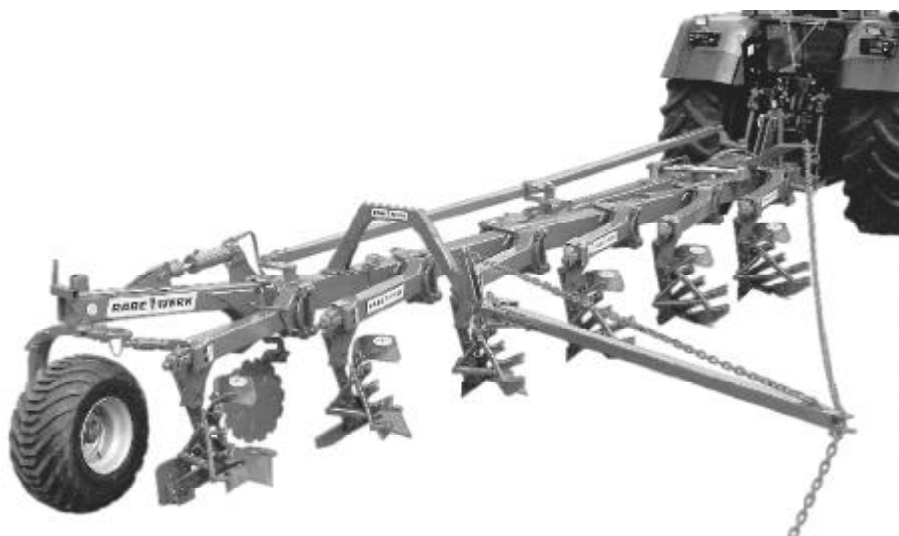




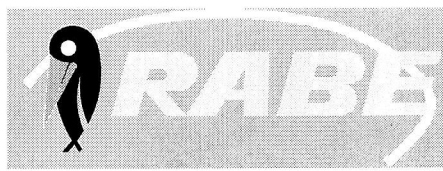
Order No. 9900.00.43GB01

Operating Instructions

Semi-mounted conventional ploughs

***Milan 180 S
Milan HA, VHA 180***





EC Declaration of Conformity

(Directive 89/392/EEC, Annex II, sub A)

We ***RABE Agrarsysteme GmbH+Co.KG***

Am Rabewerk, D-49152 Bad Essen

Declare under our sole responsibility, that the product

Semi-mounted conventional plough *MILAN S*

is in conformity with the provisions of the following other EEC directives:

Directive 89/392/EEC
93/44/EEC and 93/68/EEC, Annex I

To ensure the proper implementation of the EU's Health and Safety Guidelines,
the following norm(s) and/or specification(s) has/have been given consideration:

EN 292-1 and EN 292-2

Bad Essen

25.07.2007

Wilhelm von Allwörden,
Managing Director


Friedrich Gerdorf,
Head of Design

englisch



EC Declaration of Conformity

(Directive 89/392/EEC, Annex II, sub A)

We ***RABE Agrarsysteme GmbH+Co.KG***

Am Rabewerk, D-49152 Bad Essen

Declare under our sole responsibility, that the product

Semi-mounted conventional plough *MILAN, MILAN (HYDRO)AVANT*

is in conformity with the provisions of the following other EEC directives:

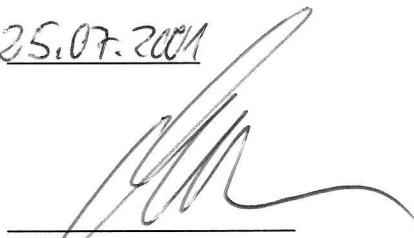
Directive 89/392/EEC
93/44/EEC and 93/68/EEC, Annex I

To ensure the proper implementation of the EU's Health and Safety Guidelines,
the following norm(s) and/or specification(s) has/have been given consideration:

EN 292-1 and EN 292-2

Bad Essen

25.07.2004

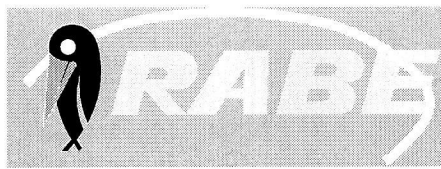


Wilhelm von Allwörden,
Managing Director



Friedrich Gerdorf,
Head of Design

englisch



EC Declaration of Conformity

(Directive 89/392/EEC, Annex II, sub A)

We ***RABE Agrarsysteme GmbH+Co.KG***

Am Rabewerk, D-49152 Bad Essen

Declare under our sole responsibility, that the product

Semi-mounted conventional plough MILAN VARIANT, MILAN VARI-(HYDRO)AVANT

is in conformity with the provisions of the following other EEC directives:

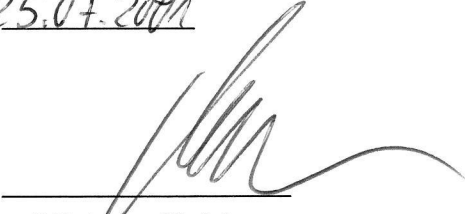
Directive 89/392/EEC
93/44/EEC and 93/68/EEC, Annex I

To ensure the proper implementation of the EU's Health and Safety Guidelines,
the following norm(s) and/or specification(s) has/have been given consideration:

EN 292-1 and EN 292-2

Bad Essen

25.07.2011



Wilhelm von Allwörden,
Managing Director



Friedrich Gerdorf,
Head of Design

englisch



Operating Instructions

Semi-mounted conventional ploughs

Milan 180 S

Milan HA 180

Milan VHA 180

Before operating the plough for the first time, please read carefully through this operating manual and the safety precautions ("For your own safety") and ensure that they are observed at all times.

Ensure that the operators are properly qualified, trained in its use and everyday maintenance, and familiar with the potential hazards and accident-prevention regulations involved. Make sure that other operators are supplied with a complete copy of the safety precautions.

Ensure that all applicable accident-prevention regulations are observed, along with other generally recognized safety procedures and any legislation that may apply with respect to health and safety in the workplace.

Observe the warning labels at all times!

Instructions in this manual accompanied by this symbol and a warning label indicate DANGER.
(For further details, see the section entitled "Key to pictograms".)



Loss of warranty

This semi-mounted non-reversible plough is designed and built exclusively for standard agricultural use. Use for any other purpose will be regarded as unauthorized operation and no liability whatsoever will be accepted for any damage or injury that may occur as a result.

The term "unauthorized operation" also covers the full observance of all operating, maintenance and servicing specifications: including, for example, the kW/PS limits and the exclusive use of original spare parts.

The use of non-original accessories, spares and/or consumables that do not carry specific approval from RABE shall void all warranty liabilities.

We accept no liability for damage, loss or injury resulting from the carrying out of unauthorized repairs and/or modifications to the device.

Claims resulting from missing or damaged items detected at the moment of delivery (transit damage, missing parts) should be made immediately and in writing.

Warranty claims, warranty conditions and our liability exclusions are based on our general terms of delivery.

Technical specifications

(subject to change)

No. of furrows	5	6	7	8	Frame height in cm (approx.)	Working width per body in cm (approx.)
extendible to	6	7	8	--		
Type	Weight in kg *(approx.) For tractors up to kW (HP)					
Milan 180 S	2072 162 (220)	2376 177 (240)	2630 192 (260)		80	40 ** (35/45)
Milan HA 180		2204 162 (220)	2507 177 (240)	2750 192 (260)	75 or 80	40 ** (35/45)
Milan VHA 180		2404 162 (220)	2732 177 (240)	3000 192 (260)	75 or 80	33 53

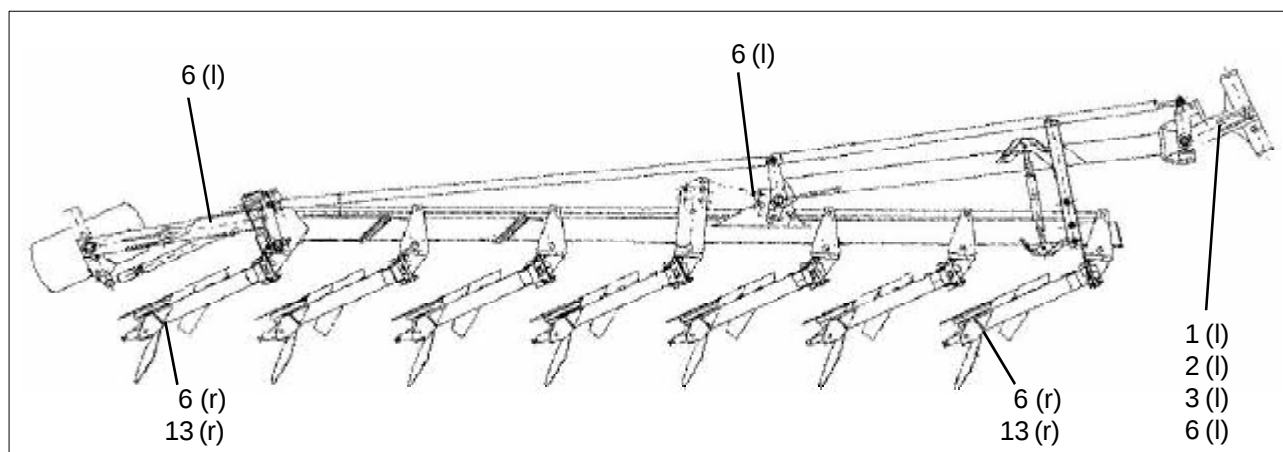
* varies according to body size, without additional equipment

** (..) = +/- 5 cm with width-adjustment wedge

Noise level: < "70 dB (A)"

Equipment: Box sectional beam 180 mm, interbody clearance 100 cm, models "S" from 6-furrow – and 7- and 8-furrow with support beam, three-point attachment cat. II, III, III N or for "K-700", steerable rear wheel with hydraulic lifting system (tyres 400/60-15.5 or – type "S" only – 400/55-22.5), mechanical or hydraulic front furrow width adjustment, shear bolt protected legs or with fully-automatic hydraulic auto reset "HydroAvant" (activation force 2300 kp), landside wearing plate on rear body. Vari-HydroAvant with infinitely-adjustable hydraulic furrow width adjustment.

Additional equipment: Skimmers/Maize skimmers (approx. 22 kg per pc.), trash boards (approx. 7 kg), serrated disc coulters (approx. 24 kg), spring-loaded (approx. 28 kg), knife coulters (approx. 3 kg), furrow press arm with chain (approx. 117 kg), locking devices for "HydroAvant" trip release system, lighting gear fixture.



Safety precautions



DO NOT allow anyone to stand between the tractor and the implement during coupling or uncoupling. Note that this includes stepping between the tractor and the plough to operate the external hydraulic controls (risk of injury).

Set the tractor's hydraulic lifting system to "position control" before coupling and uncoupling.

Before operating the tractor and the plough, ensure that they are both in safe operating condition.

Ensure that the tractor can be steered safely by attaching an adequate counterweight to the front of the tractor if necessary.



Note that there is a danger of crushing and cutting injuries occurring in the area of the three-point linkage/plough head and rear wheel.

Before moving or operating the implement, always check to ensure that no one is standing within its turning circle or operating area.

DO NOT stand or ride on the plough or remain within its operating area (turning circle).

Always lower the plough at both front and rear BEFORE carrying out adjustment or any other work on the plough.



Disable the tractor's hydraulic control system to prevent accidental operation while the implement is being towed.

Before leaving the tractor unattended, lower the plough, switch off the engine and remove the ignition key.

Before operating for the first time – or after long downtimes – check all screws and bolts for tightness, ensure that all bearings are adequately greased, inspect the hydraulic system for leaks and check tyre pressures.

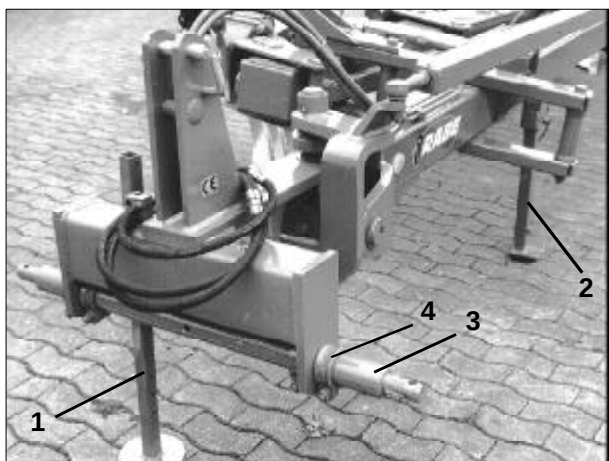
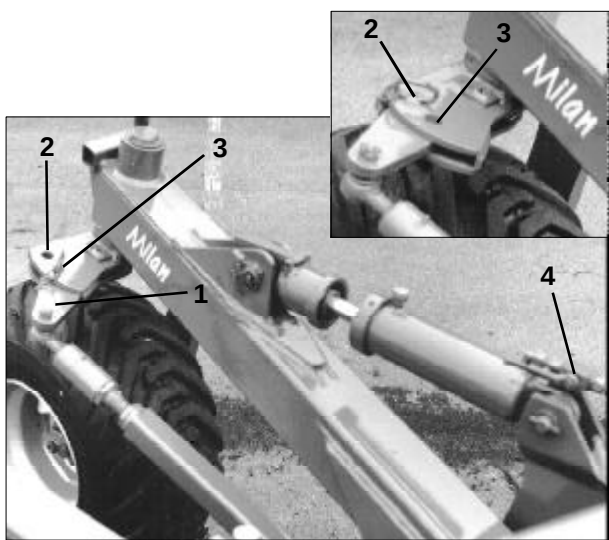
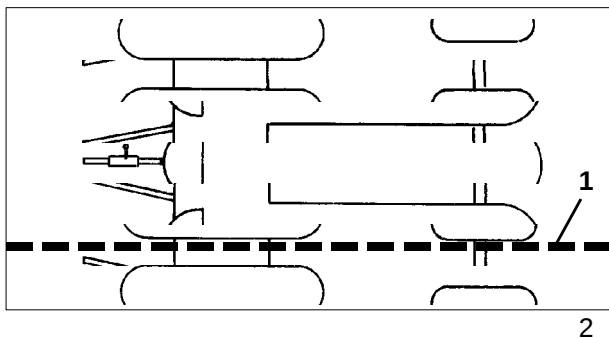


Warning labels (pictograms)

The warning labels are used to indicate possible danger areas; they are designed to ensure the safety of all persons involved in the operation of the machine.

Please refer to the appendix entitled "Key to pictograms" for further details. See Fig. 1 for details of their location (r = right hand plough side; l = left hand plough side). Replace any missing or damaged warning labels.

Key to illustrations: (13/1) refers to Fig. 13, item 1.



Set-up

Check both parts of the coupling for compatibility (Cat. of tractor linkage: plough).

Check the tyre pressure on the tractor and wheel spacings. These should be approximately the same for the front and rear, with the inner faces of the tyres aligned (2/1).

Adjust the top link so that the three-point headstock is approximately vertical.

Correctly secure the three-point linkage.

Connect hydraulic hoses:

One (single-acting) hose for rear lift.

Two hoses (double acting) for hydraulic front furrow adjustment.

Hydr. variable furrow width (double acting) Vari-HydroAvant.

Raise the support legs (5/1+2).

Before transporting by road (3)

Secure guide lever (4/1) in hole (4/3) (to change over, release wheel – lower plough).

Lift the plough at the front and rear. Close the shut off valve (4/4).

Raise the support legs (5/1+2)

Swivel furrow press arm inwards (see page 6) if fitted.

Adjust Variant plough to narrow setting.

Lower link arms of the tractor in rigid position.

Block the tractor's hydraulic-system controls to prevent unauthorized operation.

Attach the lighting gear and warning signs (light mounting supplied as optional accessory).

See page 10 for further details of road-transport procedures.

Changeover to operation:

Secure guide lever in hole (4/2).

Raise the plough. Lift and secure the support legs.

Parking the plough

Park on plough bodies and both supports – ensure that it is firmly placed. The plough is not parked exactly vertically – but the cross shaft lies horizontally for easier coupling.

Close the shutoff valve (4/4).

Keep the plugs of the hydraulic couplings away from dirt.

Swivel the subsoilers towards the rear (if fitted).

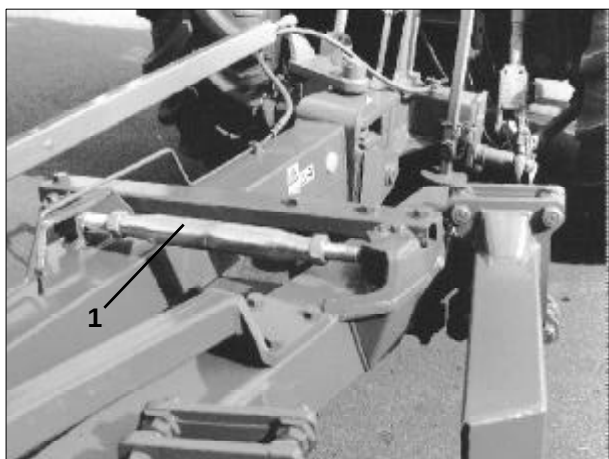
Remove the shear bolt from the subsoiler (18/3) before lowering.



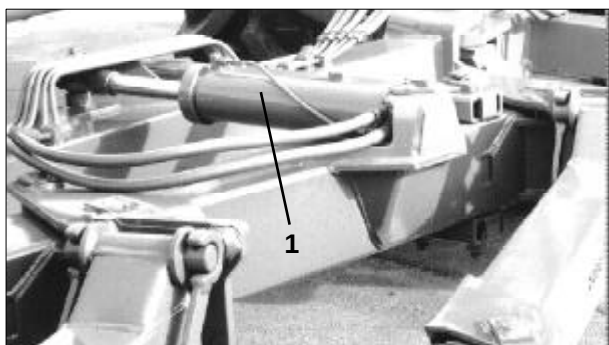
6



7



8



9

Operation

The lower link arms of the tractor can be laterally free or laterally fixed during ploughing. But always laterally fixed when being transported by road.

The lower links are normally laterally free. Try to keep lateral play to about $5 + 5 = 10$ cm for easier manoeuvring).

Fix the lower link arms to a lateral position when ploughing on steep slopes, sharply undulating ground or when following sharply defined wheel marks (e.g. those left by combine harvesters). When entering a furrow, first lower the front end of the plough to its preset working depth and then the rear end. At the end of a furrow, raise the plough first at the front and then at the rear.

Hydraulic Control-system of tractor:

If "draft control" is imprecise, with long raising and lowering impulses, choose one of the following settings:

- Level ploughing - "position control"
- Hillside ploughing - "mixed control".

Working depth: use the hydraulic three point linkage to select the desired front furrow depth, For rear, set the working depth at the cylinder limit stop (6/1).

Tilt / Inclination – The plough legs must be at a right-angle (approx. 90°) to the ground surface (7). Adjustment is carried out by altering the length setting of the lifting rods of the three-point linkage.

Front furrow width adjustment

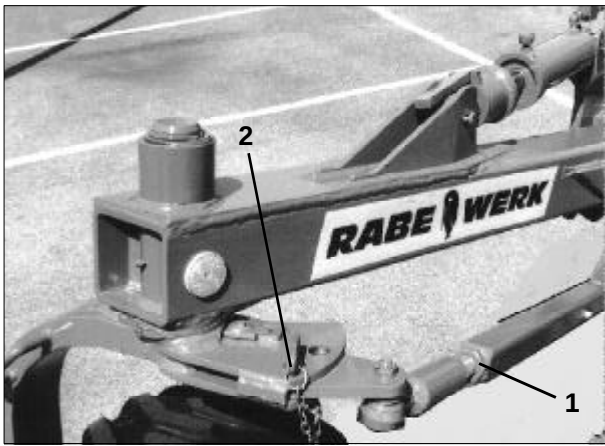
Match the working depth of the front unit to its counterpart; with turnbuckle (8/1) or hydraulic cylinder (9/1).

Turnbuckle (or cyl.) shorter – front unit wider

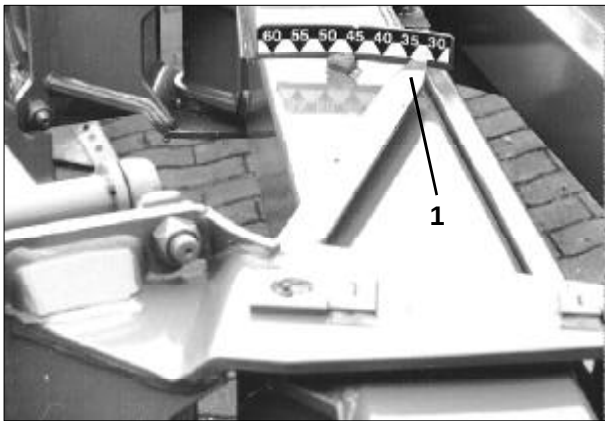
Turnbuckle (or cyl.) longer – front unit narrower

If the location on the slope is liable to change, the operating width of the front body can also be adjusted while driving, if the system is equipped with a hydraulic cylinder.

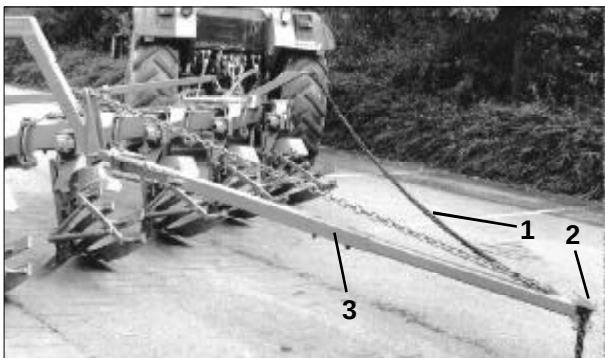
Variant, Vari-HydroAvant: Carry out furrow width adjustment of the front furrow with the width-adjustment mechanism centred up as much as possible (approx. 43 cm per unit). If the furrow width of the plough is then centrally adjusted, the working width of the front furrow adapts itself automatically.



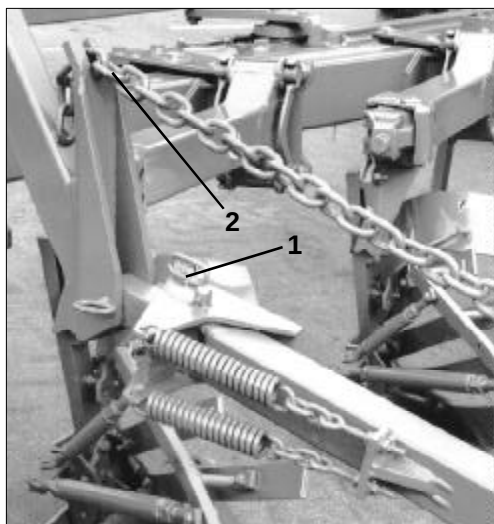
10



11



12



13

Travelling direction of transport wheel

The steerable rear wheel should be precisely aligned in the direction of travel during operation; adjust at steering rod (10/1) – secure spindle with locknut. (Guide lever in hole 10/2)

Steering rod shorter – wheel runs more towards unploughed side

The running direction of the wheel also influences the landside pressure- how the plough is led. Displacing the running direction of the wheel toward the unploughed side can improve how the plough is led over light soil in the case of multi-share ploughs.

Draught correction

If the tractors pulls to one side (crabbing), this can be corrected by displacement of the cross shaft (5/3).

If the front of the tractor pulls to the right, for example, displace the cross shaft somewhat to the right (direction of travel. Retighten the clamping rings - 5/4).

Furrow width adjustment (Vari-HydroAvant)

After basic adjustment has been carried out, the furrow width can be infinitely adjusted from the tractor - in small steps while the unit is being driven (Illustration 11/1).

Extend cylinder – operating width increases.

Arm for furrow presses

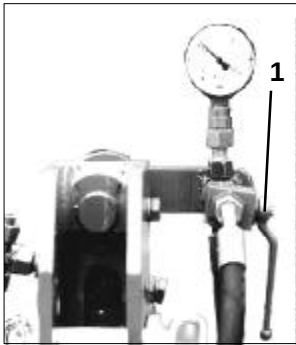
Operation: Push chain tensioner as far as it will go - plug (13/1). Tension the arm and insert in trailing chain (12/1) (plug 12/2) so that the arm and arm mounting are aligned in the same direction when pulled.

Attach the support chain (13/2) so that it hangs freely during operation and maintains the arm at a sufficient height when the plough is raised. Adjust the arm length (at 12/3) to ensure sufficient clearance between the trailing element and the edge of the furrow.

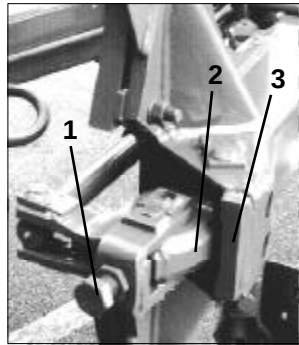
When starting to plough (without trailing elements) ensure that the plough bodies do not collide when they move upwards.

Transport: Swivel the arm forwards.

This is done by releasing the trailing chain at (12/2), pulling out the plug (13/1) and hanging the support chain (13/2) so that the arm does not come into contact with the bodies when swivelled forwards.



14



14 a

"HydroAvant" hydraulic auto-reset device:

The restoring force of the "HydroAvant" hydraulic auto-reset device can be adjusted from the tractor's driving seat by fitting a simple control device.

To alter hydraulic pressure – open the shut off tap **(14/1)** in the "auto-reset device" supply line.

Minimum pressure: **110 bar**,

Maximum: tractor operating pressure – approx. 200 bar.

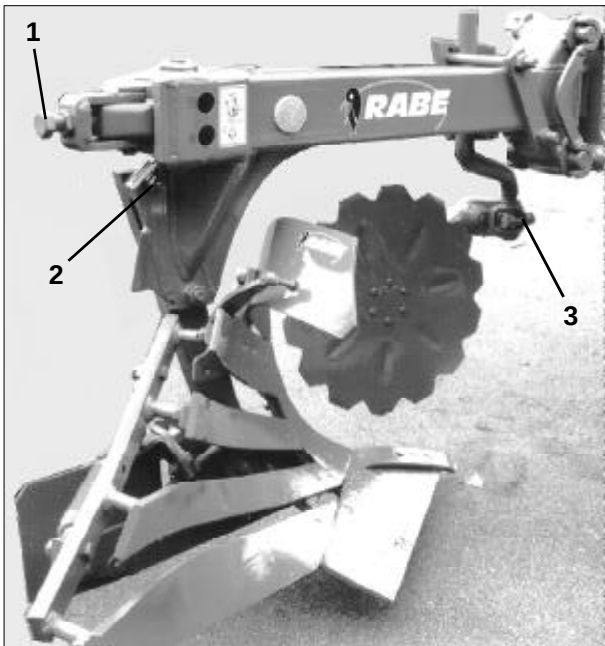
Shut tap **(14/1)** after carrying out pressure adjustment.

Adjust the restoring force (hydraulic pressure) so that the plough bottom sits "firmly" on the ground, but can easily jump over obstacles.

Adjust the clearance between the angle lever **(14 a/ 2)** and limit stop **(14 a/3)** to about 3 mm – using the bolt **(14 a/1)** (hydraulic pressure is thus reduced).



On the "HydroAvant" unit, release system pressure before dismantling.



15

Shear bolt overload protection

Also installed in "HydroAvant" and "Vari-HydroAvant" ploughs.

After fitting a new shear bolt, securely tighten the other fixing bolt also.

Shear bolt **(15/2, 16/2)**: The bolt head should always face towards the beam-side. If configured with washer on bolt head, fit the new shear bolt along with the same washer.

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



Extending the plough

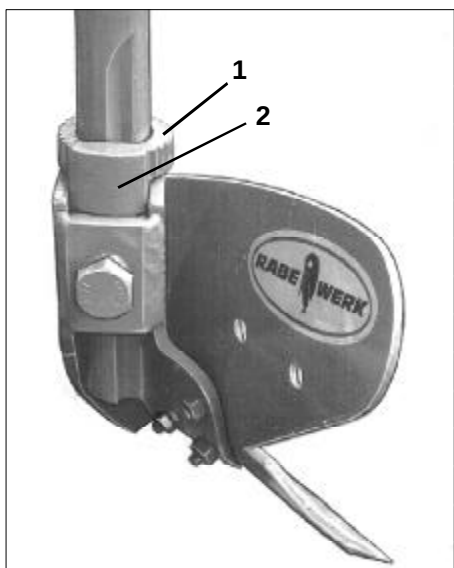
When extending the plough by one body, fit the beam extension unit and an adapter to the steering rod, hydraulic lines and an longer reinforcement strut.

Pre-tension the bracing stanchion **(16/1)** with the plough frame centred-up and slightly raised.

16



Hang securely or support from below when reconfiguring any part of the plough.



17

Skimmers/Maize skimmers

The clearance at the front of the body is altered by displacing and/or turning the fixing bracket and by turning the stalk.

Adjust the skim coulter to a depth where the share just begins to cut into the ground across its entire width. Ensure that the front units are adjusted by the same amount.

When installing the round-support feeder, insert the toothed disc (17/1) and thrust member (17/2) (with toothed-disc numbers facing upwards).

Trashboards

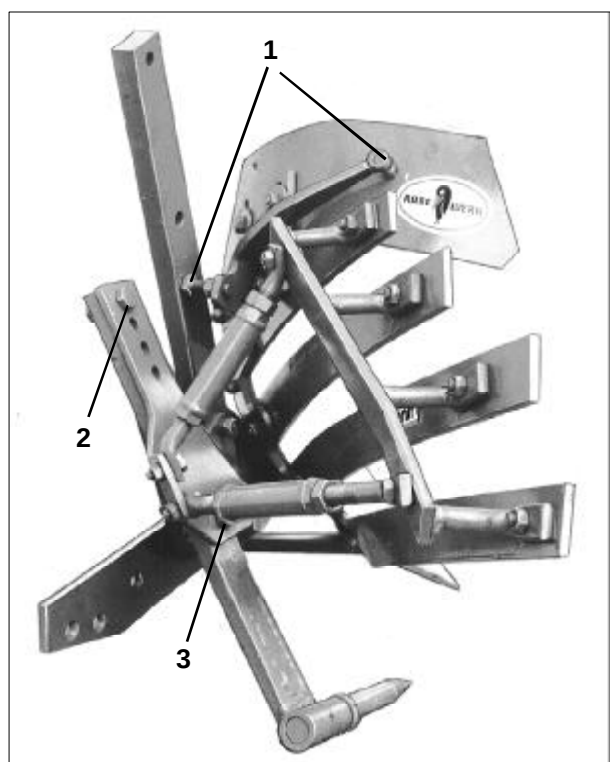
The trashboards are height-adjustable at the retainer slots. Do not adjust too deeply, as this will block the movement of soil excessively.

The trashboards should just stroke the crest of the furrows when the soil crumbles - and trash. Adjust the working depth and speed of the plough accordingly.

The trashboard should rest on top of the mouldboard.

Adjust the support bolts until there is slight contact (18/1).

On heavy, sticky ground – not crumbly ground – use skim coulters instead of trashboards.



18

Disc coulters (19)

Position to the side of the body at about 2 -4 cm to the unploughed ground – turn the stalk.

Set the depth so that there is a clearance of about 5 cm between the hub and the ground - Rotate the toothed lock washer (19/1).

Limit the amount of lateral swing at the collar (19/2, 15/3); while ensuring that the coulters can level itself in the direction of travel.

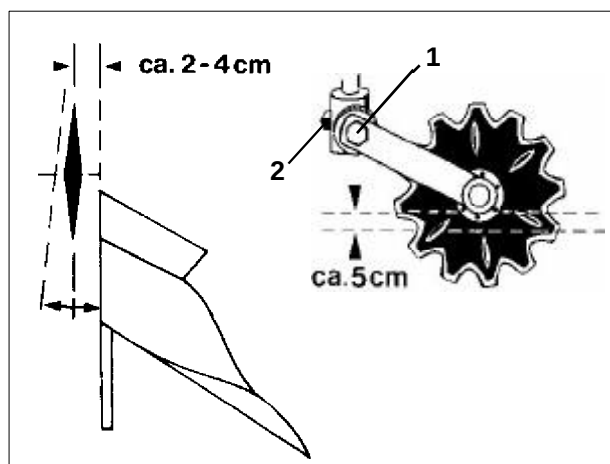
Deflector plates (7/1; if fitted)

Adjust all to the same setting; not too deep (to prevent them from "sticking" in the turned soil).

Subsoilers

Not to be used (HydroAvant) in stony conditions
Adjustable depth (18/2).

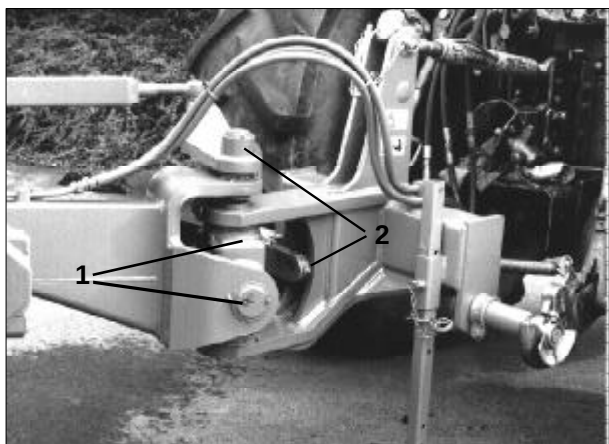
Overload protection: Shear bolt M 16x50-4.6 (18/3).



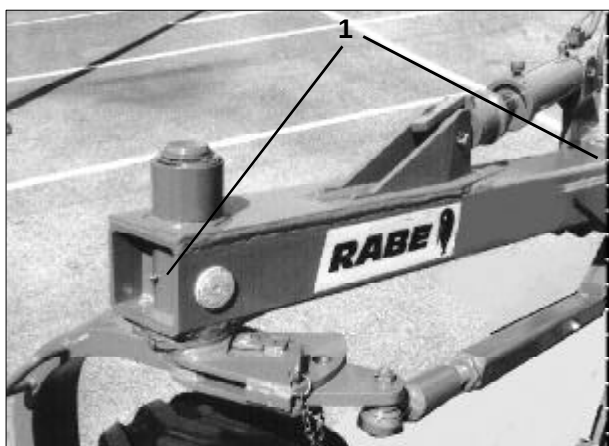
19



Swivel the subsoilers to the rear when parking plough - remove shear bolt.
Maintain adequate ground clearance when transporting by road – removing subsoiler legs if necessary.



20



21



Maintenance

Before working on the attached plough, switch off the engine and remove the ignition key.

DO NOT work under a raised implement; if necessary, then secure to prevent accidental lowering.

Before working on the hydraulic system, lower the plough completely and release the hydraulic pressure.

Dispose of used oil correctly (mineral-based products only!).

DO NOT attempt to replace tyres without adequate expertise or the right tools.

After initial use (approx. 8 hours), retighten all screws and bolts. Check at regular intervals for tightness.

Tighten bolts on mouldboards to a torque of 60 Nm

Tighten the wheel nuts to 260 Nm

Lubricate the bearings regularly with a grease gun applied to the greasing nipples;

Daily: Universal joint/three-point turret (**20/1**), wheel link/wheel leg (**21/1**), steering linkage (**20/2** etc.) plus the bearings of the reset system when operated on very stony ground (Avant, Variavant).

Check and adjust wheel and disc-coulter bearings = tapered roller bearings.

Oil all linkages, ensure free movement of spindles.

Check the hydraulic hose regularly for signs of damage or brittleness and replace as required (see list of spare parts).

These hoses are subject to a natural ageing process and should in any case be replaced after 5-6 years, regardless of their apparent condition.

With the plough parked, apply a corrosion-prevention agent to the moving parts and mating surfaces, and conserve the piston rods with acid-free grease.

Touch up any chipped or damaged paintwork.

Avoid directing the hose at the bearings for any length of time when cleaning the implement with high-pressure water.

Worn bearing bushes should be replaced; e.g. three-point turret universal joint, swivel-arm rack linkage, wheel-link bearings, bracket and connecting-rod bearing (Vari-HydroAvant).

Replace worn consumables immediately. Replace shares and unit parts before the body of the implement (share support/side plate) begins to show signs of wear.

On shares with replaceable tips, turn the tip before presetting.

Tension the new mouldboards with two rotations of the turnbuckle (replace defective board supports – hardboard, see spare parts list).

Use only original RABE parts and new original screws and bolts.

Tyre pressure: 2.5 bar.

Precautions / Road transport

Set the plough to "transportation position" and check that it is roadworthy.



DO NOT allow anyone to stand or ride on the implement, or remain within its turning circle or operating area.

Observe the relevant speed limits and traffic regulations when transporting the implement by road. Maximum speed: 30 km/h.
Take care when negotiating curves.

Observe your local road traffic regulations (Highway Code). These regulations normally hold the user responsible for the secure hitching and safe operation on public roads of the tractor and the implements being towed.



Implements must not impair the safe driving of any traction machines. The permissible axle load of the tractor, the permissible total weight or the wheel-bearing capacity (depending on the speed and tyre pressure) may not be exceeded as a result of the mounted implement. To ensure safe steering, the front axle load of the tractor must not be less than 20 % of the empty weight of the vehicle.

The maximum permitted transportation width is 3 metres. The tractor and trailer must not exceed a total length of 18m.

A special permit is normally required for moving oversized loads.

Towed implements weighing over 3t normally require a separate permit and must be equipped with onboard brakes if their axle load rating exceeds this weight



No avoidably overhanging item must endanger other traffic or road users (sect. 32 StVZO [German highway code] or your local equivalent). Overhanging items that cannot be avoided must be covered and fitted with warning signs. Safety devices include appropriate lighting and signs around all sides and the rear of the vehicle and towed implement, e.g. red/white striped warning labels 423 x 423 mm (stripes of 100 mm in width, angled at 45°, running from outside to bottom).

Towed and semi-mounted implements must be fitted with rear red reflectors and lateral amber reflectors, and must be driven with the vehicle lights switched on at all times – even in daytime (additional warning lights must be fitted if the implement protrudes by more than 400 mm outside the normal trailer lights).



We recommend that you obtain the required warning labels and lighting gear directly from your dealer. Bolt-on mounting brackets are also available from RABE for lighting gear conforming to DIN 11027.