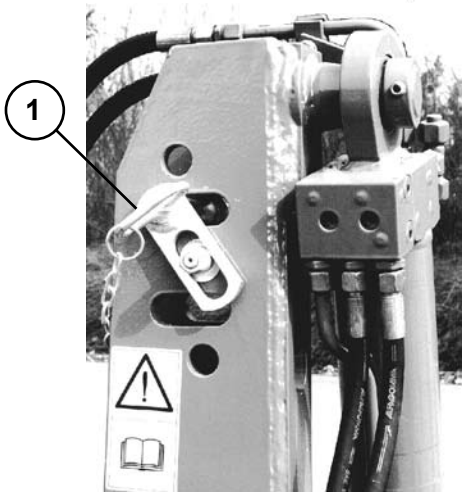
4

Put up the supports.



2

To reduce the friction forces in the in the lower link arresting hook and to avoid damage to the lower link coupling elements, a loose ball bush **(2/1)** with clamp/type guide cone **(2/2)** is recommended. This makes it possible to rotate the ball on the greased lower link pin.



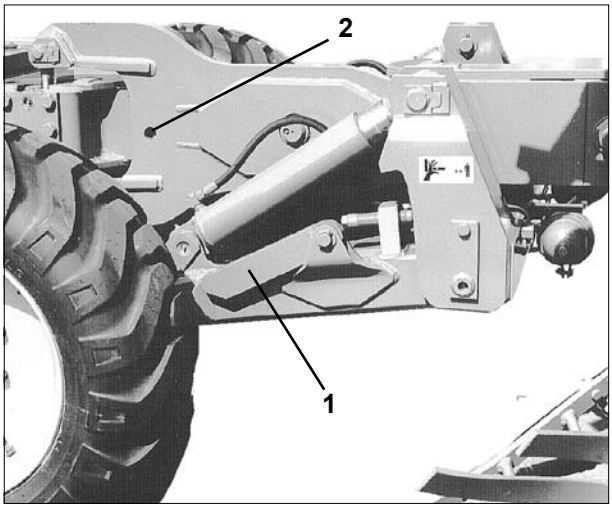
4

Adjust the top link, so that the three-point tower is positioned roughly vertically = normal position. Should the lower link pin be higher or lower during use, turn the top link so it is longer or shorter.

Properly secure the coupling device (three-point linkage).

Coupling hydraulic hoses
(Colour of protecting cap):

Turning – double-acting control device (red)
Width adjustment - double-acting control device (green)
First furrow width adjustment – double-acting control device (blue)
Rear lift – single-acting control device (black)



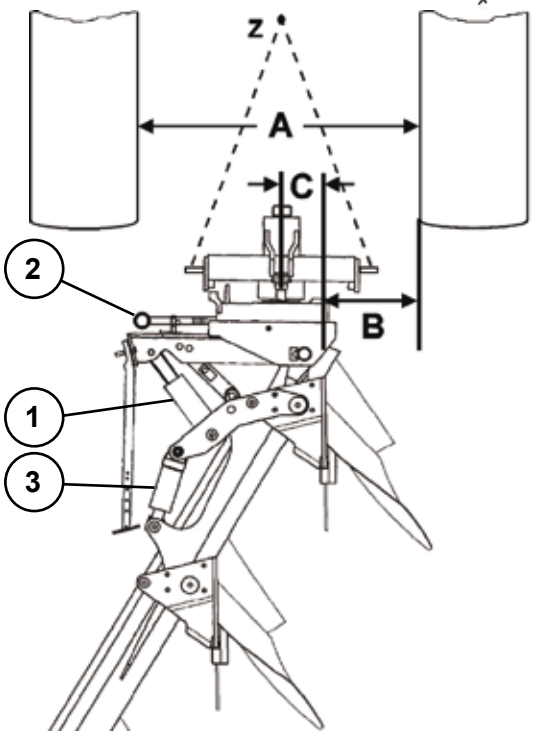
5

Rotation test
Before the plough can be lifted:
• "Chassis" stopcock must be open – 7/3
• Supports must be put up – 4/1
• Transport supports must be tilted back – 5/1
• Frame joint must be free – plug 5/2, 2/2

Raise the plough at the front and back.

Actuate “Rotate” on the control device until the plough has turned over and is positioned against the adjusting spindle **(4/2)** .

Do not turn the plough if the tractor is at an acute angle to the plough.
During very tight cornering – particularly when reversing – make sure that the tractor and plough do not touch!



6

Presetting

The “traction point” **(6/Z)** and first furrow working width **(6/B)** may be set roughly in advance
- at the farm.

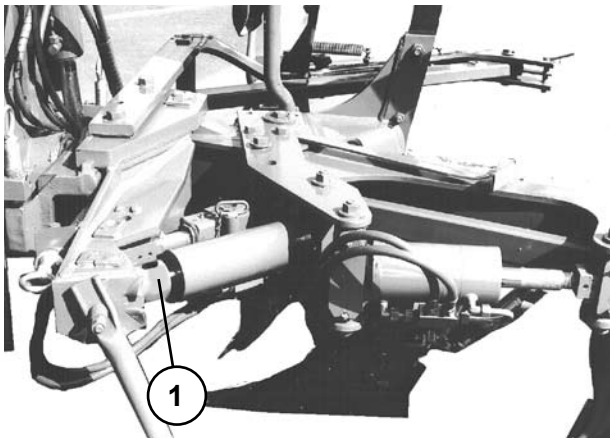
Fine adjustment is performed during use.

Both adjustment devices are arranged clearly in the adjustment centre. They can be set separately.

Presetting is performed at a working width position roughly in the centre of the available range (approx. 41 cm per body for “Albatros Vari-Avant 140 32/50”) – adjust with cylinder **(6/3)** or turnbuckle.

Traction point

Use the threaded rod **(6/1)** or cylinder (stop **7/1**) to position the body sward coulters parallel to the axis of rotation in the direction of travel.



7

2. First furrow working width: set dimension (**C**) with the spindle (**6/2**, or with the hydraulics) (horizontal distance from centre of the axis of rotation to first body sward coulter – with plough in vertical position).

The dimension (**C**) is dependent, among other things, upon:
distance between tyres (**A** = clearance) and the working width per body (**B**); if the “Average working width per body” is not listed in the table, the dimension (**C**) must be determined as an intermediate value – see example “b”.

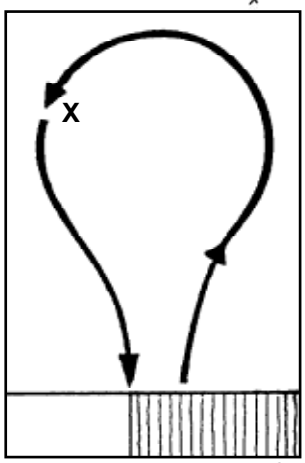
Clearance	Working width per body			
	B			
A	**35**	**40**	**45**	**50**
110	13	8	3	-
120	18	13	8	3
130	23	18	13	8
140	29	24	19	14
150	35	30	25	20
(cm)	**C**: Distance from axis of rotation to first body sward coulter			

Examples:

a) Average working width per body 40 cm
Distance between tyres 130 cm
Dimension **C** 18 cm

b) Average working width per body 41 cm
Distance between tyres 130 cm
Dimension **C** 17 cm

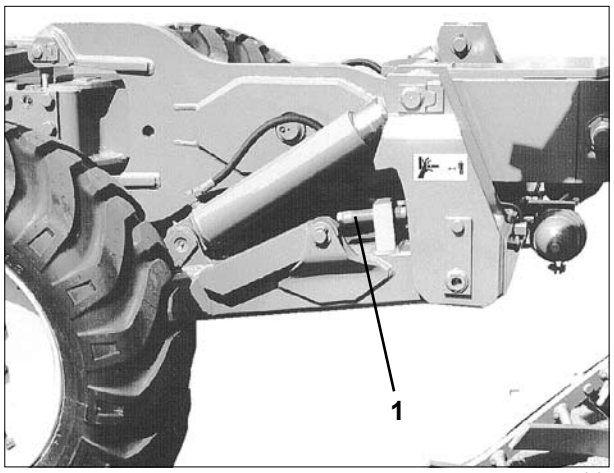
If hydraulic first furrow width adjustment is fitted, do not move under load – not with the implement raised, nor while towing.



9

Turning on headlands

At the end of the furrow, lift the plough first at the front, then at the back; drive a lightbulb-shaped loop – after the apex of the turn, rotate the plough (see **9/X**).
At the start of the furrow, lower the plough first at the front, then at the back to the set working depth. This procedure should be performed without stopping.

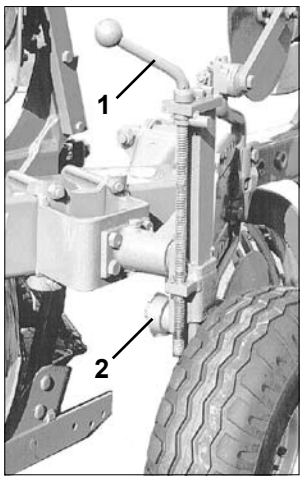


11

Field use
The tractor lower links can allow for lateral motion during work or even be laterally locked. However, for transport it should always be laterally locked.

Working depth
Use the hydraulic system to select the desired depth. The working width is adjusted at the rear, using the bolts **(11/1)** (both bolts should have the "same length"; when the plough is lowered, they must come to rest at the same point).

Adjust the depth wheel to the working depth **–** spindle **10/1)**; by twisting the depth wheel stop (cam **10/2)** it is possible to equalise the depth between the left and right side of the plough.
Set the working depth precisely along the full length of the plough!

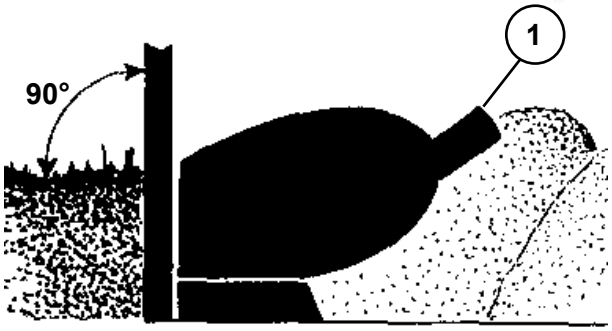


10

Usually the lower links are laterally free (however, to facilitate manoeuvring, limit the lateral tolerance as far as possible to approx. 5 + 5 = 10 cm).
In hillside locations, for frequently changing soil types, or compacted tracks, plough with the lower links locked laterally.
Lift the plough out of the furrow before "resetting"!

Hydraulic-system adjustment
The hydraulic system should be adjusted to take account of ground conditions.

Ground	Hydraulic-system adjustment
Flat	Position control
Hilly	Mixed control



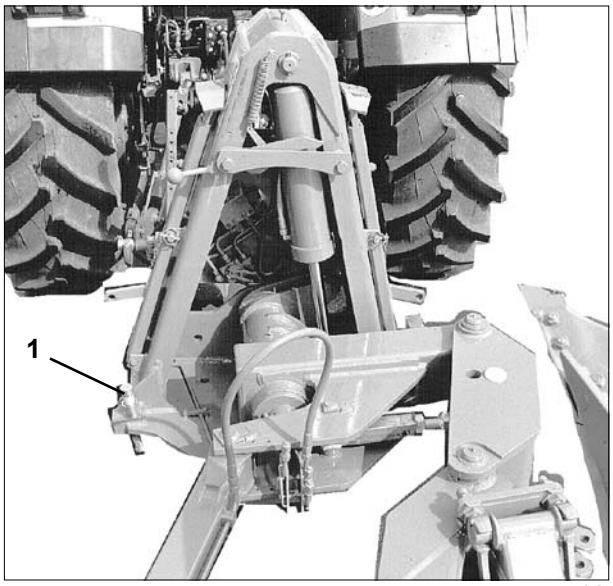
11

Inclination / Tilt

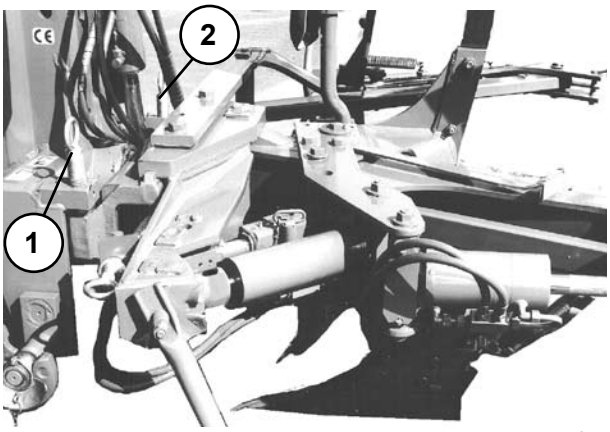
Each side of the plough is adjusted separately. The surface of the ground and the legs should be approximately at right angles (90°) to one another (see Fig.**11**).

- Spindle **(12/1)** for right-turning plough side
- Spindle **(12/2)** for left-turning plough side

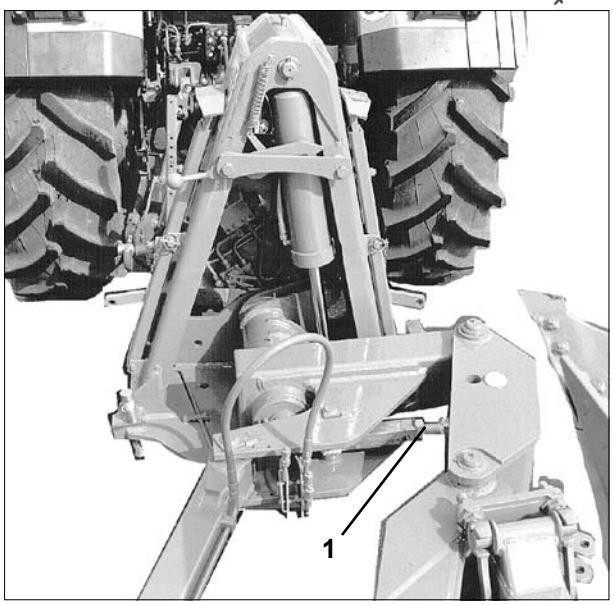
Precise adjustment is particularly important for swivel multi-share ploughs!



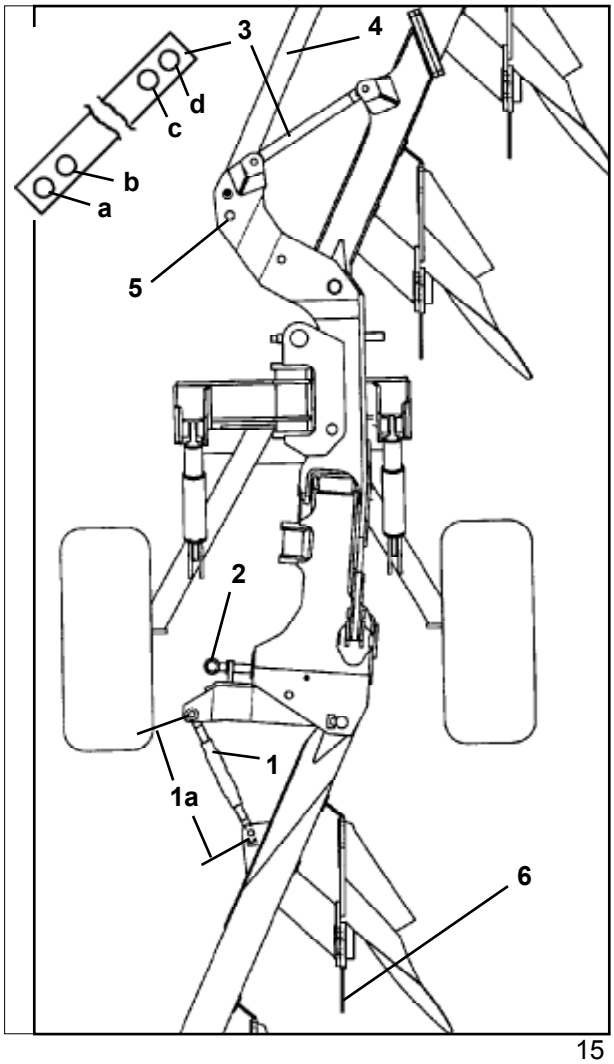
12



8



14



15

First plough body working width
This must be adjusted to match the working width of the other bodies. With spindle **(14/1)** or hydraulic cylinder (on request).

If the implement is equipped with a hydraulic cylinder, the working width of the first body can be adjusted during operation to take account of frequently changing inclines.

Spindle **(14/1)** or hydraulic cylinder shorter – first body wider
Spindle **(14/1)** or hydraulic cylinder longer – first body narrower
Should the “narrower” adjustment range be inadequate for a tractor with an unusually large track width (distance between tyres), then position a pull rod **(15/4)** in the hole **(15/5)** on the intermediate frame.

Marabu Variant, Marabu Vari-(Hydro)Avant:
Adjust the working width of the first body to an average width setting – approx. 43 cm per body. If the plough working width is then adjusted, the first furrow working width adapts automatically.

Working width in the barrow area
The plough body sward coulters of the front and rear plough must be parallel to one-another, the “working width in the barrow area” must be equal to the other working widths; theoretically – measured while stationary – approx. **3 cm** narrower:
... use the turnbuckle **(15/1)** to align the sward coulters **(15/6)** parallel to the front - Marabu/-(Hydro)Avant only
... adjust the working width with the spindle **(15/2)** – move parallel.

If on the “Marabu” or “Marabu (Hydro)Avant”, the body working width is adjusted by adjustment wedges, the double rod **(15/3)** and turnbuckle **(15/1)** must be adjusted:
... fit the rod accordingly (see table and Fig.15) – and remove the relevant dimension (cm) from the rod for the turnbuckle length **(15/1a)** = standard setting.

If hydraulic first furrow width adjustment is fitted, do not move under load – not with the implement raised, nor while towing.

Continuous working width adjustment
(Marabu Variant, -Vari-Avant, -Vari-HydroAvant)

With the standard setting (first body width adjustment and in the barrow area) the working width can be adjusted hydraulically from the tractor.

The adjustment is performed by two hydraulic cylinders in the front plough and one in the rear; the transfer to the rear plough actuates **one** front cylinder (same oil volume).

Larger working width – extend cylinder **(16/1)**
– retract cylinder **(16/2)**
Small working width – retract cylinder **(16/1)**
– extend cylinder **(16/2)**

The body working widths must be the same in the front and rear plough.

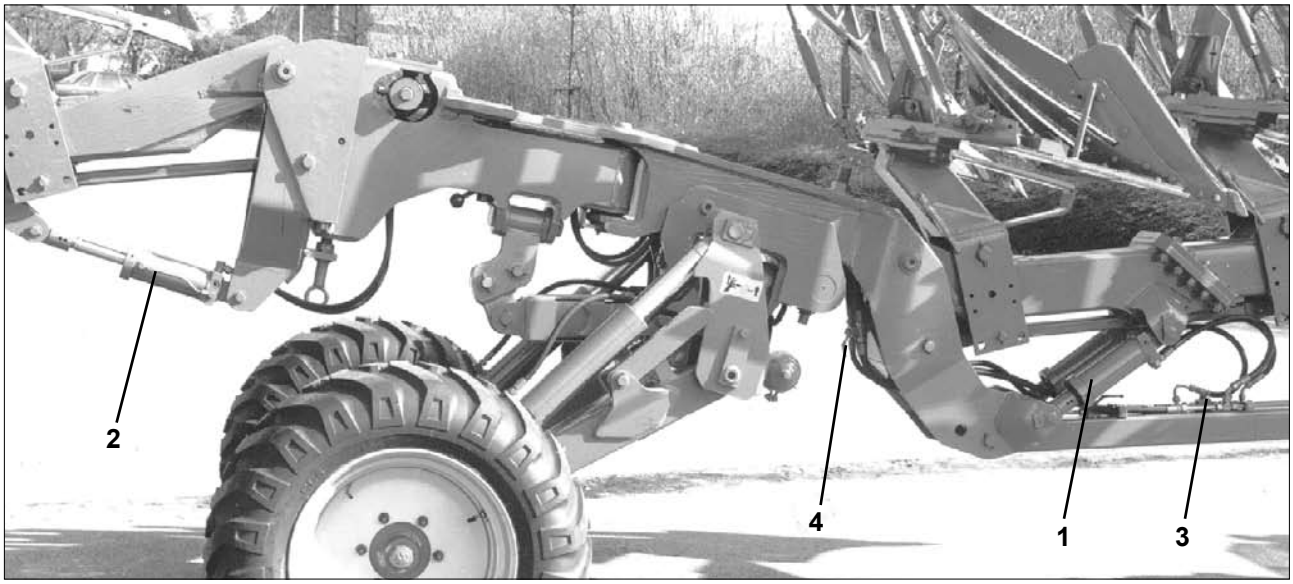
The rear cylinder **(16/2)** must be of the same length, at its narrowest working width, as the front cylinders **(16/1)** at their greatest working width.

If this is not the case, correct as follows:

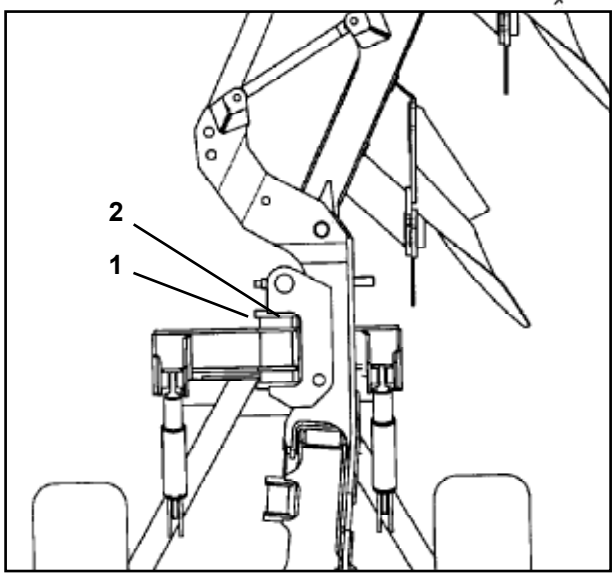
Adjust the front plough cylinders
Stopcock **(16/3)** closed,
Stopcock **(16/4)** open,
... retract cylinders **(16/1)** to block.

Adjust the rear plough cylinder
Stopcock **(16/3)** open,
Stopcock **(16/4)** closed,
... extend cylinder **(16/2)** to limit stop.

Working position: stopcock **(16/3+4)** closed (even during transport).



16

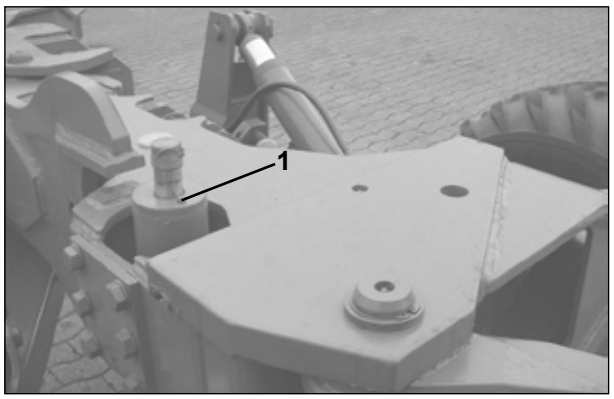


17

Direction of rotation of the wheels (central barrow)

During operation, the wheels should run in the direction of travel.
The direction of rotation also impacts the sward coulter pressure/the plough guidance.
By slightly adjusting the direction of rotation of the wheel for unploughed ground, it is possible to improve the guidance of the plough in light soil (greater sward coulter pressure).

The direction of rotation of the wheel must be adjusted using the threaded connection **(17/1)**; e.g. for greater sward coulter pressure, move the spindle nut **(17/2)** slightly in the direction of the unploughed ground (fully retighten the nuts on both sides – 700 Nm).



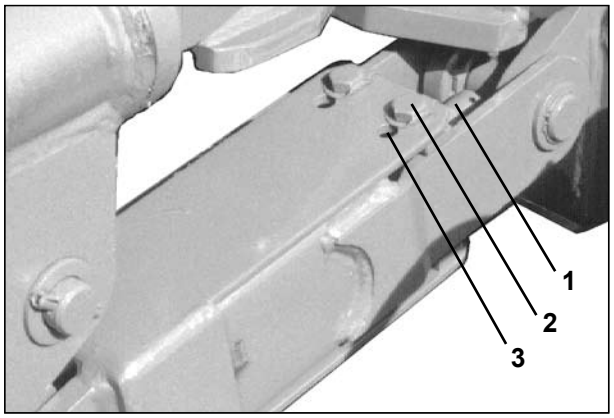
17.1

Frame joint

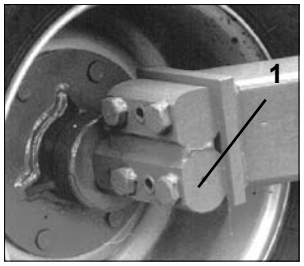
Adjustable spring loading for good ground contour following and firm seating of the rear section of the plough: if the plough is not holding its depth at the back, the pretension can be increased – to do this, raise the plough slightly. Undo the nut **(18/1)** and also pretension the spring assembly until the bolts **(18/2)** can be removed. Then pretension the spring assembly again and secure the bolts in their holes **(18/3)**.

Screw the nut (18/1) back on and secure.

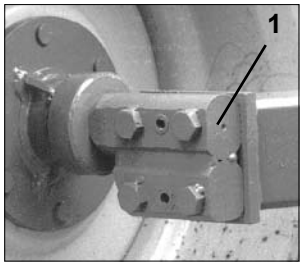
Hydraulic damping of the plough rear section during rotation:
if there is “play in the damping system”, the oil must be topped up – to do so set the plough down on a left-turning body (also set the rear bodies down on a base, so that the frame joint is bent to its full extent) and fill up using the “cylinder-end-cap screw” **(17.1/1)** (Hydraulic oil with mineral-oil base).



18



19

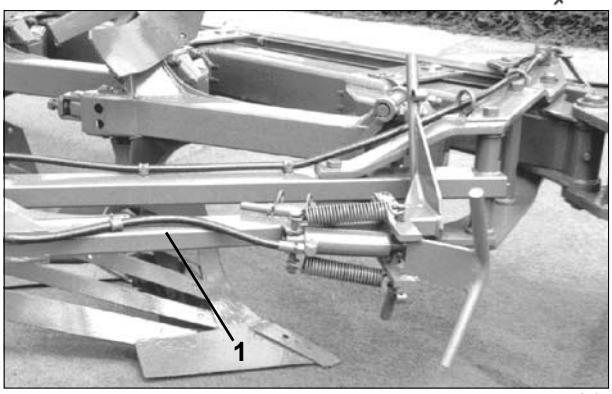


20

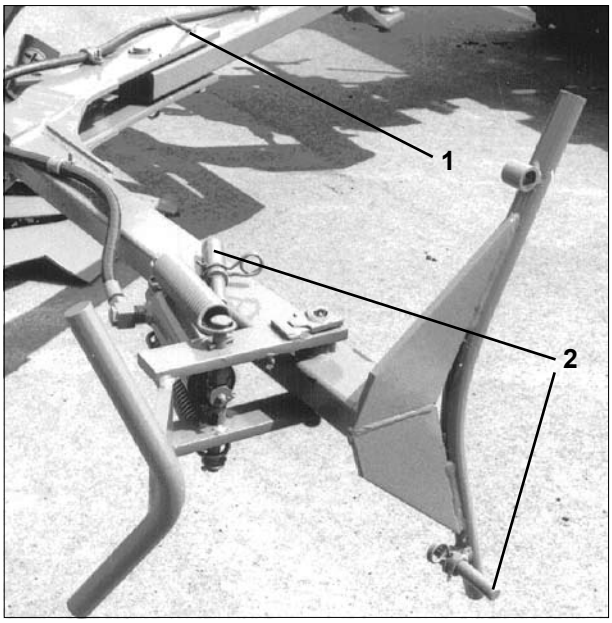
Attachment of the wheel axles

Tyres: 400/60-15.5 **(19/1)**

400/55-22.5 **(20/1)**



28

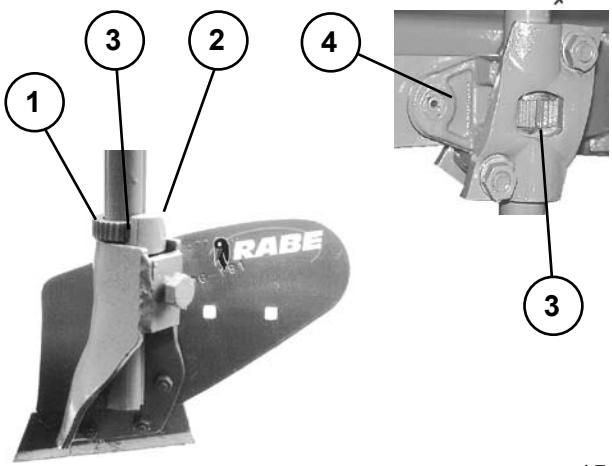


29

Pick-up arm for plough followers
The pick-up arm may be folded away and locked for transport and soil engagement;
on the “Variant / Vari-Avant”, swivel the outer part of the arm forward **(28/1)**.
In the working position, position the arm at right angles to the direction of travel – plug **(29/1)**.
(If the pick-up arm is pivoted in during soil engagement, a swerving – “overloaded” – body could collide with it; you should therefore proceed with care during soil engagement (or if there is sufficient free space, set the arm in working position).
With the hydraulic release device and and locking device, insert pins **(29/2)** in the catching hook if the press is also to be pulled around obstacles while the plough is lifted.
When connected to the rotation cylinder, the release device is triggered by the application of pressure against the direction of rotation.

On-land variant (N)
... for operating alongside the furrow.

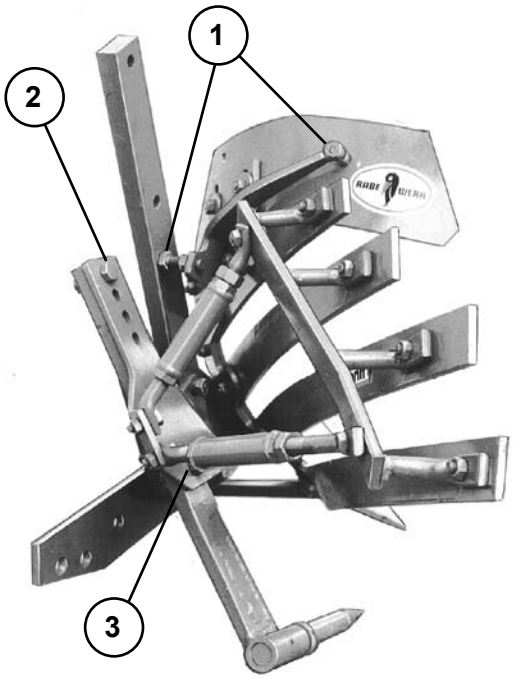
In the case of the N-variant, the tractor travels alongside the furrow (tractor up to approx. 320 cm chassis width).
Release the lower links laterally – approx. 15 cm “tolerance”.
Adjust the first body working by operating at an appropriate distance from the furrow edge.
Adjust the furrow wheels – approx. 5 cm distance from the furrow edge – and adjust depth using the turnbuckle.
For soil engagement, the corresponding “furrow wheel” must be put up.



15

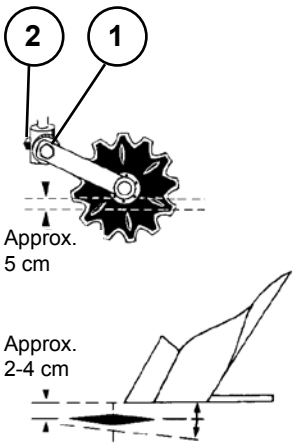
Standard skimmers / skimmers
Skimmers and disc coulters are also adjusted automatically when the working width is changed.

Set the position to the laterally to the plough body, the distance in front of the body and the depth.
Side position in relation to the body – with rod projection.
Distance in front of the body – by rotating the guide plate **(15/4)** and rod projection.
Limit the depth such that the cutting edge works in the soil across the entirety of its width.
Pay attention to the equal adjustment of the front tools!
The red marking “at tooth washers” **(15/3)** marks the default factory setting.
When mounting the “round rod skimmer”, insert tooth washer **(15/1)** and pressure piece **(15/2)** (tooth washer with numbers pointing upwards – in the working position).

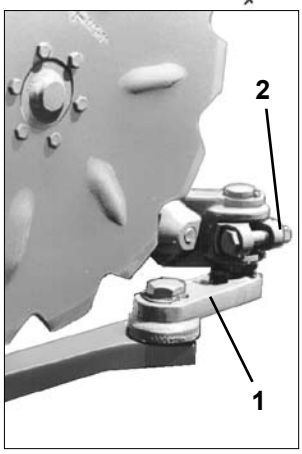


16

Trash boards
The height of the trash boards may be adjusted via the slots of the support. Do not set too deep to avoid slowing down the soil flow too much.
With crumbling soil, the trash boards are only needed to scrape off - and skim - the upper furrow crown; adjust corresponding to the working depth and plough speed.
At the front (landside) the "trash board" needs to be resting against the mouldboard.
Set the support screws so they contact **(16/1)**.
With heavy, cohesive – not crumbling – soil, use skimmers instead of trash boards.

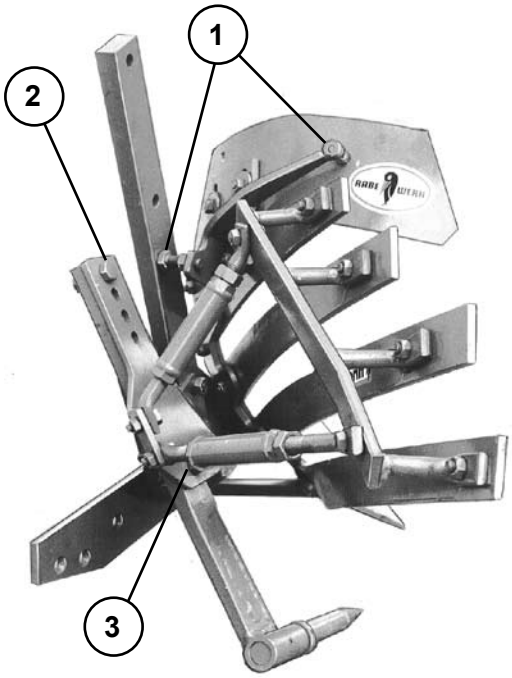


17



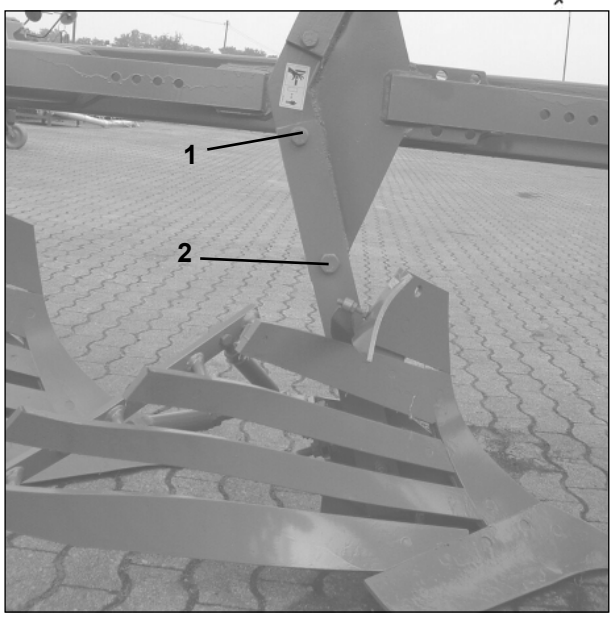
18

Disc coulters
Limit the depth in such a way that there is approx. 5 cm of clearance between the disc bearing housing and the ground – turn tooth washer **(17/1)**.
"Landside" distance to the body approx. 2 - 4 cm; turn with rod or set with cam adjuster **(24/1)**:
“Variant” – loosen screws (**18/2** = centre of rotation) and **(18/2)** (tighten to 410 Nm).
Limit lateral swinging using the adjusting ring **(17/2)**, making sure that the disc coulter is able to turn to the direction of travel (tension adjusting rings).



16

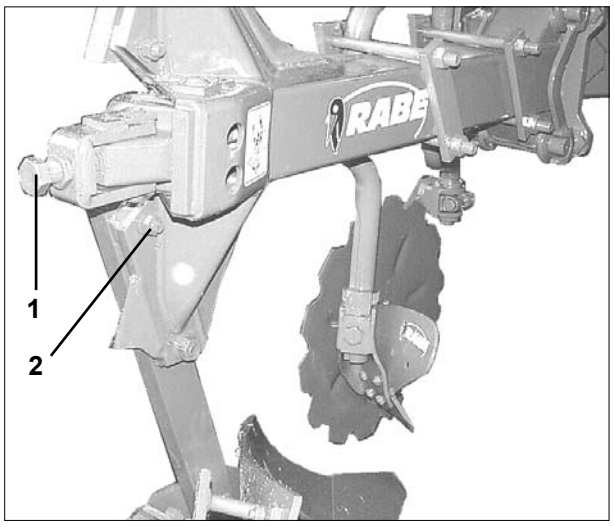
Subsoil decompactors
Decompactor depth is adjustable **(16/2)**.
Overload protection: shear bolt M 16x50-4.6 **(16/3)**.
When setting down the plough, pivot the decompactors backwards - remove shear bolt.



25

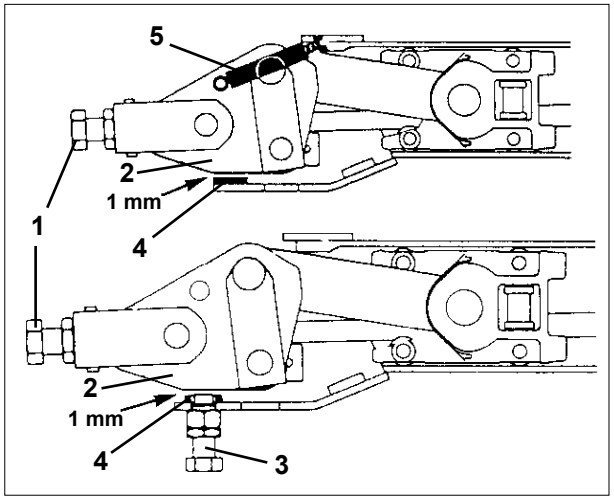
Leg overload protection
Shear bolt **(25/1)** – also fitted for ”stone protection” **(26/1)** – bolt head always on leg side.
After installing a new shear bolt, tighten the other plough leg bolts as well (**25/2** and **26/2**).

Tightening torques, plough leg bolts (Nm)		
	Shear bolt/pivot bolt	
	“Normal plough”	“Stone protection”
	315 / 640	**225 / 460**



26

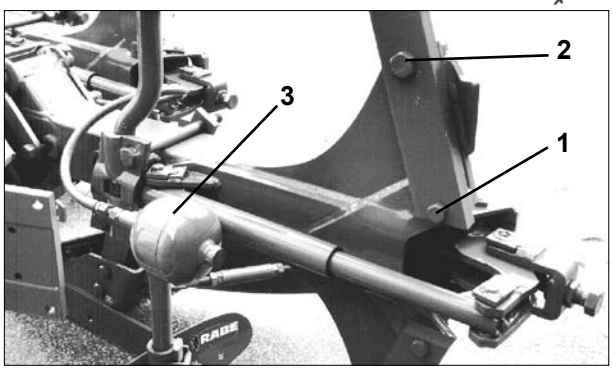
Use only original shear bolts!
(see spare parts list).



27

Risk of crushing when swivelling back the "triggered" body.
Only approach the plough body from the rear – the respective plough side points downwards.
If the swivelled out plough body is "blocked", loosen the pivot leg bolt slightly.
– Suitable tools **(19/3)**, e.g. RABE special wrenches and gloves, must ne used!

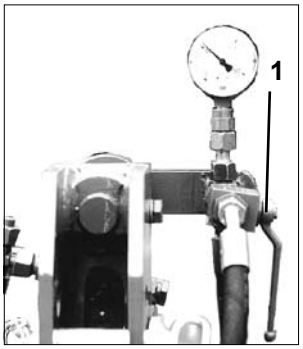
Important: bear in mind the tightening torques!



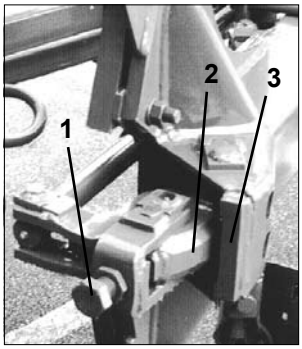
26

Avant automatic stone protection
The restoring force can be adjusted from the tractor seat.

Connect a single-acting control device.
Change the hydraulic pressure – open cock **(27/1)**.
Minimum pressure: 110 bar,
maximum: tractor operating pressure – ca. 200 bar.
Close cock **(27/1)** after setting the pressure.
Set the restoring force (hydraulic pressure) to such a value that the plough bodies are "strongly" engaged in the soil but avoid stones easily.
Set a distance of approximately 3 mm between angle lever **(28/2)** and limit stop **(28/3)** – using the bolt **(28/1)**. (Lower hydraulic pressure for this).

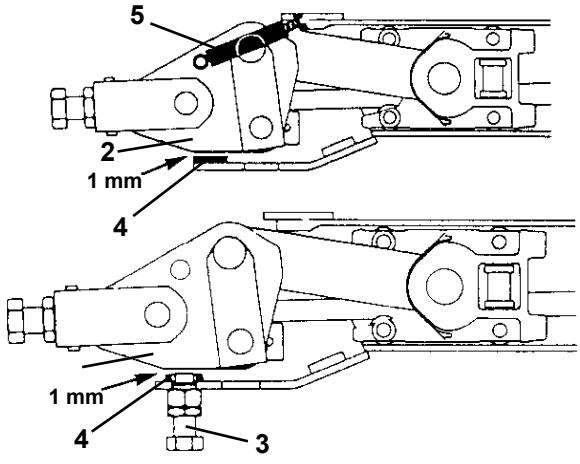


27



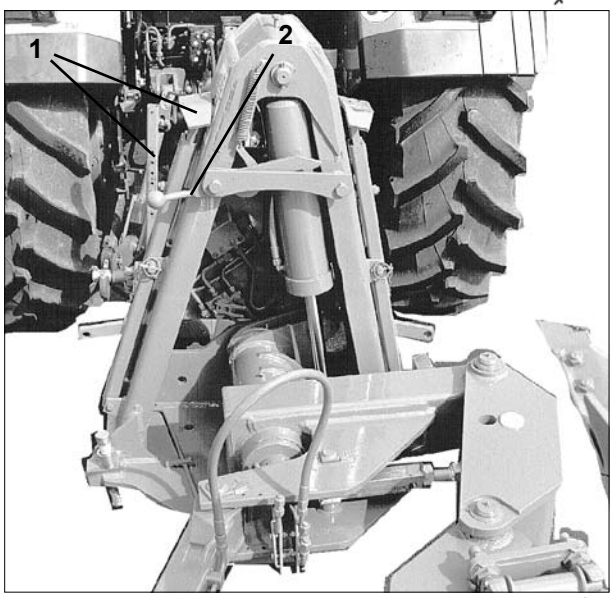
28

Depressurise the system prior to disassembly!



27

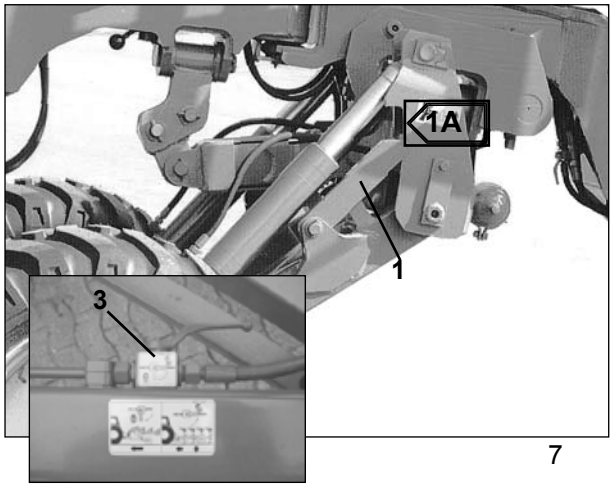
Any changes to the hydraulic accumulators by **(23/3)** machining, welding or other measures are prohibited.
Prior to performing any work on the hydraulic circuit, it is necessary to depressurise the hydraulic accumulator completely from any liquids.
The maintenance, repair and/or the removal of component may only be carried out by properly trained personnel.



6

Transport position
Raise the plough at the front and back.
Put up all supports (6/1).
Pivot the transport supports (7/1) forward.
Pin the frame joint – with pin (2/2; “right” body underneath).
Preselect the centre position locking mechanism – lever (6/2).
Rotate the plough slowly – locks independently (make sure that it engages securely).
Lower on to transport supports (7/1) at the back.
Close "chassis" stopcock (7/3).
Lower at the front to a point where there is still sufficient ground clearance.

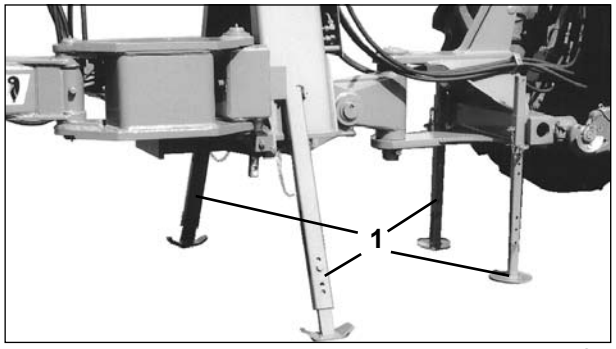
Fix tractor lower links at the side.
Lock tractor control devices.
Notes on transport: see page 14.



7

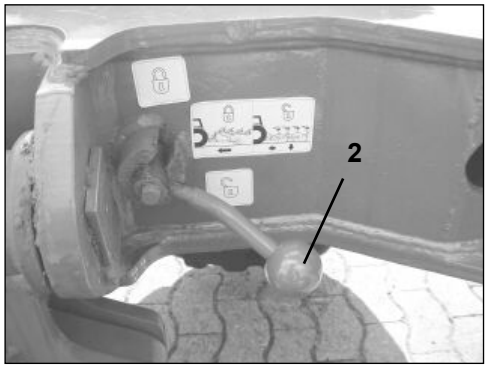
With **hydro-pneumatic suspension**, do not lower the plough all the way onto the transport supports at the back, but instead leave a gap of **5 cm** for spring travel (7/1A).

Attach lighting and warning boards (indicator bracket = additional equipment).

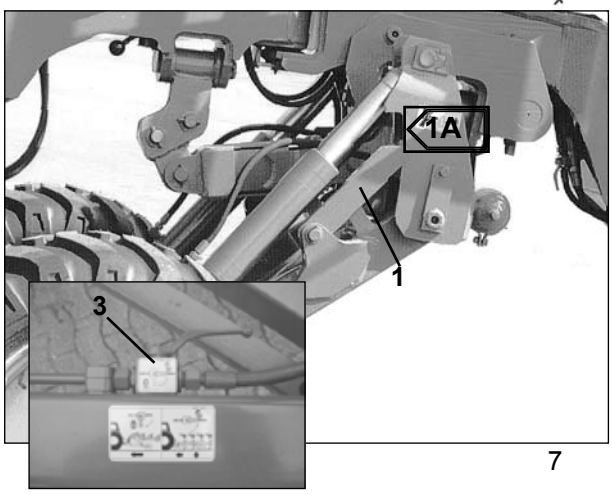


8

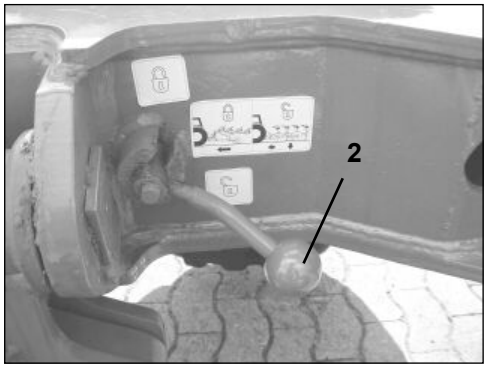
Switching to working position
Open the stopcock (7/3). Lift the plough.
Pivot the transport supports (7/1) back.
Release the centre position: throw lever (6/2), briefly initiate rotation – unlocks automatically.
Rotate on right-turning body and release frame joint – pin (2/2).



2



7



2

Setting down the plough

The plough can be set down in a tilted position (same as transport position) or for extended periods on the right-turning bodies, in order to protect the tyres.

Pay attention to stability! Set support length appropriately.

To set down in a tilted position, lower onto the transport supports (7/1) at the back, close the stopcock (7/3) and set down on supports (8/1).

When setting down on the right-turning bodies (working position – leg roughly vertical) also place on supports (8/1) and close the cock (7/3).

If subsoil decompactors are fitted, remove the shear bolt (22/3) and pivot the decompactors to the rear.

Depressurise hydraulic hoses prior to uncoupling. Protect hydraulic coupling plug against dirt.

Grease all sliding surfaces.

Maintenance

When working on the mounted implement, turn off the engine and take the key out of the ignition!

Do not work on the implement while it is raised! – raised implements must also be supported to prevent them from dropping unintentionally!

Before performing work on the hydraulic system, lower the implement and depressurise the system!

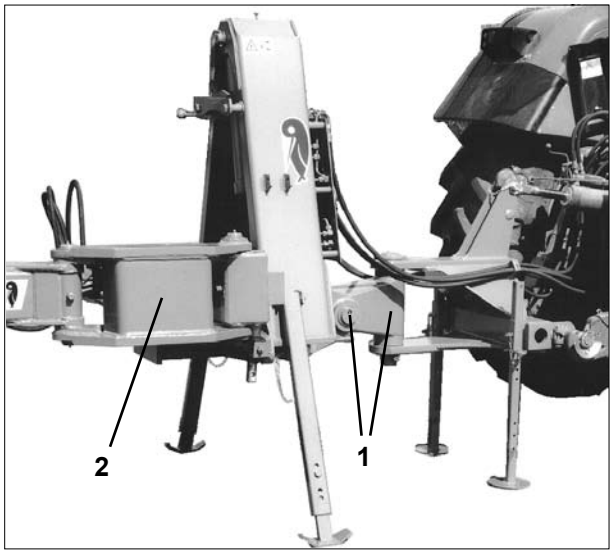
Dispose of hydraulic oil properly.

Fitting tyres requires an adequate level of knowledge; use only suitable fitting tools!

After initial use (approx. 8 hours), retighten all bolts; check tightness regularly thereafter – use a torque wrench!

Tightening torques:

Tighten bolts on mouldboards to 80 Nm – also on the slatted body, axle fastening bolts to 400 Nm **(19+20)**.SFlbwheel nuts to 260 Nm.



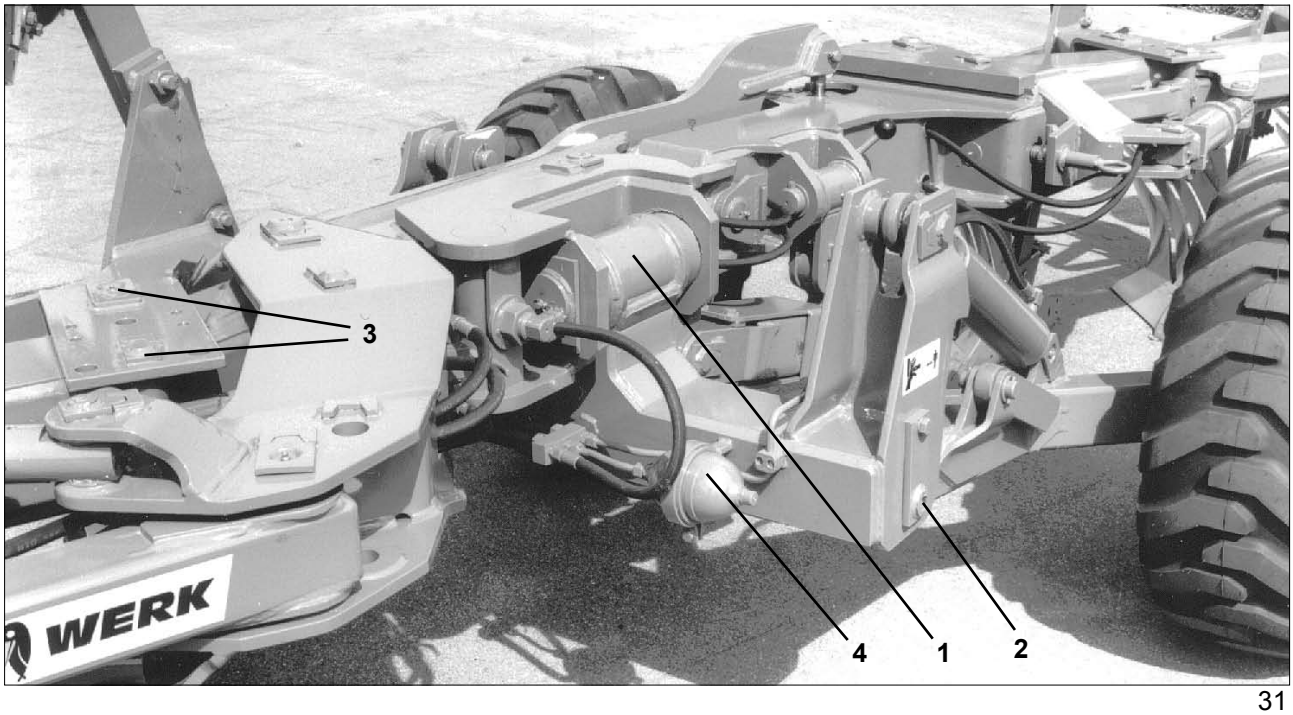
30

Plough leg bolts: see table on page 10.

When trash boards are used, take care that the support bolts have contact **(22/1)**.

Lubricate all bearings with lubricating nipples regularly using a lithium-based multipurpose grease:

e.g. universal joint/three-point tower **(30/1)**, barrow bearings **(31/1+2)**, lifting and rotation cylinder bearings, on the frame joint, in the case of very stony ground, lubricate the stone protection bearings daily (HydroAvant), check and readjust the bearing bolts for the hydraulic pick-up arm, disc coulters, wheel bearing, disc coulter bearing and turning axis bearing.



31

Oil joints and keep spindles running.
Inspect hydraulic hose lines regularly and, if damage or embrittlement are discovered, replace them (spare parts list).
Hoses are subject to natural ageing, the period of usage should not exceed 5-6 years.
When cleaning with a water jet (particularly at high pressure), do not point the jet directly onto the bearings.
When the implement is parked, preserve all sliding surface with corrosion protection agent and the piston rods with acid-free grease.
Repair damage to the paintwork.

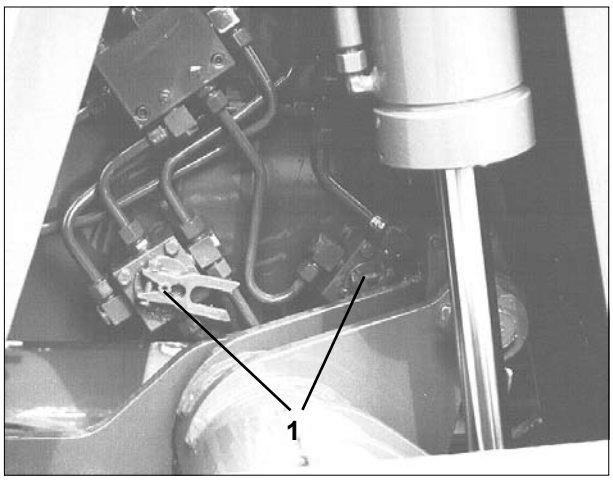
Daily: it is prohibited, to modify the hydraulic accumulator **(31/4)** by machining, welding it or using other measures.

Prior to performing any work on the hydraulic circuit, it is necessary to depressurise the hydraulic accumulator completely from any liquids. The maintenance, repair and/or removal of components may only be carried out by properly trained personnel.

Replace wear parts promptly; for the shares and sward coulters, this means before the frog (share support/side plate) starts to wear.
First turn the point of shares with reversible points and then put them in front.
Pretension the new mouldboards by two turns of the turnbuckle (replace defective shims – see spare parts list).

Only use original RABE parts and original bolts!

Tyre pressure: Chassis – 2.5 bar
Depth wheel – 2.5 bar



32

Check the shifting claws of the directional valves periodically **(32/1)**: the shifting claw must engage in the respective limit position – spring-loaded ball.
The bearing bushings can be replaced in case of wear; e.g. universal joint/three-point tower, swing arm bearings **(30/2)**, frame and chassis bearings, console and push rod bearings (**31/3**; Variant, Vari-Avant, Vari-HydroAvant).

Residual dangers	
Danger areas	**Instructions**
Transport position locking mechanism	Operating instructions, transport position
Falling down of the skimmers after undoing the adjusting screw	Operating instructions, skimmers
Falling down of the disc coulter after undoing the adjusting screw	Operating instructions, disc coulter
Ejection of the stone protection	Operating instructions, mechanical auto reset system
Worn out strips, breast boards, countersunk screws	Notes in the operating instructions on sharp edges caused by wear
Subsoil decompactors in half-turned position during transport	Notes in the operating instructions on reverse assembly.
Loss in pressure in supply line to transport wheel	Operating instructions, transport locks and setting down the plough
Setting down with subsoil decompactors fitted	Notes in the operating instructions on only setting down with folded in subsoil decompactors

Caution / transport

Move implement into "transport position"; check suitability for transport.

Riding on the implement and standing in danger area are prohibited!

Adapt your driving speed to prevailing conditions on the public highway; maximum speed 25 km/h.

Take care when navigating turns; the implement veers out!

The provisions of the German Road Traffic Licensing Regulations (StVZO) must be complied with.

According to the provisions of the German Road Traffic Licensing Regulations (StVZO), the operator is responsible for the roadworthy connection of tractor and implement when driving on the public highway.

Working tools must not interfere with the safe driving of the tractor combination. The mounted implement must not exceed the permissible tractor axle loads, the permissible total weight and the tyre loading capacity (depending on speed and air pressure). The front axle must bear at least 20% of the vehicle's unladen weight in the interests of steering safety.

The highest permissible transport width is 3 m. Special authorisation is required for these maximum permissible dimensions to be exceeded.

Semi-mounted implements weighing more than 3 t require an operating permit; at axle loads in excess of 3 t, they must have their own braking system.

No parts may protrude from the outline of the implement in such a way that they constitute an avoidable danger (section 32 of the German Road Traffic Licensing Regulations - StVZO).

If protruding parts cannot be avoided they must be covered and marked.

Safety equipment is also necessary for marking the implement outline as well as for rear safety accessories – e.g. red/white striped warning signs 423 x 423 mm.

Lighting devices are necessary if the implements conceal tractor lights or if visibility is low due to the weather conditions, e.g. front and back if the semi-mounted implement projects out laterally more than 40 cm over the tractor's lighting devices, or for rear-end safety if there is a distance greater than 1 m between the tractor taillights and the end of the implement.
Semi-mounted implements may only be operated with red reflectors at the back, yellow reflectors on the sides and always with lighting devices operational – even in the day (side marker lamps if the implement protrudes at the side more than 400 mm over the tractor lights).
We recommend purchasing warning signs and lighting devices directly from vendors.
RABE also sells mounting profiles for retrofitting lighting devices according to DIN 11027.