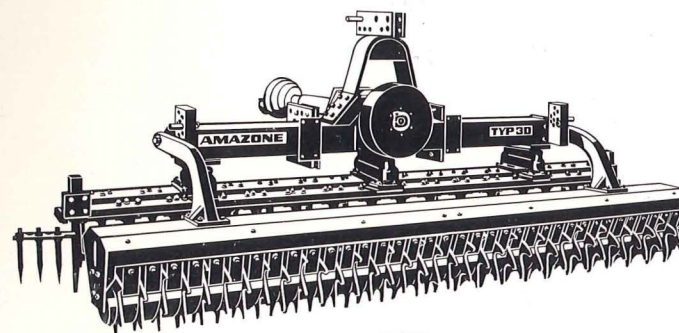


POWER HARROW **AMAZONE** Operation manual

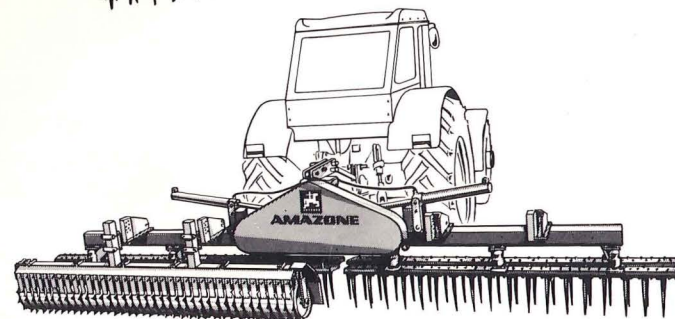


RE 20

RE 25

RE 30

RE 40



RE 50

RE 60

AMAZONEN-WERKE H. DREYER



Factories in W.-Germany:

D-4507 Hasbergen-Gaste

Tel.: Hasbergen (05405) *643 [*1043]

Telex: 094801

D-2872 Hude (Oldbg.)

Tel.: Hude (04408) 1031

Telex: 0251010

Factory in France:

AMAZONE-Machines Agricoles S.A.

F-57602 Forbach • Rue de la Verrerie

Tel.: (87) 851531 • Telex: 86492

Factories for: Mineral-fertilizer spreaders, seed drills, reciprocating power harrows, universal sprayers, potato-grading and -sorting machines, fertilizer stores, -bins and -conveyors.

We congratulate you on the purchase of your new "AMAZONE" power harrow. You have made a good choice.

Please read these instructions carefully to ensure that you will make the best possible use of your "AMAZONE". You will of course recognise that we will not be able to accept claims under guarantee if any damage is caused because of lack of care in operation.

Please enter the serial number of your power harrow in the box below. The number is marked and punched into the left-hand side of the frame of the power harrow.

Please quote this serial number when making subsequent orders and complaints.

No.:

CONTENTS

Page

A. Upon receiving the power harrow	3
B. Attaching the power harrow to the tractor three-point hydraulics	3
C. Putting the power harrow into use	5
D. Combination power harrow/packer roller	7
E. Combination power harrow/seed drill D 7	9
F. Combination power harrow/packer roller/ seed drill D 7	13
G. Super-wide power harrow RE 50 and RE 60	15
H. Special accessories	17
I. Maintenance	17
K. General notes	18

The first figure of the figures given in the following text, e.g. Fig. 3/2, is the number of the illustration (Fig.) and the second figure is the number of the part in the illustration.

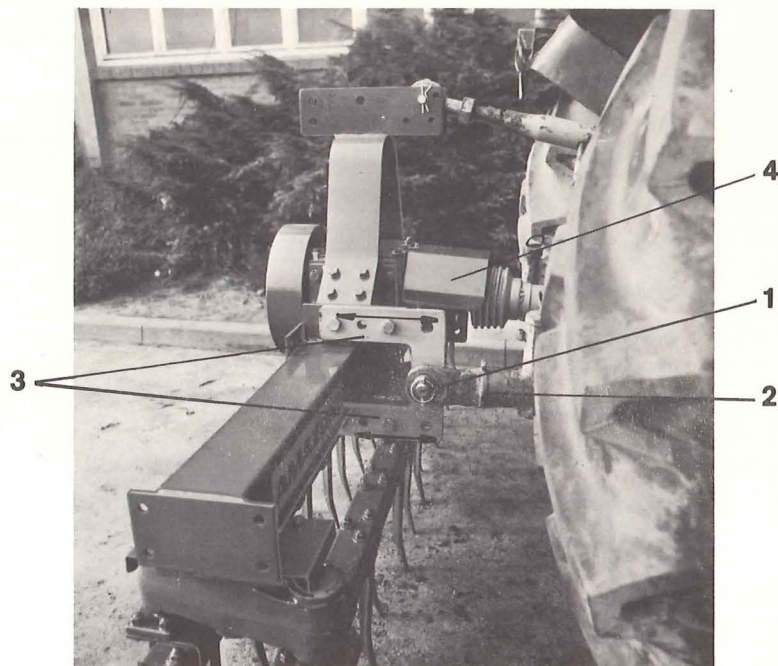


Fig. 1

A) Upon receiving the power harrow:

Upon receiving the power harrow check that no damage has been caused in transit and that no parts are missing. Claims must be made immediately to the carrier if compensation is to be made. Also ensure that all parts listed in the consignment note have been received.

B) Attaching the power harrow to the tractor three-point hydraulics:

Attach the power harrow to the three-point hydraulics of the tractor in the usual manner. Adjust the upper link so that the power harrow is roughly horizontal in the working position. If the power harrow is required to do especially deep work, it will be an advantage if it is inclined slightly backwards. This will allow the tines to have a better angle of work and achieve the best possible penetration.

The lower link bolts (Fig. 1/1) of the power harrow can be mounted with greater height of depth depending on the type of tractor so that the lower links of the tractor are roughly horizontal in the working position.

The tractor lower links (Fig. 1/2) should have some freedom of lateral movement in the working position of the power harrow. The distance between the tractors PTO-shaft and the linkage points of the lower links can be large on some types of tractors. In order that the power harrow can now be attached to all types of tractors, the lower linkage points on the power harrow can be adjusted horizontally in the forward direction (Fig. 1/3). If the range of adjustment is still not enough, use extension pieces (18 cm extension) (see section H Special Accessories).

Mount the universal joint shaft with the elastic coupling at the machine side. Ensure that the length of the universal joint shaft is correct; it must be shortened accordingly if necessary. The protective cover supplied loose for the universal joint shaft must be fastened in accordance with Fig. 1/4.



Fig. 2

C) Putting the power harrow into use:

Before putting the power harrow into use, lower it almost to ground level by the tractor hydraulics.

After a short trial run in this position, start up the tractor and when at full speed (540 r.p.m. = PTO-shaft normal speed) lower the power harrow right down to the ground. The driving speed should be adapted to the condition of the soil.

It is not necessary when turning at the ends of fields to switch off and raise the power harrow, for the power harrow can make very tight turns even at full operation.

Cautions: It must be ensured that the power harrow is **not raised too high** when being driven, in order that the angle of the universal joint shaft is not too great and to avoid the danger of breakage.

The control hydraulics of the tractor can be used to advantage to control the penetration of the power harrow. It is used in the same way as in the depth control of the plough. The penetration of the power harrow must be controlled particularly when working on loose soil so that banks of earth do not build up in front of the tine-bars; because the earth pulled along with the power harrow would only increase unnecessarily the power required from the tractor and cause earth movements towards both sides of the power harrow and reduce the penetration.

The penetration of the power harrow can be adjusted by a packer roller (see sections D and F).

The drive speed of the PTO-shaft should never exceed 540 r.p.m.

Speeds higher than 540 r.p.m. cause very high stress on the power harrow and can lead to premature wear.

Guarantee claims for damages which are caused by too high drive speeds of the PTO-shaft cannot be met.

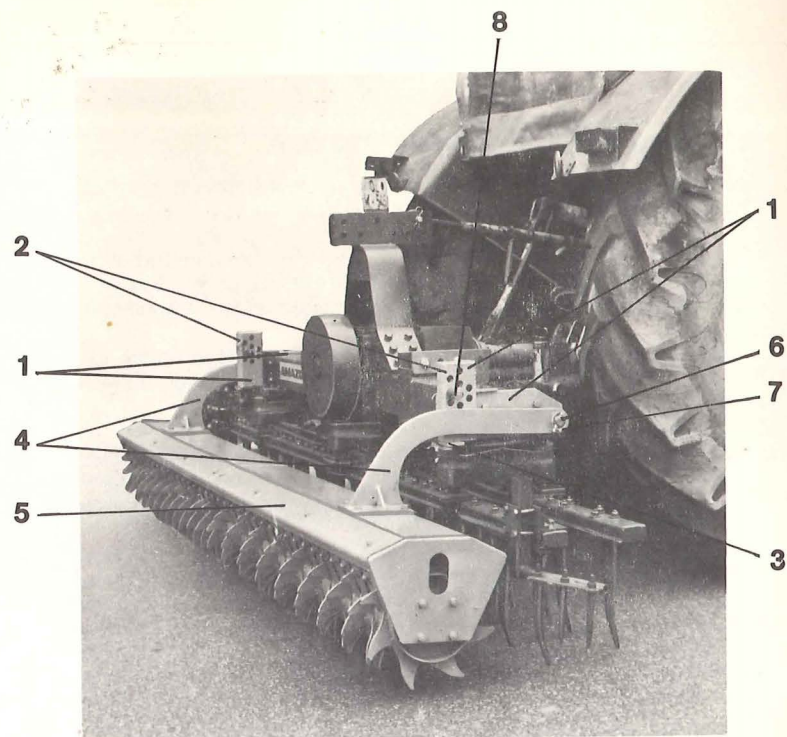


Fig. 3

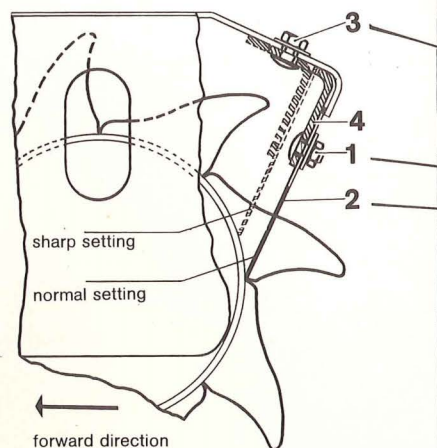


Fig. 4

D) Combination power harrow multi-packer roller:

1. In combination with the AMAZONE multi-packer roller, the AMAZONE power harrow is an ideal seedbed dressing unit which can be used on almost all types of soil. The tines of the power harrow break up and loosen the soil, while the packer roller packs and compacts the soil to allow fast germination of the seeds with direct sowing. In addition to the packing action and the crumbling action, the packer roller guarantees accurate depth control of the power harrow.
2. To attach the multi-packer roller to the power harrow, first fasten to the power harrow the supporting parts (Fig. 3/1) with the depth limitation plate (Fig. 3/2) behind and with the supporting arm rest (Fig. 3/3) outside. Next fit the supporting arms (Fig. 3/4) to the cover (Fig. 3/5) of the packer roller, but only loosely with the free ends pointing forwards. After connecting the packer roller to the power harrow by means of the coupling bolts (Fig. 3/6), which are secured by clevis pins (Fig. 3/7), push the supporting arms (Fig. 3/4) hard against the depth limitation plate (Fig. 3/2) of the supporting parts and fasten. Insert the marking bolts (Fig. 3/8) into the required hole of the depth limitation plate **above** the supporting arms (Fig. 3/4) for a precise setting of the working depth of the power harrow and secure with clevis pins.

The packer roller is equipped with spring-loaded cleaners which can be adjusted according to the condition of the soil. The spring-steel cleaners are set in the works for light and medium-weight soils. The spring-steel cleaners should be set more sharply for sticky, hard soils (e.g. loam). But it is only necessary to set the cleaners more sharply if the film of earth on the roller shell is thicker than 2 mm. This is done by moving the cleaner holders forwards. All locking screws (Fig. 4/1) must first be loosened and the spring-steel cleaners (Fig. 4/2) moved upwards as far as they will go in the long hole. Then slightly loosen the screws (Fig. 4/3) in the cleaner holders (Fig. 4/4) so that the cleaners can be moved forwards uniformly according to the condition of the soil. Then tighten the screws (Fig. 4/3) again. Finally adjust the spring-steel cleaners (Fig. 4/2) again until they lie on the roller shell and tighten the locking screws (Fig. 4/1). Ensure when tightening the locking screws (Fig. 4/1) that the spring-steel cleaners (Fig. 4/2) are pressing only lightly against the roller shell.

The wear on the spring-steel cleaners (Fig. 4/2) can be compensated for by making a readjustment. To do this, loosen the locking screws (Fig. 4/1) and move the spring-steel cleaners (Fig. 4/2) down until they rest on the roller shell. Ensure when tightening the locking screws (Fig. 4/1) that the spring-steel cleaners (Fig. 4/2) are resting only lightly against the roller shell.

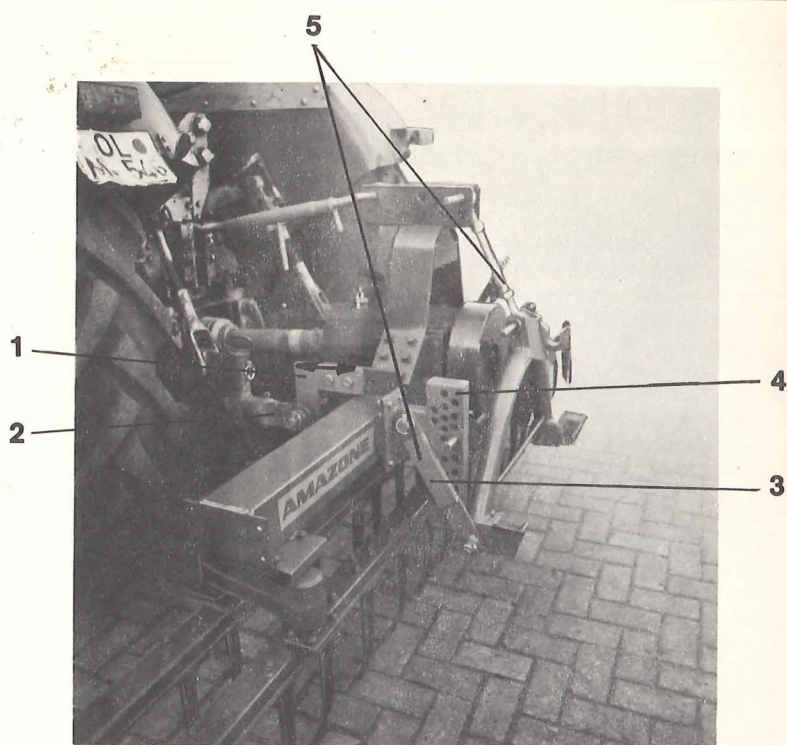


Fig. 5

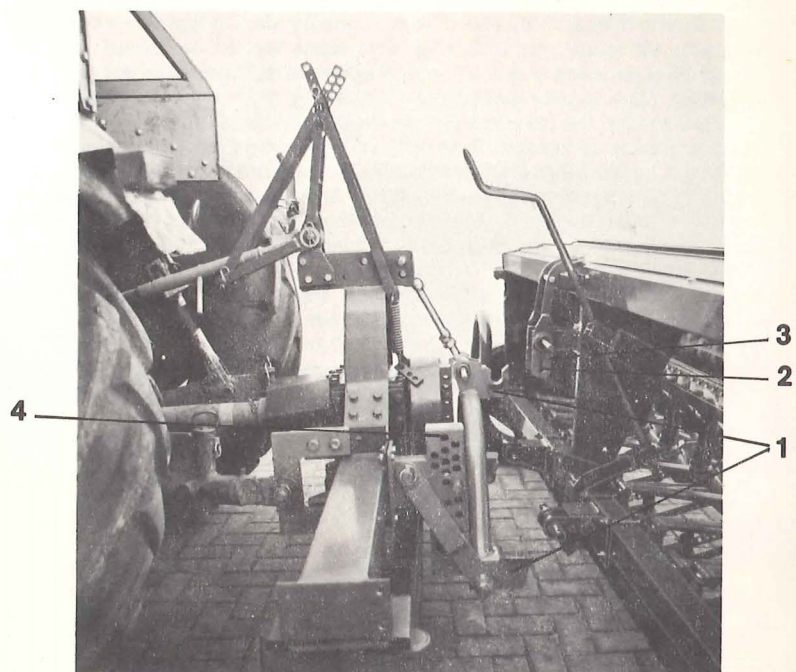


Fig. 6

E) Combination power harrow/seed drill D 7

1. If the AMAZONE power harrow is used in conjunction with an AMAZONE seed drill, then it is essential that the power harrow is coupled as closely as possible to the tractor in order to keep to a minimum the load on the front axle of the tractor. This is done by adjusting horizontally the lower link points of the power harrow (Fig. 5/1). It may be necessary to shorten the universal joint shaft, in which case it must be ensured that the overlapping of the profile is sufficient (minimum 4 inches = 10 cm). The load on the front axle of the tractor can be increased by attaching additional weights.

The lower links (Fig. 5/2) of the tractor should have some freedom of lateral movement.

2. To couple the power harrow to the seed drill D 7, bolt the connecting parts to the rear of the power harrow in accordance with Fig. 5. Ensure that the lower links (Fig. 5/3) are fastened **outside** the supporting beams (Fig. 5/4). Connect the AMAZONE quick-action coupling, which is supplied as standard equipment with the seed drill D 7 Super and which can be supplied as a special accessory with the seed drills D 7 Standard and D 7 Junior, to the three links (Fig. 5/5) of the connecting parts in accordance with Fig. 5. To connect the power harrow to the seed drill, move back the tractor mounted power harrow until the hitch pins of the quickaction coupling (Fig. 6/1) are below the three-point link bolts of the seed drill. Now slowly raise the power harrow by operating the tractor hydraulics until all three hitch pins of the quick-action coupling grip the three link pins of the seed drill. Finally, lock the quick-action coupling by inserting the marking pins (Fig. 6/2) underneath the upper hitch pin into the two marking brackets (Fig. 6/3). The seed drill can be coupled easily and quickly only if the quick-action coupling is laying against the vertical supporting beams (Fig. 6/4) (lowermost position).

The seed drills D 7 Super, D 7 Standard and D 7 Junior with bolted lower link points can be connected to the power harrow even without the AMAZONE quick-action coupling in order to reduce the required hydraulic lifting power of the tractor (smaller centroidal distance). The AMAZONE quick-action coupling is always necessary for the combination power harrow/seed drill D 7 with welded lower link point.

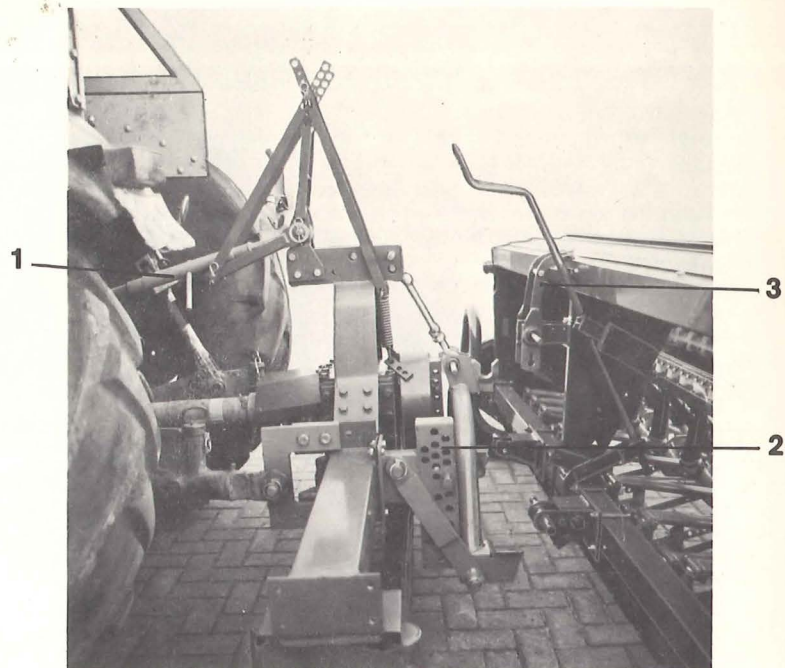


Fig. 7



Fig. 8

3. The power harrow and particularly the seed drill must be attached horizontally behind the tractor. The power harrow is brought into the horizontal position behind the tractor by turning the upper link (Fig. 7/1) and the seed drill by turning the turnbuckle (Fig. 8/1). It must be ensured that the arrow (pendulum) (Fig. 8/2) on the seed drill is pointing straight down on to the top of the triangular opening.
 4. The rows of holes (Fig. 7/2) in the vertical supporting beams have the following purpose:
By inserting two bolts (left and right) (Fig. 8/3) **above** the lower links, the penetration of the power harrow can be adjusted as required. The power harrow will thus be supported by the connected seed drill.
- No bolts are necessary below the link because when raised the quick-action coupling itself is laid directly against the vertical supporting beams (Fig. 7/2).
5. **Caution:** Danger of the universal joint shaft breaking:
When lifting for turning at the end of the field the PTO-shaft must be switched off. The power harrow and seed drill can then only be raised by the tractor hydraulics if the power harrow has come to a stop.
 6. To be able to change over the track markers on the seed drill from the seat of the tractor, a control lever extension is necessary for all D 7 Standard and D 7 Junior (see Special Accessories for AMAZONE D 7 seed drill).
 7. If the seed drill is equipped with the automatic changeover (Fig. 8/4), a special transmitting extension lever will be necessary for the combination power harrow and seed drill D 7. (See Special Accessories for AMAZONE D 7 speed drill). This is mounted on the power harrow at the upper link point in accordance with Fig. 8. The angle piece (Fig. 7/3) on the automatic changeover of the seed drill D 7 must be mounted, contrary to the normal arrangement, pointing to the rear for the switching operation with the power harrow.

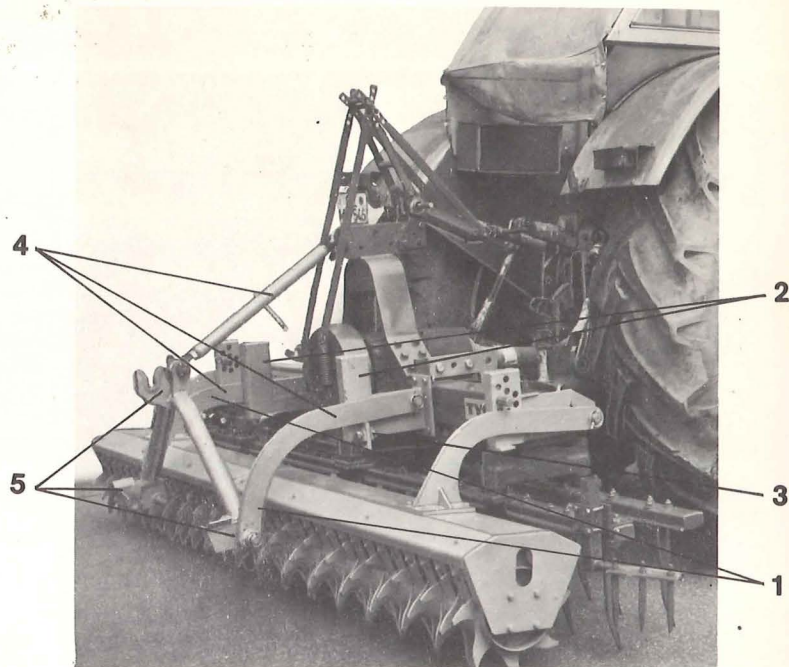


Fig. 9

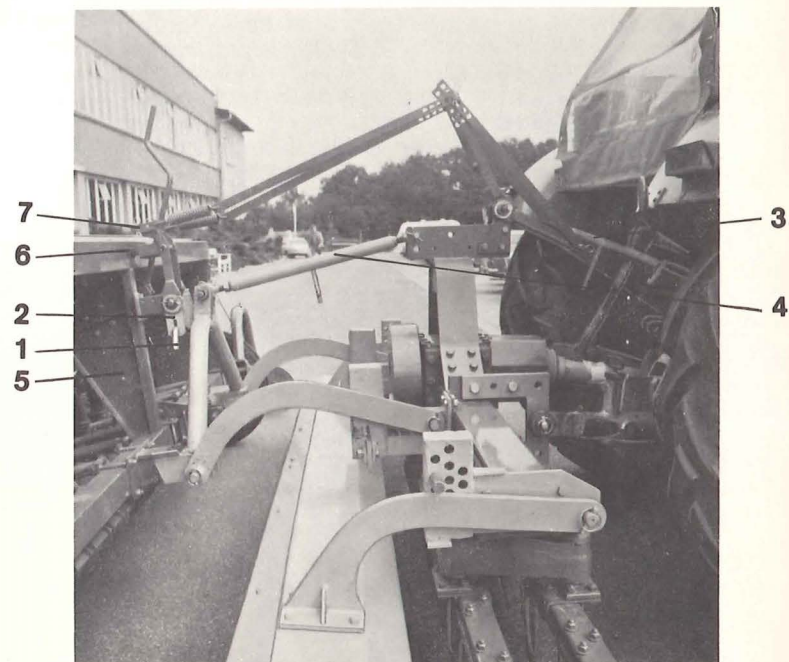


Fig. 10

F) Combination power harrow/packer roller/seed drill D 7

1. For attaching the power harrow to the tractor three-point hydraulics, see section B.
2. For attaching the packer roller to the power harrow, see section D, point 2.
3. For connecting the power harrow **and** packer roller to the seed drill D 7, bolt the extended connecting parts to the rear of the power harrow in accordance with Fig. 9. It must be ensured that the lower links (Fig. 9/1) are outside the supporting beams (Fig. 9/2). The rest (Fig. 9/3) of the lower links should be set, depending on the tyres of the seed drill, so that it can be moved backwards with the hitch pin-catchers of the quick-action coupling under the three-point link pins of the seed drill.
Connect the AMAZONE quick-action coupling, which is supplied as standard with the seed drill D 7 Super and as a special accessory with the seed drills D 7 Standard and D 7 Junior, to the three links (Fig. 9/4) of the extended coupling parts. To connect the power harrow to the seed drill, the tractor with the connected power harrow and packer roller are moved back until the hitch pins of the quick-action coupling (Fig. 9/5) are below the three-point link bolts of the seed drill. Now slowly raise the power harrow and the packer roller by operating the tractor hydraulics until all three hitch pins of the quick-action coupling grip the three link pins of the seed drill. Finally, lock the quick-action coupling by inserting the securing bolts (Fig. 10/1) below the upper hitch pin catcher into the two securing brackets (Fig. 10/2).
4. The power harrow and packer roller and particularly the seed drill must be attached horizontally behind the tractor. The power harrow is brought into the horizontal position by turning the upper link on the tractor (Fig. 10/3) and the seed drill by turning the upper link between the power harrow and the seed drill (Fig. 10/4). It must be ensured that the arrow (pendulum) Fig. 10/5 on the seed drill is pointing straight down on to the top of the triangular opening.
5. **Caution:** Danger of the universal joint shaft breaking:
When lifting for turning at the end of the field the universal joint shaft must be switched off. The power harrow with packer roller and seed drill can then only be raised by the tractor hydraulics if the power harrow has come to a stop.
6. To be able to change over the track markers on the seed drill from the seat of the tractor, a control lever extension is necessary for D 7 Standard and D 7 Junior seed drills (see Special Accessories for AMAZONE D 7 seed drill).
7. If the seed drill is equipped with the automatic changeover (Fig. 10/6), a special transmitting extension lever will be necessary for the combination of power harrow and packer roller with the seed drill D 7. (See Special Accessories for AMAZONE D 7 seed drill). This is mounted on the power harrow at the upper link point in accordance with Fig. 10. The angle piece (Fig. 10/7) on the automatic changeover of the seed drill D 7 must be mounted, contrary to the normal arrangement, pointing to the rear for the switching operation with the power harrow.

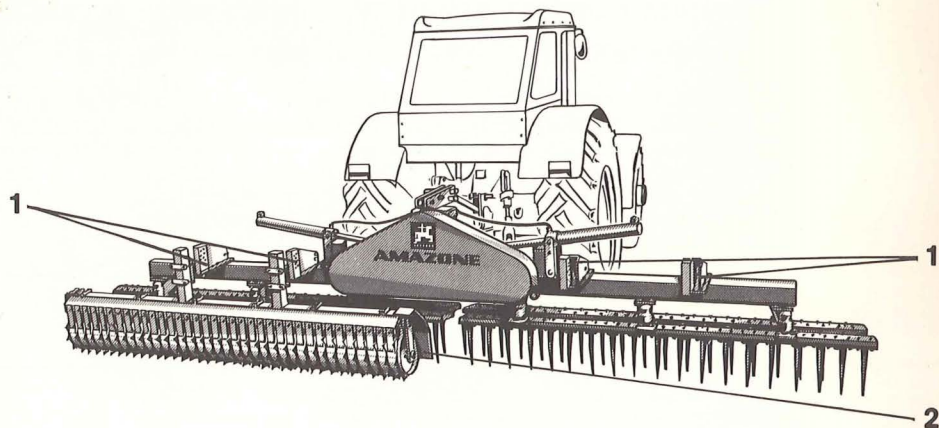


Fig. 11

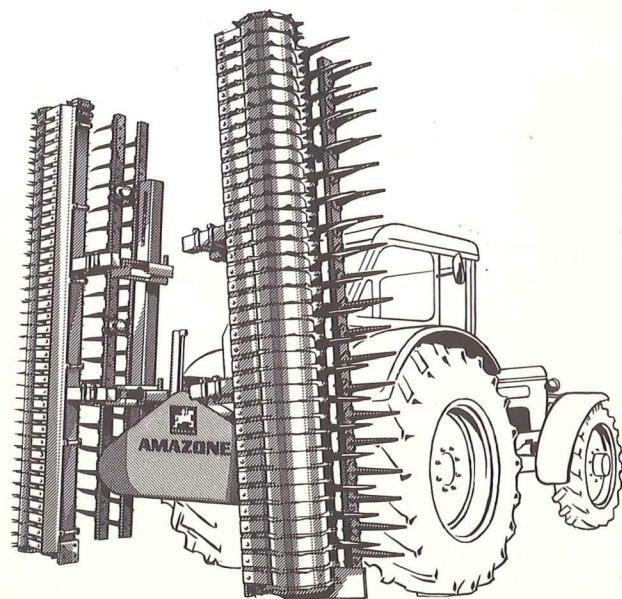


Fig. 12

G) Super-wide power harrow RE 50 and RE 60:

1. The super-wide power harrow RE 50 and RE 60 (Fig. 11 and 12) divided into two machine halves with 5 m (16,4 ft) and 6 m (20 ft) working widths consists of a rigid centre frame to which the two machine halves are pivotally hinged. Each machine half is equipped with an oil-bath gearbox and is driven by a central V-belt drive. The pivoting arrangement of the two machine halves around the drive shaft of the two oil-bath gearboxes allows the super-wide power harrow to be operated with the two machine halves in any position. This design enables the super-wide power harrow despite its large working width to be adapted to the contours of the field and for it to be swivelled in hydraulically to a transporting width of 2.6 m (8,5 ft) (Fig. 12).
2. Attach the super-wide power harrow to the tractor as described in section B, point 2. Horizontal adjustment of the lower link points is not necessary because the long universal joint shaft allows the super-wide power harrow to be attached to all tractors without difficulty. In addition, an elastic coupling in the universal joint shaft is not necessary because of the V-belt pulley. To operate the two hydraulic cylinders of the super-wide power harrow, the tractor must be equipped with an additional, hydraulic connection with a single-acting control valve.
3. The AMAZONE super-wide power harrow can of course also be used in combination with the AMAZONE packer roller which in addition to the packing action and crumbling action guarantees accurate depth control of the super-wide power harrow. The packer roller is divided in the same way as the super-wide power harrow, i.e. a packer roller 2.5 m or 3 m in width is attached to each machine half of the super-wide power harrow. The depth control is carried out in the usual way by means of marking bolts (Fig. 11/1). (See also section B, point 2). A centre spreader (Fig. 11/2) is arranged in the centre between the two packer rollers which eliminates any ridges of soil.

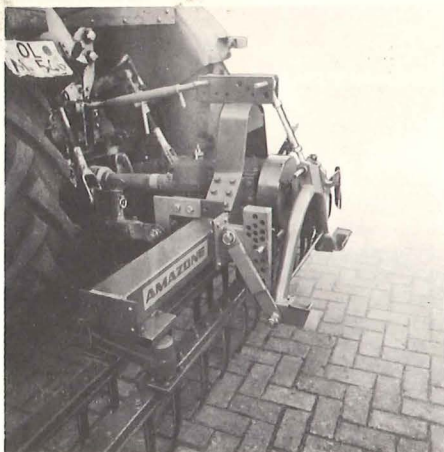


Fig. 13



Fig. 14



Fig. 15

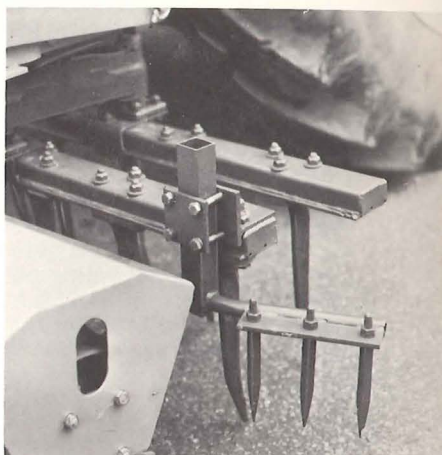


Fig. 16

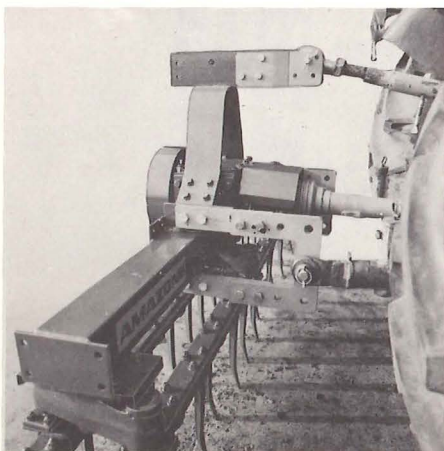


Fig. 17

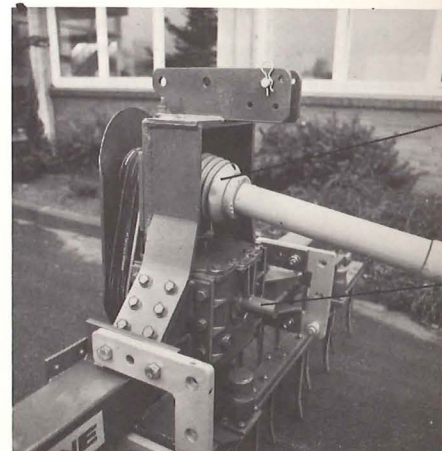


Fig. 18

H) Special accessories

1. A set of connecting parts „A” for coupling an AMAZONE power harrow to an AMAZONE seed drill D 7 (Fig. 13).
2. A set of extended connecting parts "B" for coupling an AMAZONE power harrow and an AMAZONE packer roller, outside diameter 370 mm (14,6 inches), to a AMAZONE seed drill D 7 (Fig. 14).
3. A set of extended connecting parts "C" for coupling an AMAZONE power harrow and an AMAZONE packer roller, outside diameter 420 mm (16,5 inches), to an AMAZONE seed drill D 7.
4. AMAZONE packer roller, outside diameter 370 mm (14,6 inches), with vertical adjustment and cleaners (see section D and Fig. 15).
5. AMAZONE packer roller, outside diameter 420 mm (16,5 inches), with vertical adjustment and cleaners (recommended for particularly light soil).
6. A pair of vertically adjustable side dam levellers (Fig. 16) for eliminating small ridges of earth which may be caused at the sides next to the power harrow on loose soil. We recommend that the levellers on the left and right be interchanged in the case of very stoney soil. The stones rolling up in the front will then be removed more quickly.
7. Extension piece for three-point linkage (18 cm = 7 inches), (Fig. 17).
8. Drive for PTO-shaft 1,000 r.p.m. and 540 r.p.m. (Fig. 18). The standard PTO-shaft connection for 540 r.p.m. (Fig. 18/1) remains. The elevated PTO-shaft connection (Fig. 18/2) is for 1,000 r.p.m. but can also be supplied for 540 r.p.m. A longer universal joint shaft is necessary (695 mm = 27,36 inches).



Fig. 19

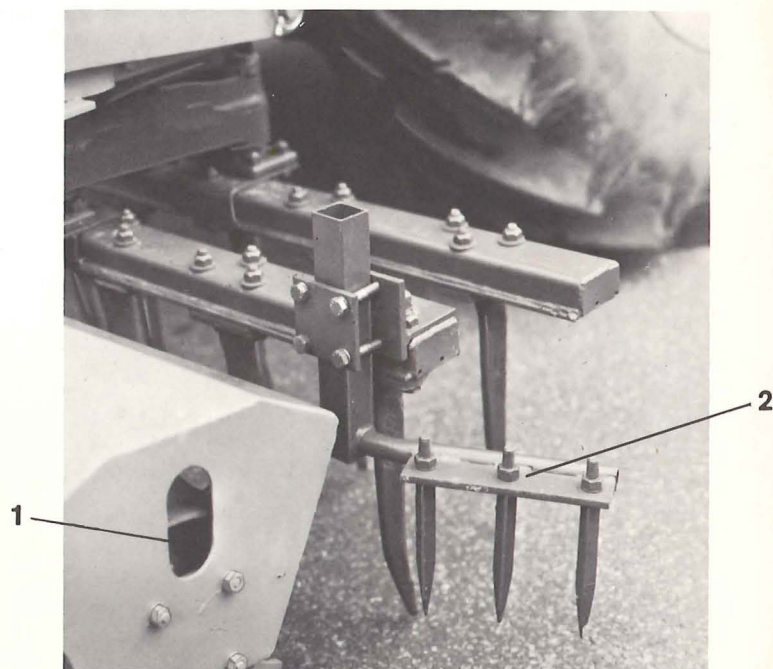


Fig. 20

J) Maintenance

The power harrow has a self-lubricating oil-bath gearbox (Fig. 19/1). All bearings are of the roller bearing type and do not require lubrication.

Oil changes are not necessary. With the power harrow in the horizontal position the oil level must be visible in the oil-level sight glass. When topping up use a high-pressure gear oil with a viscosity of 6.5° Engler at 50° C corresponding to SAE 80. Ensure that the used gear oil is clean and that no dirt can get into the gearbox when filling.

The cap of the gearbox casing should only be opened in exceptional cases because of the danger of dirt getting inside. Even when carrying out repair work the gearbox cover must be securely re-fastened to ensure that dirt or water cannot enter the gearbox and destroy all the roller bearings.

The two axle bearings (Fig. 20/1) of the packer roller are equipped with maintenance-free bearings, which the manufacturer advises should be provided with lubricating nipples in order to guarantee a sufficiently long life if the machine is heavily used. We recommend that these bearings be greased at regular intervals.

K) General notes

When moving on the public highway do not hide the rear lights of the tractor by lifting the power harrow too high. Moreover, on the power harrow RE 30 the tine bars should be secured in the centre position in order that the legally prescribed maximum width of 3 m (9,85 ft) is not exceeded. For the same reason the side dam levellers (Fig. 20/2) must be dismantled or changed over when travelling on the public highway.

As national traffic regulations may differ please consult with local traffic authorities.