Operating Instruction and Spare Parts List

Reversible Ploughs

EAGLE VARIANT, VARI-AVANT

For ordering spare parts pls. read rear cover.

RABEWERK

CONTENTS PAGE

EC Declaration of Conformity

according to Directive 89/392/EEC

We **RABEWERK GmbH+Co.**

Am Rabewerk, D-49152 Bad Essen

declare under our sole responsibility, that the product

Reversible Plough EAGLE VARIANT C and EAGLE VARI-AVANT C

to which this declaration relates corresponds to the relevant basic safety and health requirements of the Directive 89/392/EEC.
"The Supply of Machinery (Safety) Regulations 1992 as amended" have been respected.

For the relevant implementation of the safety and health requirements mentioned in the Directive, the standard EN 292 has been respected.

Bad Essen, 24.11.94

i.V. Michael Bruse

Michael Bruse,
Service-Manager

Vital Points For Ordering Spare Parts

Please give the following information whenever you order spare parts:

1. Indicate model (stamped on identification plate)
2. Serial number (stamped on identification plate and frame)

▲

Identification Plate

3. Part number or, if none is shown, the stock number together with the specifications.
   If a complete assembly is required please mention the underlined part number.
4. Don't forget to specify the quantity required!

RABEWERK

D-49152 BAD ESSEN-LINNE · GERMANY

Telephon: (05472) 7710 · Telex: 941617 · Telefax: (05472) 771195

RABE WERK

Operating Instruction

FOR REVERSIBLE PLOUGHS

EAGLE VARIANT (VARIANT - AVANT)
HARRIER VARIANT (VARIANT - AVANT)

Before Use

Ensure operators have read and are familiar with the instructions contained in this manual, and the plough is not operated by untrained persons.

The reversible plough is an implement mounted in the 3-point-hydraulic linkage of a tractor and is designed for normal agricultural work. Use the plough only for the purpose for wihich it was designed and tested and in accordance with the instructions contained in this handbook.

Caution. Warranty will be invalid if the machine is improperly used, arbitrary changes are made, the HP. limits are exceeded, or non-genuine parts are fitted.

For damages resulting out of misure or above mentioned reasons liability cannot be claimed.

Only authorized and skilled Rabe dealer technicians, national distributors or our own factory service engineers are allowed to undertake repairs under warranty.

Safety Precautions

Warning. Ensure that the plough is standing on firm, level ground with the parking stand in lowered position and the work area is clear of bystanders.

Preparing for Work (Fig. 1)

Consult the tractor manufacturer's manual for instructions on mounting implements and safe working methods.

Warning. Never leave the tractor seat or carry out work unless the plough is fully lowered to the ground, the gear shift in neutral, the hand brake applied, the engine stopped and the ignition key removed.

No. 107-7-92 GB

The plough is suitable for attachment to tractors with Cat. II (standard) or Cat. III (optional) three point linkage.
Adjust tractor tyre pressures to the manufacturers recommendations and ensure the wheel setting is matching. The inside of the front and rear tyres should be in the same width.
Adjust the two lower links to the same height. Multi positions for the lower link pins (1 Fig. A) are provided to ensure high enough lift of the plough. If the lift height is not sufficient with the link pins (1 Fig. A) in the bottom hole the liftrods of the three point linkage should be shortened and the toplink be fixed in the tophole position on the plough's headstock.

Top Link

The top link should be fitted to the headstock so that, when the plough is in work, it slopes downwards from the plough to the tractor. The best position on the headstock is the slotted hole with the advantage of quicker penetration of the plough and releave of the tractor's hydraulics. The correct length of the toplink is adjusted if the toplink is able to float during work in the slotted hole position.

Warning. Secure the lower links and toplink with proper lynch pins.

Hydraulic Couplings and Adjustments (Fig. 2 & 3)

The plough is equipped with double acting turnover.
Connect the two couplings (hoses) with the double acting hydraulic controls of the tractor.
A second double acting control unit is required on the tractor if the plough is equipped with a hydraulic ram (2 Fig. G) in lieu of a turnbuckle for hydraulically operated variable working width.
The hydraulic angling ram (3 Fig. D), which is recommended for 5- furrow ploughs as it requires jower turnover torque, increases lifting height and allows a reduced transport width. This cylinder is synchronised with the turnover ram and is shifting the beam in line before the turnover sequence is started. After finishing the turnover the plough is automatically brought back into working position.
Another separate single acting control is required if the plough is eqipped with an hydraulic disconnecting device for the furrow press pick-up arm in case this is not coupled direct to the turnover ram.

The turnover can also be operated single acting.
The hydraulic hose connections are marked on the hydraulic ram with 'P' and 'T'.
For single acting turnover use hose 'T' to connect directly to the oil reservoir of the tractor lift and the second hose to the single acting control valve.

Testing Turnover (Fig. 2, 3)

Warning. Check that sufficient front end weight has been fitted to preserve steering stability and prevent the tractor from rearing.
The load on the front axle of the tractor will be less and lifting capacity of tractor is improved if the bottom link pin on the plough headstock is fitted in the lowest position.
When lifting take care that the headstock does not collide with the cab of the tractor.

Before lifting open transport valves (2 & 3 Fig. F) and the parking stand has to be raised.
The hose connected to the turnover ram (marked 'P') must be always plugged in on the control valve function 'UP'.

Operate the hydraulic control lever from 'Neutral' into 'UP' position until the plough is completely reversed and is resting against the inclination screws (2 Fig. C1 + C2). If equipped with a hydraulic angling cylinder until the reangling sequence is completed and the ram is drawn in against the adjustable stop (3 & 6 Fig. D1). After apprx. 8 sec. a new turnover sequence can be started or immediately if the hydraulic lever is operated for a short moment into 'Down' position.

Plough Settings (Fig. 6)

The draft point (Z) and the front furrow working width (B) can be pre- adjusted in the farmyard already. Both settings are simple and can be adjusted separately.
But the final adjustment should be made during work.
For pre- adjustment choose an average furrow width of apprx. 40 cm.

1. Draught:
   Use turnbuckle (2 Fig D) or adjustable stop (3 & 6 Fig D1) to align the landsides parallel to the centre line of the turnover shaft

2. Front furrow:
   With screw (2 Fig C) acc. to figure in chart in cm and depending on wheelspacing (A) and working width per body (B)

cm	Work. width per body				
	B / A	30	35	40	45
	110	18	13	8	3
Wheel spac-ing	120	23	18	13	8
	130	28	23	18	13
	140	34	29	24	19
	150	40	35	30	25
	Dimension C *				

* from centre line of the turnover shaft to landside of front body

Example:
Working width per body: 40 cm
Wheel spacing: 130 cm
Dimension C: 18 cm

Check Chains or Stabilizers on Tractor Linkage

They should be adjusted so that they are slack when the plough is in work.
To prevent is from fouling the tractor wheels when in the raised position they should become fixed eg., by means of wedges fitted to the tractor.

Operation

Warning. Never allow people to stand of sit on the plough during operation.
The area of operation must be clear of bystanders.

Working Depth

Select „Draft" or „Mixed Control" on the hydraulic system and choose desired working depth with hydraulic lever.
Adjust the toplink so that the plough beam is parallel to the ground and the depth wheel height so that it does not exert too much pressure on the ground. The toplink can be fitted to the slotted hole position on plough headstock for improved draft control (bottom link sensing on tractor).

The toplink pin should be limited to rest against the forward shoulder allowing some play.

Transport- and Depth wheel (Fig. 13 & 15)
(Combi wheel)
The depth is adjusted with screw (13 Fig. J).
Adjusting the eccentric (13 Fig. J1) differences in depth between the left and right hand ploughing side can be equalized.

Plough inclination (Fig. 2 & 4)

Each side of the plough can be separately adjusted. The surface of the ground and the plough legs should be in approximate 90° angle to each other (Fig. 4).

For adjustment use

the screw (2 Fig. C1) for the right hand bodies and
the screw (2 Fig. C2) for the left hand bodies.

If the first body works too shallow, compensate this by increasing the inclination towards the ploughed end.

Draught Alignment (Fig. 2, 3, 6)

A turnbuckle (2 Fig. D) or an adjustable stop on the hydraulic angling ram (3 Fig. D 1) controls the line of draught (draught point). Alignment has to be carried out by means of adjusting turnbuckle or the adjustable stop on the hydraulic angling ram.

Appearance of side draught resulting in crabbing of tractor indicates wrong setting. The tractor linkage should stay approximately central between rear wheels as well as the toplink.

Turnbuckle (2 Fig. D) extended or adjust stop (3 Fig. D1) on angling ram turned towards cylinder	- 3- point moves towards the unploughed land
Turnbuckle (2 Fig. D) shortened or adjust stop (3 Fig. D1) on angling ram turned away from cylinder	- 3- point moves towards the ploughed land

For example, if the tractor tries to run towards the ploughed land, shorten the turnbuckle or turn stop (3 Fig. D1) away from cylinder. After adjustment do not forget to extend ram fully against stop.

Front Furrow Width Adjustment (Fig. 2 & 6)

After the draught alignment the cutting width of first body will be adjusted by means of turning the spindle (2 & 6 Fig. E) to move the plough beam parallel.

Move beam towards ploughed land	-	Front furrow smaller
Move beam towards unploughed land	-	Front furrow wider

Skim coulters (Fig.5)

Positive ratched locks on skim (5 Fig. M/M1) and beam locating position eliminates movement even in heavy stoney condition.
When fitting the toothed segment (5 Fig. M) on disc stalks with 40 mm dia. the stamped-in figure should show to the top with plough in working position.
The distance of the skimmers to the plough bodies can be changed by reversing the holder and/or by turning the cranked stalk.
In all cases they should be set only deep enough to ensure that all trash is buried.

Disc coulters (Fig. 7 & 8)

The depth is adjusted by locating the notched segments (7 & 8 Fig. N1) allowing a minimum clearance between disc bearing and ground of approx. 5 cm (2 inch) to avoid excessive wear to the bearings.
They should also be set so that there is clearance (2 - 4 cm) between their cut and the landside shin.
The lateral movement should be restricted by adjusting the collar (7 & 8 Fig. N) allowing unrestricted movement of appox. 5 degrees in each direction.

Caution. Take care that the collars (7 & 8 Fig. N) are always kept tight, especially when plough is in horizontal transport position running on the Combi Wheel.

Pick-Up Arm for Furrow Presses (Fig. 10, 11, 12)

Fix the connection rod (10 Fig. H2) so, that the pick-up arm is in an rectangular position to the working direction.
For transport move the arm rearwards to the beam and lock securely (Fig.11).
On Auto-Reset model „Avant" swing the outer end of the arm (Fig.12) rearwards and lock in position with pin.
On the arm of the Hydraulic Disconnecting Device the set of holding pins (10 Fig. H3) can be fitted on both ends of the hook, to pull the furrow press around obstacles with the plough lifted out of work.
To operate the disonnecting device when connected to the turnove ram move hydr. control lever in opposite direction as when reversing the plough.

Transport (Fig. 2 & 3)

Turn the plough so that the right hand bodies are downwards.
If the plough is equipped with hydr. variable width adjustment and/or with angling ram the plough must be moved into the narrow position.
Move the pick-up arm rearwards and lock as described under „Picked-Up Arm for Furrow Presses". Internal check chains or stabilizers should be now in rigid position.
Transport valves (2 & 3 Fig. F) must be closed in transport and the transport locking pin (2 or 3 Fig. F1) engaged.

Warning. Drive carefully in curves because the implement swings out.

Transport with Combi Wheel (Fig. 2, 3, 13, 14, 15)

Shift plough in narrow position and engage transport locking pin (2 or 3 Fig. F1), remove the pin (13 Fig. L) and turn the wheels manually around its vertical axle until the pin can be engaged in hole (13 & 14 Fig. L1).
In transport position pin (13 Fig. K) can be fitted in either holes (13 Fig. K1 & K2) if

required to clear beam. Then engage the special transport lock (15 Fig. O) underneath the headstock and turn the plough slowly until it locks automatically in the half turned position.
Let the plough down resting on the Combi Wheel and remove the top link pin from the plough and close valve (2 & 3 Fig. F).

Warning. Not removing the top link from the plough can result in damages on plough headstock, top link and tractor hydraulic linkage.

Re-converting into Work Position (Fig. 13, 14 & 15)

Fix the top link again and raise the plough. Disengage the transport lock (15 Fig. O), open valve (2 & 3 Fig. F) and turn the plough back into working position.
Disengage pin (2 & 3 Fig. F1) and remove the pin (13 Fig. L) turn the wheel manually around until the pin can be engaged in the hole (13 Fig. L2). Also fit pin (13 Fig. K) in the working position hole (13 Fig. K2).

Storage of Plough

Always rest the plough on right hand bodies with parking stand down and valve closed (2 & 3 Fig. F). Protect all wearing surfaces against rust with grease on plough bodies.

Subsoilers (Fig. 9)
(Optional equipment)

Due to stability problems it is not permitted to store the plough resting on the subsoiler units.
Remove shearbolts (9 Fig. U) and turn subsoiler rearwards out of way.
The use of subsoilers is not permitted in stoney conditions.

Trashboards (Fig. 9)

The trashboards (optional) are supported from the rear by adjustable bolts (9 Fig. V) which should always be resting against the plough leg.

Maintenance

Warning. Never allow work to be carried out on plough in raised position unless the plough is supported. Only work on hydraulic system if the plough is lowered and the system is not under pressure.

All hardware should be checked for tightness, especially during the first hours of operation. The bolts on the mouldboards requiring a torque setting of 80 Nm (60 lbs ft) and the lower link pins

Torque settings for bolts:

Mouldbords:	80 Nm (60 lbs ft)
Lower link pins:	
EAGLE range	1600 Nm
HARRIER range	2400 Nm

Grease Nipples

All moving parts with grease nipples must be greased regularly (every 8 hours) such as on turnover ram, turnover shaft, vertical adjustment screws, front furrow adjuster srew, sliding rail, centre pin, turnbuckle and pivot points of plough consoles. Also disc coulters, depth- and combi Wheel.

Bushes (Fig. 16)

Bushes fitted on leg consoles and push bars (16 Fig. D 3 & D 4) are exchangable after they are worn.

Avant Automatic Reset System

In stoney conditions the bearings and pivots must be greased daily.

Tapered Roller Bearings

The depth wheel, disc coulter and turnover shaft bearing on the headstock is equipped with tapered roller bearings which have to be readjusted after longer usage (e.g. once a season).

Bolt-on Points (on shares)

To achieve maximum service life the bolt-on points are designed with three fixing position holes.
First turn the point around and after both sides are worn adjust forward.

Tyre Pressure

Rubber depthwheel	-	2.5 bar
Combi wheel	-	3.7 bar

„AVANT" Automatic Reset System (Fig. 17 & 18)

The reset system is already correctly adjusted in the factory. But the reset force can either be in- or decreased by turning the adjuster bolt (Fig. 17 & 18 Fig. T).

Turn bolt (17/18 Fig. T) clockwise	-	less reset force
Turn bolt (17/18 Fig. T) anti-clockwise	-	more reset force

Note: It is important that the kneelever body (18 Fig. R)has a minimum of 2 mm clearance (18 Fig. S) against the boxed beam section.

Under very heavy, but stone-free conditions the reset system can be blocked by fitting a special locking device (18 Fig. J) which is optionally available.

Warning. The reset system works under strong spring tension. The built-in compression spring is pre- tensioned by the factory.
Dismantling of the reset system must be carried out only by trained RABE personnel using special tools which can be ordered from the manufacturer.
Using own devices and systems to dismantle can be extremely dangerous.

Shearbolt overload protection (1 + 19 Fig. U1)

All plough models are standard with shearbolts. Also the „Avant" automatic reset versions. The shearbolt is provided in the mounting of the plough legs. For most models they are of necked design. The shearbolt must be fitted always from the side of the leg. Check spare parts list whether a washer is required.

Note: Tighten shearbolts carefully again and check periodically.
Use genuine shearbolts only (refer to spare parts list).

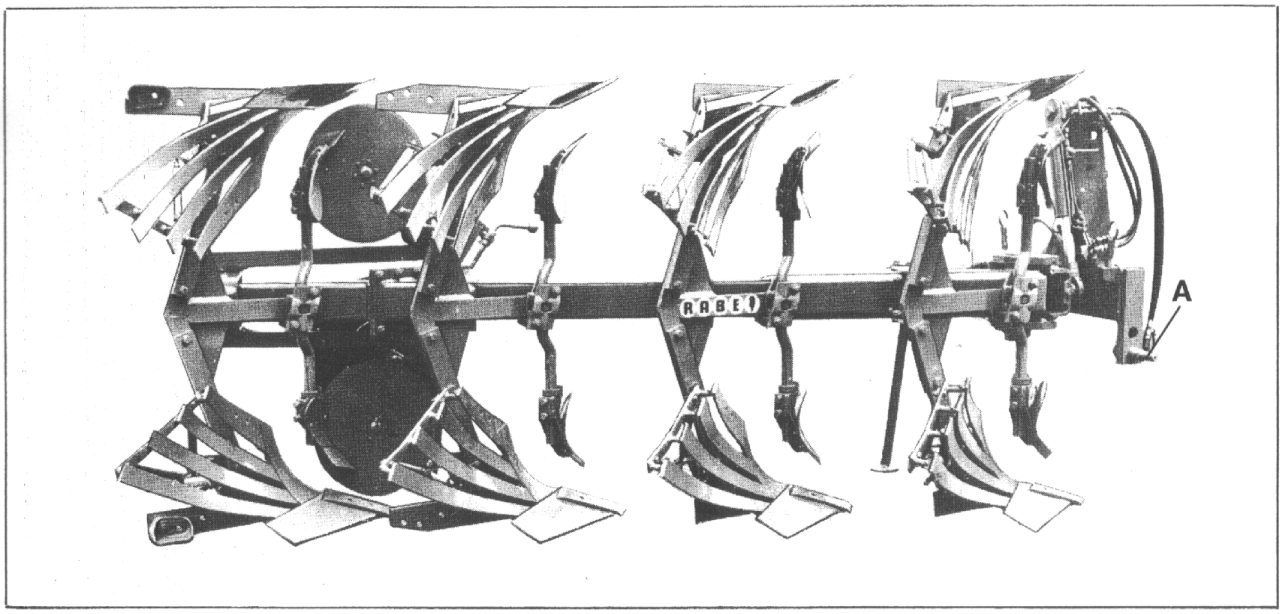


Fig.1

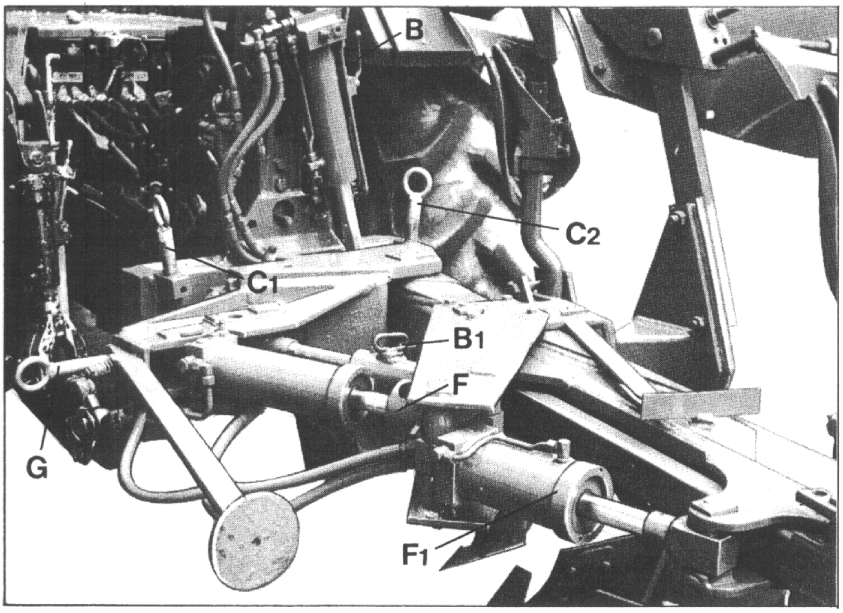


Fig.2

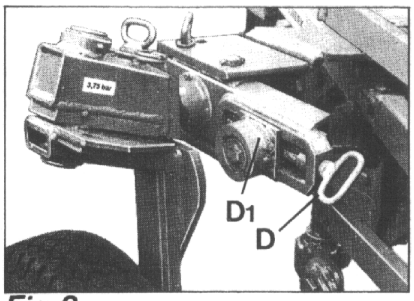


Fig.3

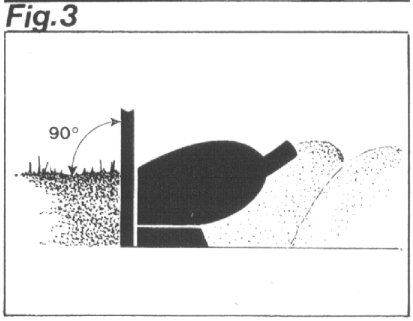
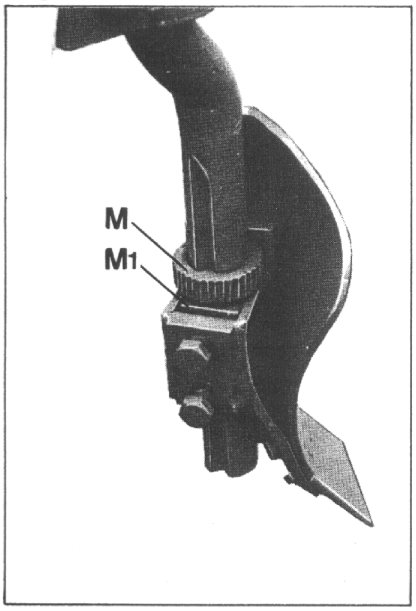


Fig.4



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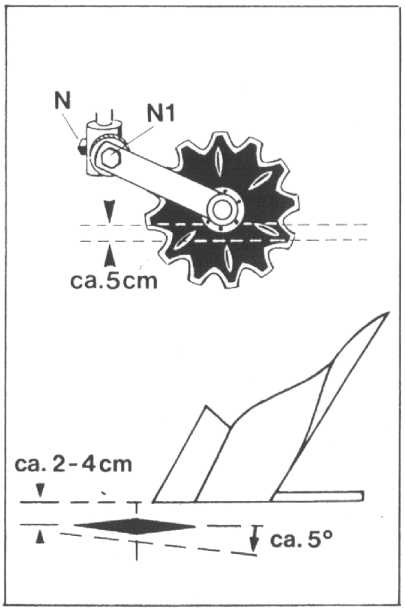

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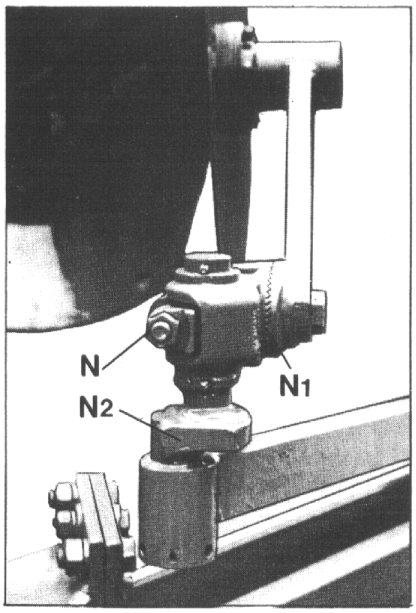

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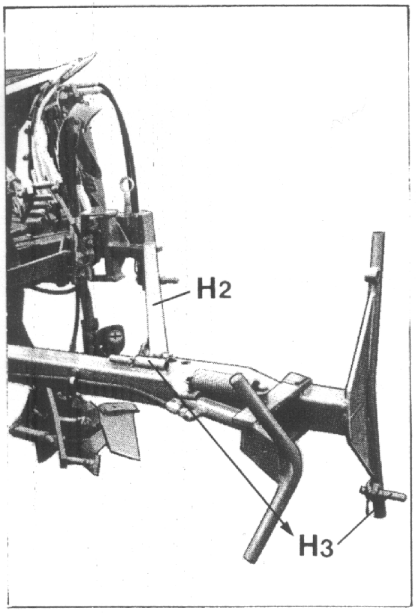


Fig.8

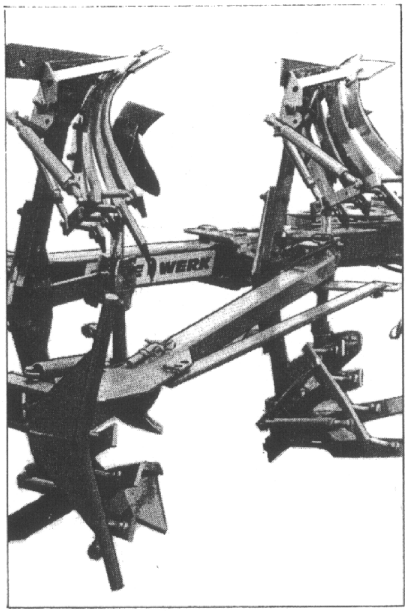
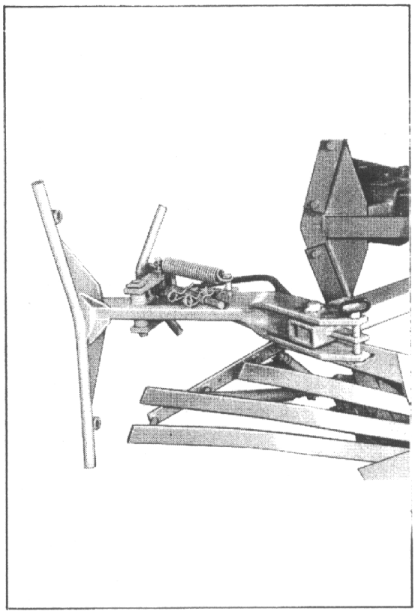


Fig.9



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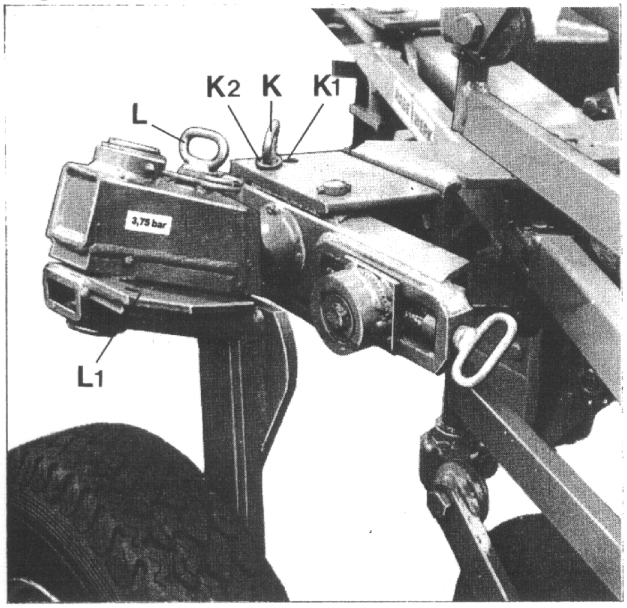

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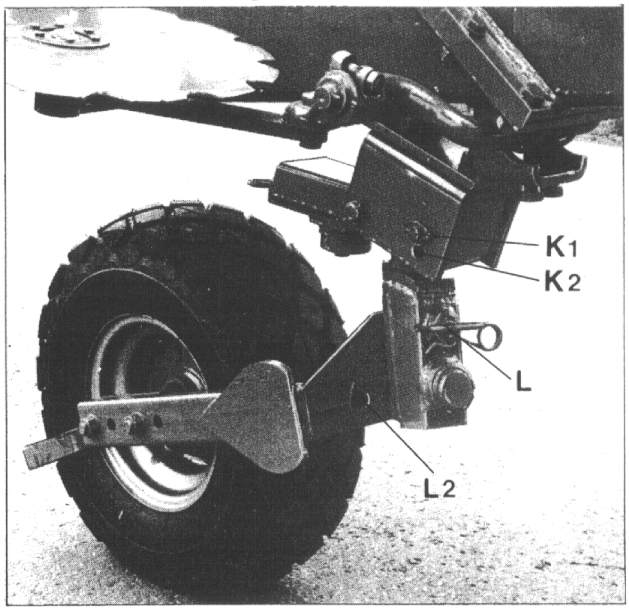

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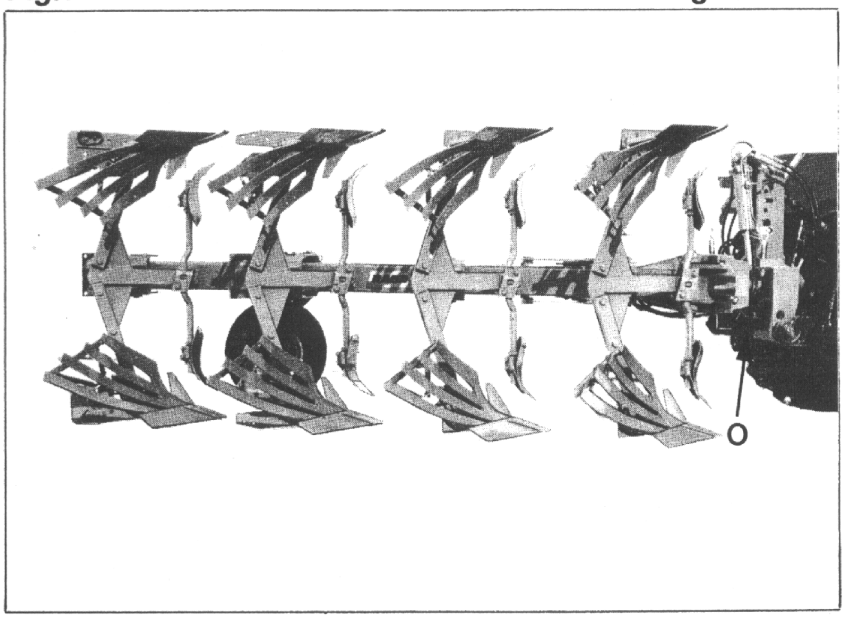


Fig.13

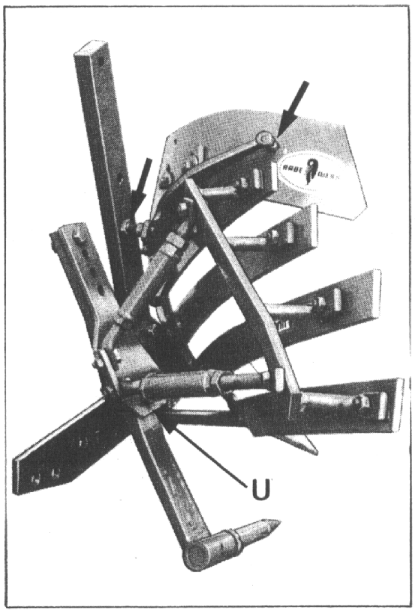
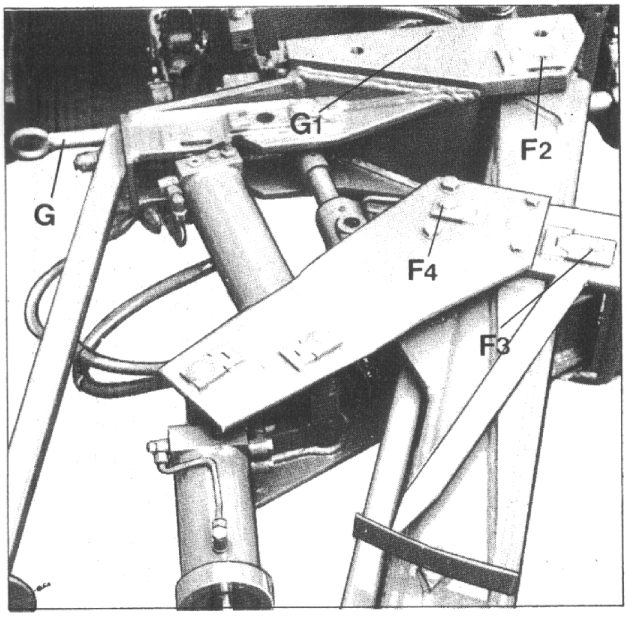


Fig.14



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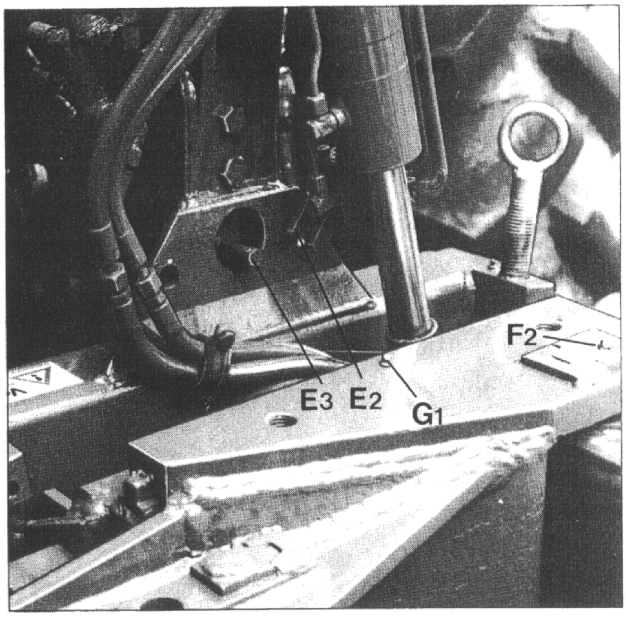

Fig.16

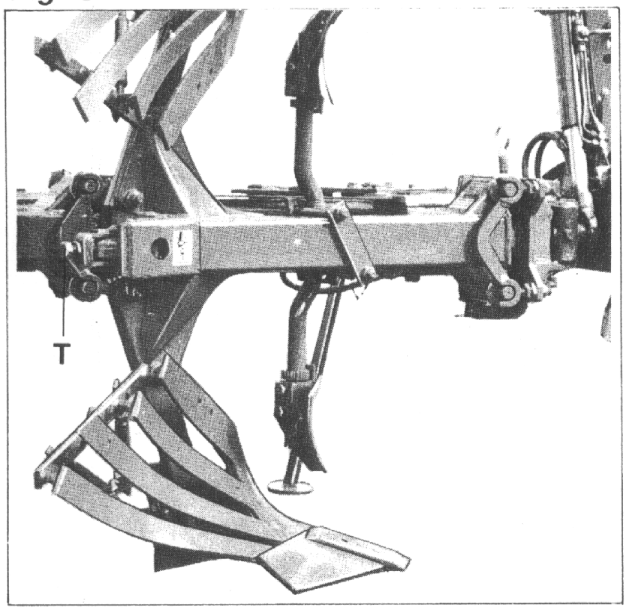

Fig.17

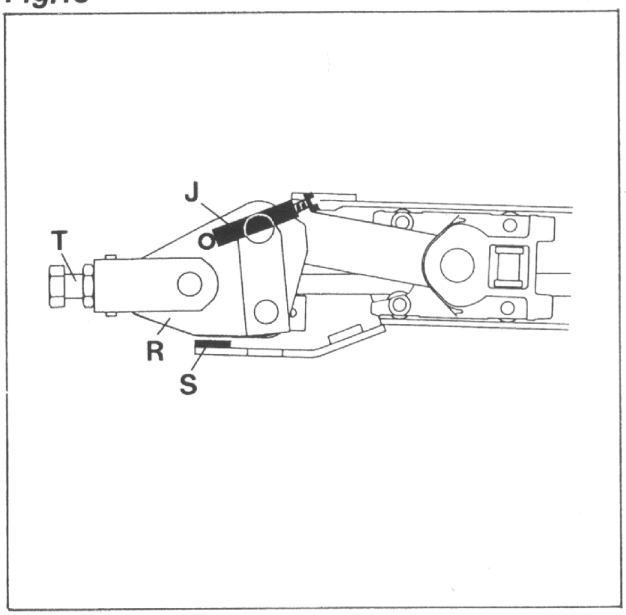

Fig.18

Vital Points For Ordering Spare Parts

Please give the following information whenever you order spare parts:

1. Indicate model (stamped on identification plate)
2. Serial number (stamped on identification plate and frame)

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3. Part number or, if none is shown, the stock number together with the specifications.
   If a complete assembly is required please mention the underlined part number.
4. Don't forget to specify the quantity required!

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