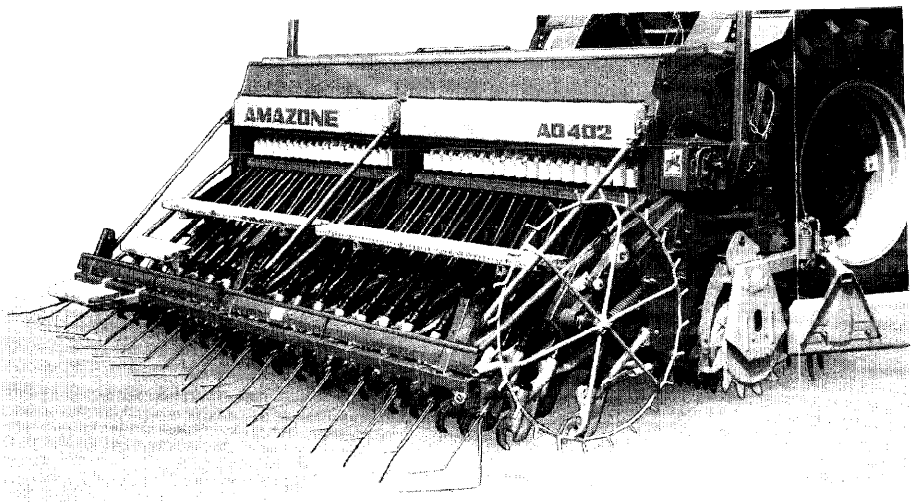
Instruction Manual

for
Pack Top Seed Drill
AMAZONE
AD 252 - AD 302 - AD 402 - AD 452AD-2
(partly also for RP-AD 602,
consisting of 2 x RP-AD 302)



AMAZONEN-WERKE

MG 184
DB 658* (GB) 7.92
Printed in F. R. Germany

The AMAZONE Pack-Top seed drill of the Type AD-2 in combination with Tyre Packer roller has been developed according to the latest findings of plant production science and is one machine from the wide range of AMAZONE farm machinery. The engineering technology in connection with the correct operation ensures optimum use and longevity.

Please get acquainted with the correct way of operating your AMAZONE tyre packer-till- and drill-combination and its operating devices. Never let untrained persons operate the till- and drill- combination.

Maintain your till- and drill-combination in good operational order. Any unauthorised changes to the tyre packer till- and drill-combination may affect its performance and/or safety as well as its longevity. You will, of course, appreciate that we will not be able to accept claims under the guarantee if any damage is caused due to incorrect operation or to unauthorised changes.

Please carefully read the safety instructions in this instruction manual and on the safety stickers on the tyre packer-till- and drill-combination. All safety signs and stickers should always be kept in a well readable condition. Missing or damaged signs or stickers should be replaced for your own safety.

Please enter the serial number of your Pack Top seed drill AD-2 into the space provided below. You will find this number on the type plate in front under the seed box riveted to the right-hand outer wall. Additionally the serial number is painted to the front of the drill's seed box. Please always quote the serial number when ordering spares or asking technical questions:

AMAZONE Pack Top Seed Drill Type AD . . . . . (insert applicable)

Serial No. .....

Your seed drill complies with the regulations of the Agricultural Health and Safety Authorities. In case of repair, only original spareparts of the AMAZONEN-Works should be used for replacement. Claims for guarantee can only be filed if exclusively original options, spare- and wearing parts were used.

Caution! Whenever the machine is moved either on the tyre packer or equipped with star wheel the agitator shaft turns even if the gearbox is set at "0". Therefore, make sure that no parts are left inside the seed box before moving the drill.
Otherwise damage could occur to the agitator shaft or to the metering wheels.

Never put your hands inside the seed box while the machine is moving as serious injury may be caused by the rotating agitator shaft (never try to level the seed inside the seed box while the machine is in drilling operation).

Carefully read pages 5 and 8 through 11 for injury free operations.

Contents

page

This sign is used in this instructions or on the machine to draw your attention to safety advice in the instructions for the tyre packer and attached machines. It signals particular danger of injury!

Adhere to all safety advice!

Please pass on all safety advice also to other users!

Operation advice (declined use of the machine)

1. The AMAZONE Pack Top seed drill AD-2 has exclusively been designed for the usual operations in agriculture (declined use of the machine).

2. Any use beyond the one stipulated above is no longer considered as declined use. The manufacturer does not accept any responsibility for damage resulting from this; therefore the operator himself carries the full risk.

3. Under "declined use" also the adhering to the manufacturer's prescribed operation maintenance and repair conditions is to be understood.

4. The AMAZONE Pack Top seed drill may only be operated, maintained and repaired by such persons who have been made acquainted with it and who have been advised about the dangers.

5. Any damages or injuries resulting from arbitrary changes on the machine rule out the responsibility of the manufacturer.

6. The applicable accident preventive advice as well as any further generally accepted safety-, working-medical and road-traffic rules should be adhered to. Further details may be taken from paragraph 2.0 "General Health and Safety Precautions" in this instruction manual.

On receipt of the machine
Immediately check for damage during transport or for missing parts. Claims are only entertained following immediate complaint to your distributor. Please also check that all parts listed in the freight note are present.

Maintenance advice
Check all bolted connections after the first 10 hours of operation and tighten if found loose.

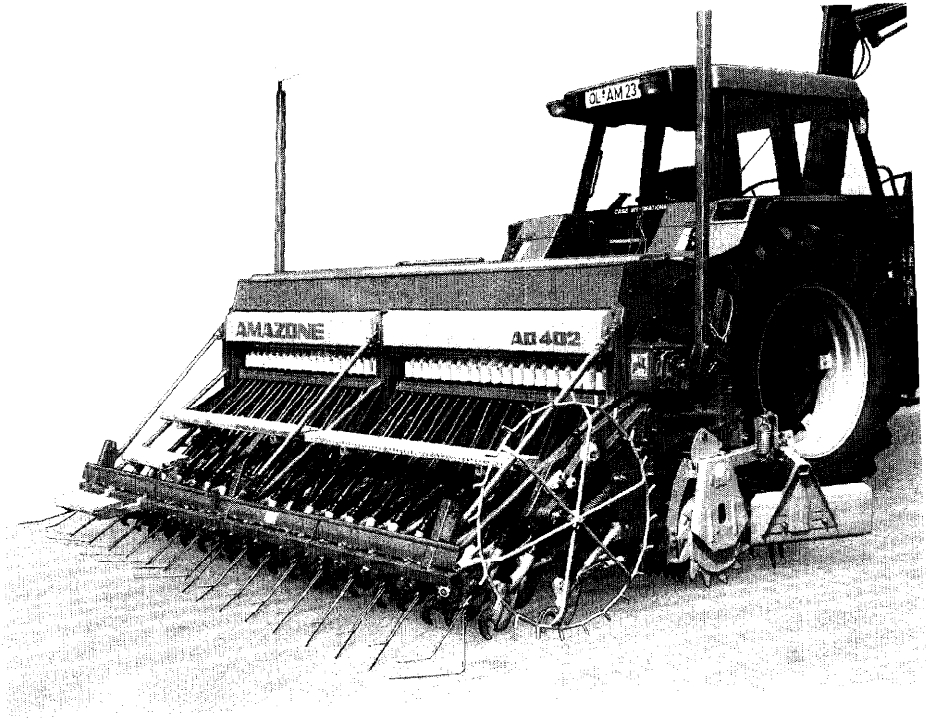


Fig. 1

1.0 Details about the machine

1.1 Manufacturer

AMAZONEN-Werke H. Dreyer GmbH & Co. KG
Postfach 51, D-W. 4507 Hasbergen-Gaste/F. R. Germany

1.2 Technical Data

Pack-Top seed drill	AD 252	AD 302	AD 402	AD 452
Working width/Transport width	2.50 m	3.00 m	4.00 m	4.50 m
Available coulters	'K' (Suffolk) or roll disc coulters			
Max. number of rows	24	30	40	44
Min. row spacing	10.4 cm	10.0 cm	10.0 cm	10.0 cm
Filling height (mounted on KG rotary cultivator)	1.45 m			
Payload of seed box	460 l	560 l	760 l	860 l
Diameter of star wheel	1.02 m		1.18 m	
Total weight with coupling parts and largest number of rows, approx.	473 kgs	526 kgs	642 kgs	695 kgs

Hints for this instruction book

Any description for electronic options is not included in this instruction book. Separate instructions are available.
The following electronic/electric options are available at present:

AMAZONE - AMTICO - electronic sowing depth control
AMAZONE - AMFACO - electr. tramlining control
AMAZONE - AMFARE - electr. tramlining and marker control
AMAZONE - AMFÜME - electr. seed level indicator
AMAZONE - AMERE - electr. seed rate control
AMAZONE - AMEHA - electr. hectare meter

2.0 General safety and accident prevention advice

Basic principle:
Always check traffic and operational safety before putting the machine into operation.

1. Adhere to the general rules of health- and safety precautions besides the advice in this instruction manual!
2. The fitted warning- and advising plates give important hints for a safe operation; adhering to protects your own safety!
3. When making use of public roads adhere to applicable traffic rules.
4. Become acquainted with all installations and controlling devices as well as with their function before beginning with the operation. Doing this during operation would be too late.
5. The clothing of the operator should fit tight. Avoid wearing any loose clothing!
6. To avoid danger of fire keep your machine clean!
7. Before beginning to drive, check surrounding area (children etc.) Ensure sufficient visibility!
8. Sitting or standing on the implement during operation or during transport is not permissible.
9. Attach implements as advised and only to the advised devices!
10. Special care should be taken when the implement is coupled to or off the tractor.
11. When attaching or removing the machine bring the supporting devices into the corresponding position (standing safety).
12. Fit weights always as advised to the fixing points provided for that purpose.
13. Adhere to the maximum permissible axle loads, total weights and transport measurements.
14. Fit and check transport gear, traffic lights, warning and guards!

15. The release ropes for quick coupler should hang freely and in the lowered position must not release the quick coupling by themselves.

16. During driving never leave the operator's seat.

17. Mount the implement as prescribed. Moving behaviour, steerability and braking are influenced by mounted implements, trailers and ballast weights. Check sufficient steerability and braking.

18. When driving round bends note the width of the machine and/or the changing centre of gravity of the implement.

19. Put implement into operation only when all guards are fixed in position.

20. Never stay or allow anyone to stay within the operating area!

21. Never stay in the turning and slewing area of the implement!

22. Hydraulic folding frames should only be actuated, if no persons are staying in the slewing area.

23. On all pivoting parts actuated by foreign powers (e. g. hydraulics) exists danger of injury by bruising and crushing.

24. Before leaving the tractor lower the machine to the ground. Actuate the parking brake, stop the engine and remove the ignition key!

25. Allow nobody to stand between tractor and implement if the tractor is not secured against rolling away by the parking brake and/or by the supplied chocks.

26. Bring markers into transporting position and secure.

Safety Advice for implements fitted to the tractor's three-point-hydraulic

1. When fitting the machine to the three-point linkage of the tractor bring all control levers into such a position that unintended lifting or lowering is impossible.
2. When fitting to the three-point linkage the mounting categories at the tractor and the implement must be compatible or must be made compatible.
3. There is danger of injury in the area of the three-point linkage by its squeezing and shearing places.
4. When actuating the control levers for the three-point linkage from outside the tractor cab never step between tractor and implement!
5. Make sure that in the transport position of the implement the tractor three-point linkage has sufficient lateral immovability.
6. When driving on public roads with a lifted machine the lifting control lever should be locked against unintentional lowering.

Safety Advice for hydraulic system

1. The hydraulic system is under high pressure.
2. Connect hydraulic hoses to the hydraulic rams and motors according to the advice in the instructions.
3. When fitting the hydraulic hoses to the tractor hydraulic sockets always ensure that the hydraulic system at the tractor's as well as at the implement side is without pressure.
4. To avoid wrong hydraulic connection, sockets and plugs should be marked (e.g.colour coded). This helps to prevent contrary function (lifting instead of lowering or vice versa) and reduces the danger of accident.
5. Regularly check hydraulic hoses and pipe lines and exchange if found defective. The replacement hoses and pipe lines must meet with the implement manufacturer's technical standards!

6. When searching for leaks appropriate aids should be used because of the danger of injury.

7. Liquids leaking under high pressure (Diesel fuel, hydraulic oil) can penetrate the skin and cause severe injury. When injured see a doctor immediately! Danger of infection!

8. Before starting to do repair work to the hydraulic system relieve it from pressure by actuating the control lever accordingly, lower machine to the ground and stop tractor engine.

9. The maximum allowable operational atmospheric pressure must never be exceeded.

Special advice for operating with mechanical seed drills

1. During the calibration test watch out for rotating or oscillating parts of the machine.

2. Use steps only for filling. It is not allowable to travel on the steps during operation.

3. For road transport remove marker-discs and carriers of the pre-emergence marker.

4. Adhere to the manufacturer's advice when filling the seedbox.

5. Secure markers in transport position.

6. Never place any parts inside seed box as even when manoeuvring the agitator shaft rotates.

7. Never exceed the maximum allowable filling quantity.

8. If the seed drill is equipped with a hydraulically driven filling auger this auger may only be **switched on after the seed box lid has been closed**. Switch it off before opening the lid.

9. Always only close or open the lid of the seed box via the steps provided on the rear of the machine.

10. Never lean over or reach into open seed box during operation or while the filling auger is running. (Special areas of danger are the centre and the sides of the rotating auger.)

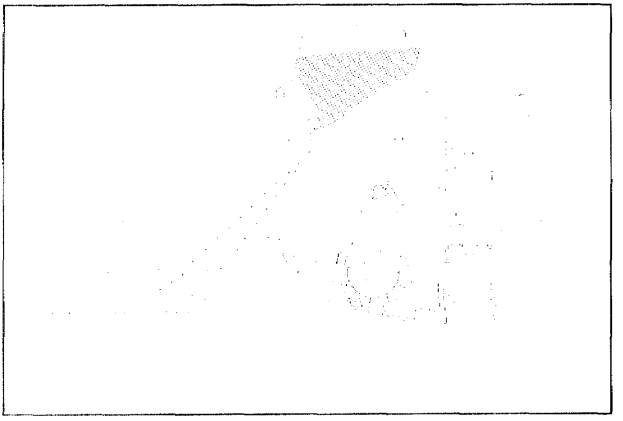


Fig. 4

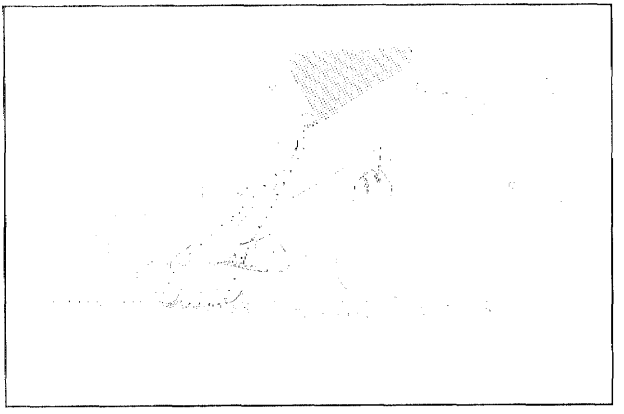


Fig. 5

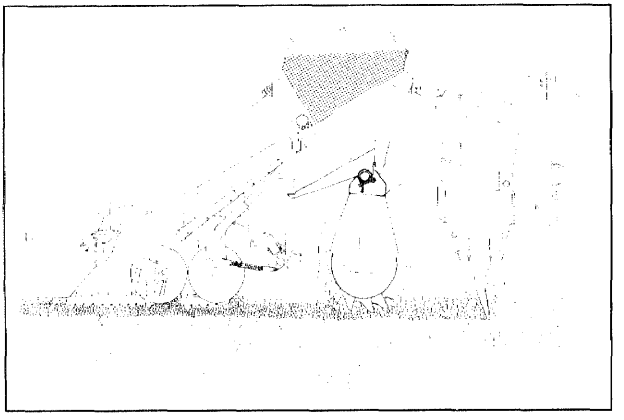


Fig. 6

3.0 AMAZONE Till and Drill Combinations

For seed bed preparation and sowing, tilling and sowing combinations are increasingly being used. Seed bed preparation and sowing in one operation does not only save working time and fuel but also improves considerably the sowing conditions which in return result in higher yields.

The AMAZONE Pack Top seed drill AD has been developed in the main for the use in combination with an AMAZONE soil tillage implement. This combination optimises crumbling, levelling, recompacting and exact sowing in one operation with a comparatively small engine horse power and lifting power requirement. The Pack Top seed drill AD consists of tooth packer roller and seed drill. The seed box of the drill is directly mounted on top of the tooth packer roller. Due to its short design the combination of the soil tillage implement and band packer seed drill is also suitable for tractors with small engine horse power and lifting power.

The coupling parts are designed in such a way that the Pack Top seed drill during operation is resting on the packer roller and **not** on the soil tillage implement. This has the big advantage that the soil tillage implement does not receive any weight by the Pack Top seed drill and therefore can give way to stones or other obstacles upwards without any problems. Hereby damages to tines and gear boxes are prevented.

Combinations of AMAZONE band packer seed drills and soil tillage implements are designed for the following operations:

- **AMAZONE Front harrow with Pack Top seed drill equipped with 'K'-(Suffolk) coulters** on light soils following the plough
- **AMAZONE Power harrow with Pack Top seed drill equipped with 'K'- (Suffolk) coulters** (Fig. 4) on light to medium heavy soils for operation following the plough.
- **AMAZONE Rotary harrow with Pack Top seed drill equipped with 'K'-(Suffolk) coulters** on all soils for operation following the plough.
- **AMAZONE Rotary harrow with Pack Top seed drill equipped with roll disc coulters** for operation following the plough or the cultivator, with or without organic matter on the surface of all soils.
- **AMAZONE Rotary cultivator with Pack Top seed drill equipped with 'K'-(Suffolk) coulters** (Fig. 5) on all soils (also when extremely clayey or stony) with or without preseeding operation by subsoiler or plough without or with only some organic matter on the surface.
- **AMAZONE Rotary cultivator with Pack Top seed drill equipped with roll disc coulters** (Fig. 6) on all soils (also when extremely clayey or stony) with or without preseeding operation by subsoiler or plough with or without organic matter on the surface.

The tines "on grip" of the AMAZONE soil tillage implements power harrow and rotary cultivator have a demixing effect. The coarse soil particles are thrown further than the fine ones. Hereby the fine soil is concentrated in the lower area of the worked zone, i. e. in the area of the seed placement whereas the coarse particles remain on the surface which in this way protect the soil from panning.

The wall of soil moved in front of the tines fills up simultaneously any furrow etc. and produces ideal conditions for maintaining a uniform sowing depth of the seed.

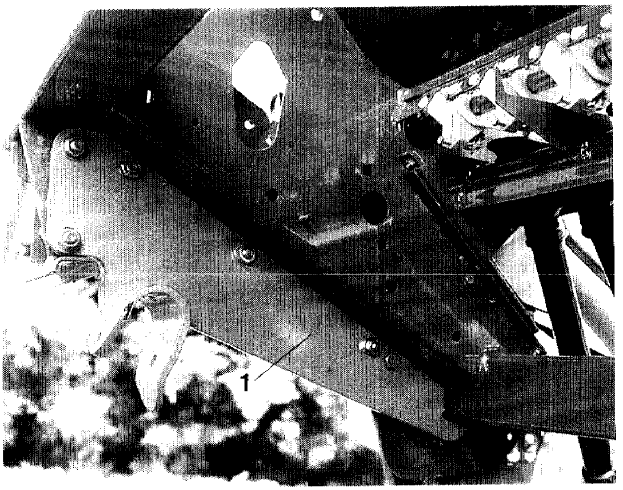


Fig.7

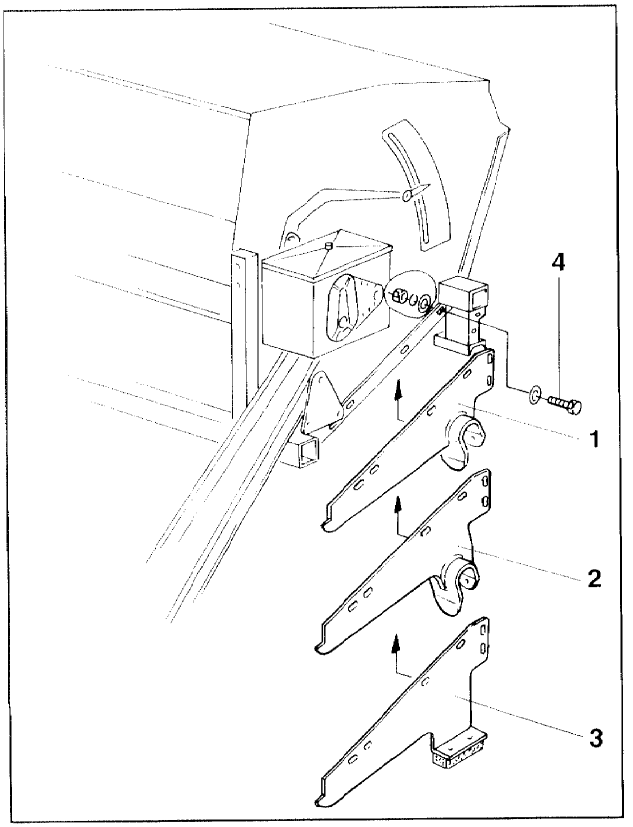


Fig.8

4.0 Coupling parts (review)

The AMAZONE Pack Top seed drill should be mounted by coupling parts to the soil tillage implement. The coupling parts should be matched to the corresponding soil tillage implement. Three main groups of coupling parts are available:

Coupling parts for

- **AMAZONE** soil tillage implements with tooth packer roller PW 500
- **AMAZONE** soil tillage implements with tooth packer roller PW 420
- Soil tillage implements/packer rollers of other manufacturers

4.1 Equipping the Pack Top seed drill

Mount two linking plates (Fig. 7/1), or two supporting brackets with hexagon bolts M 12 x 30 DIN 933 (Fig. 8/4) to the outer walls of the seed box of the Pack Top seed drill.

Depending on the manufacturer of the soil tillage implement fit:

Linking plate for combinations with AMAZONE tooth packer roller PW 500 (see Fig. 8/1)
Linking plate for combinations with AMAZONE tooth packer roller PW 420 (see Fig. 8/2)
Resting support for combinations with rotary harrows of other manufacturers (see Fig. 8/3)

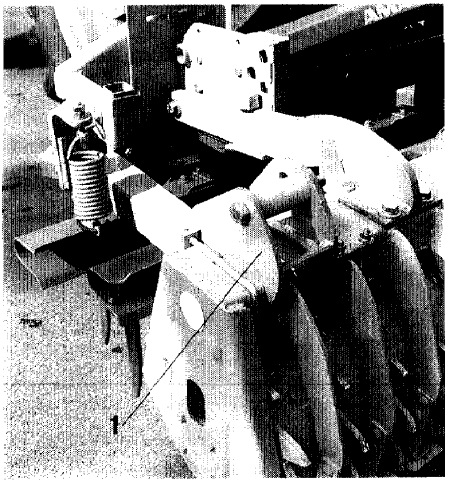


Fig. 9

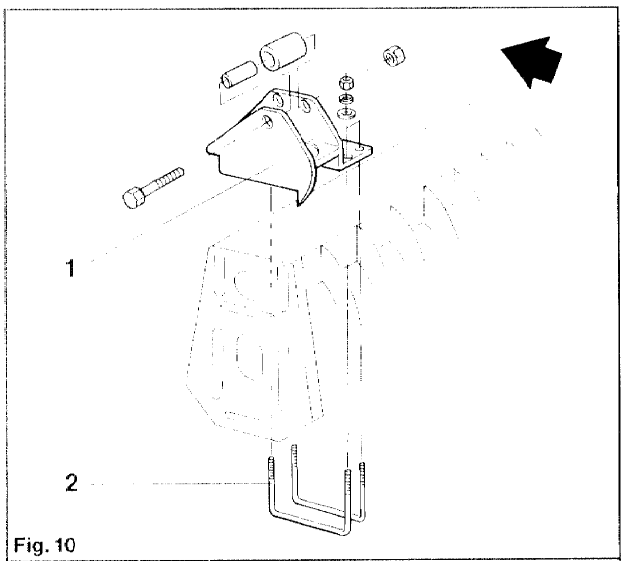


Fig. 10

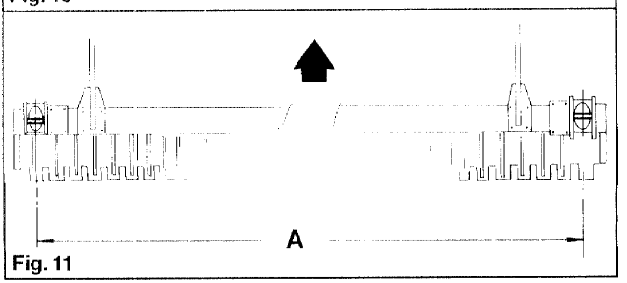


Fig. 11

5.0 Coupling parts for AMAZONE soil tillage implements

Before coupling the Pack Top seed drill AMAZONE AD to an AMAZONE soil tillage implement the tooth packer roller should be equipped with two hinging consoles (Fig. 9/1).

Both hinging consoles (Fig. 10/1) are bolted to the frame of the tooth packer roller with U-bolts (Fig. 10/2) in the correct spacing (see Fig. 11):

AD 252	**Spacing**	**A = 2270 mm**
AD 302	**Spacing**	**A = 2770 mm**
AD 402	**Spacing**	**A = 3770 mm**
AD 452	**Spacing**	**A = 4270 mm**

The hinging consoles can be bolted either to tooth packer rollers PW 420 or to tooth packer rollers PW 500.

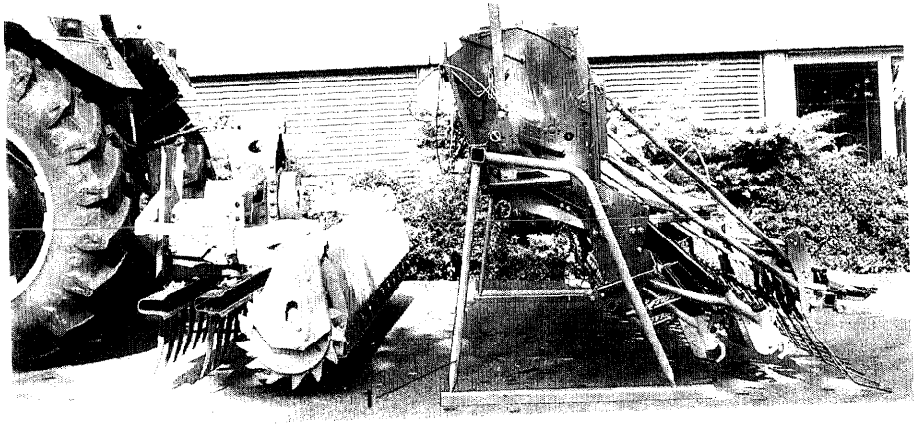


Fig. 12

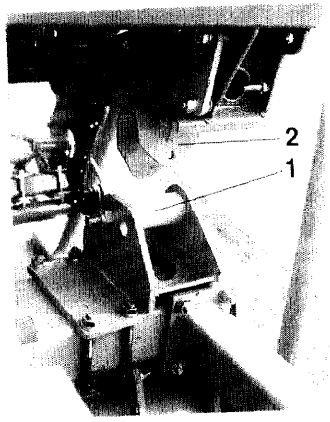


Fig. 13

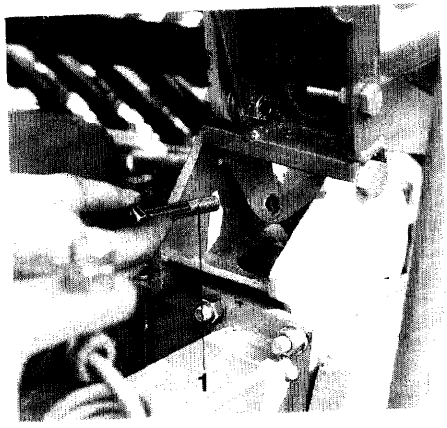


Fig. 14

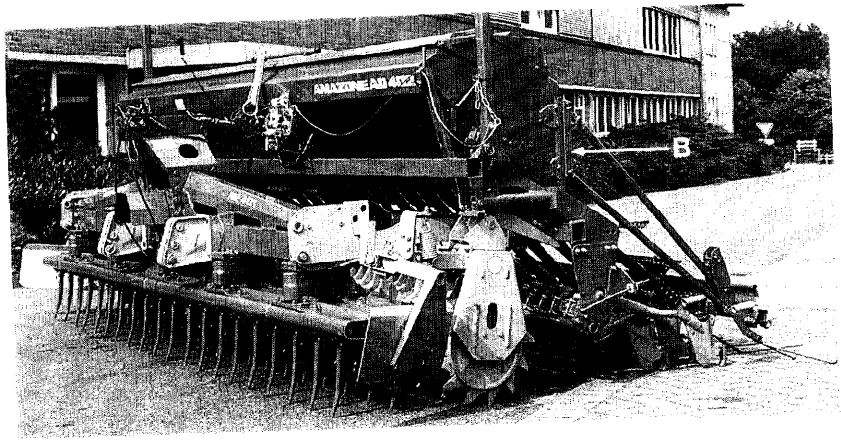


Fig. 15

5.2 Coupling the Pack Top seed drill to an AMAZONE soil tillage implement

- For coupling the Pack Top seed drill the soil tillage implement and packer roller should be lifted by the tractor's hydraulic.

- Back up tractor with the mounted combination to the Pack Top seed drill standing on its parking support (Fig. 12).

- Bring hinging shafts (Fig. 13/1) and catching pockets (Fig. 13/2) together, insert two pins (Fig. 14/1) and secure with spring pins.

- Fix turnbuckle (Fig. 15/1) to the AD and to the soil tillage implement by pins and secure each one by spring pin.

- Now lift complete combination and remove parking support (Fig. 12/1).

- Adjust top link length (Fig. 15/1) in such a way that the rear wall of the seed drill in the area of B (Fig. 15) stands about vertical.

Uncoupling the Pack Top seed drill is done in vice versa procedure.

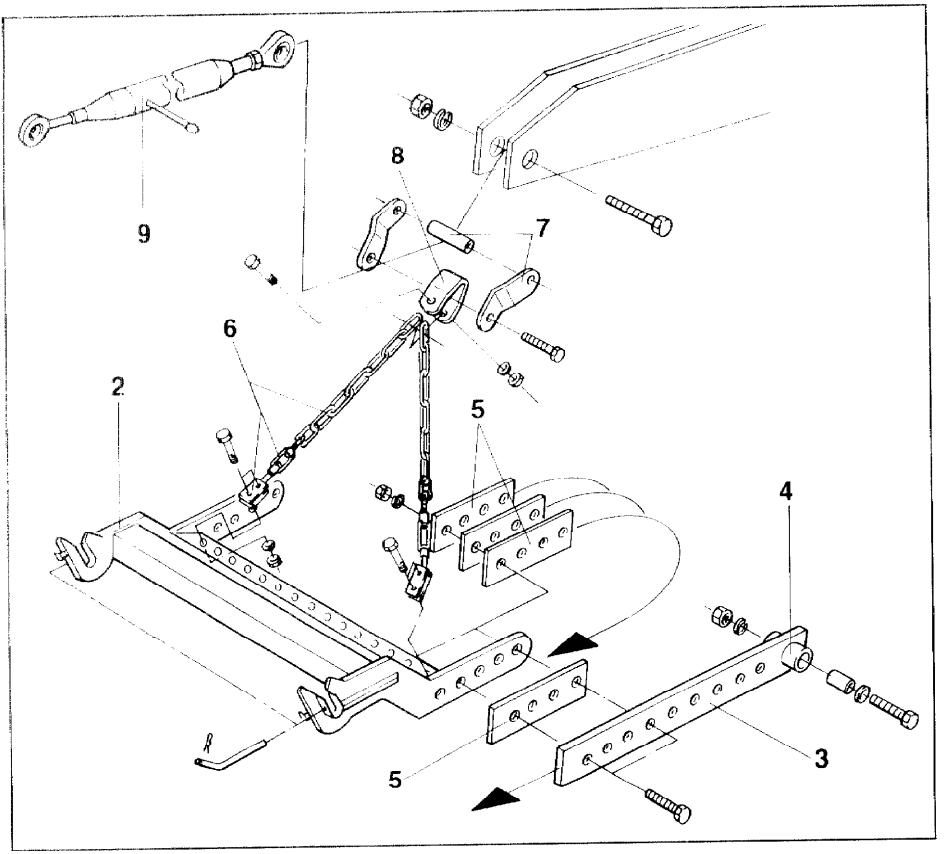


Fig. 16

6.0 Coupling parts for rotary harrow of other manufacturers

Before coupling the AMAZONE Pack Top seed drill AD to a rotary harrow of another manufacturer the seed drill, soil tillage implement and packer roller are to be equipped with coupling parts. The coupling parts consists in the main of:

Fig. 16 No.	Description	Qty.
	Resting support (see Fig. 8/3)	2
2	Coupling frame	1
3	Linking plate	2
4	Bushing* with two securing rings	2
5	Spacer plate	8
6	Turnbuckle with chain and pulling plate	2
7	Extension plate	2
8	Hinging piece	1
9	Turnbuckle M27** for top link	1

* Inner diameter of bushing should be matched to the fixing bolt or the fixing pin!

** Please consider the correct length of the turnbuckle (see table page 25)!

6.1 Equipping the Pack Top seed drill

The Pack Top seed drill AD is - as described under para. 4.1 - equipped with two resting supports (Fig. 8/3) with plastic resting pieces.

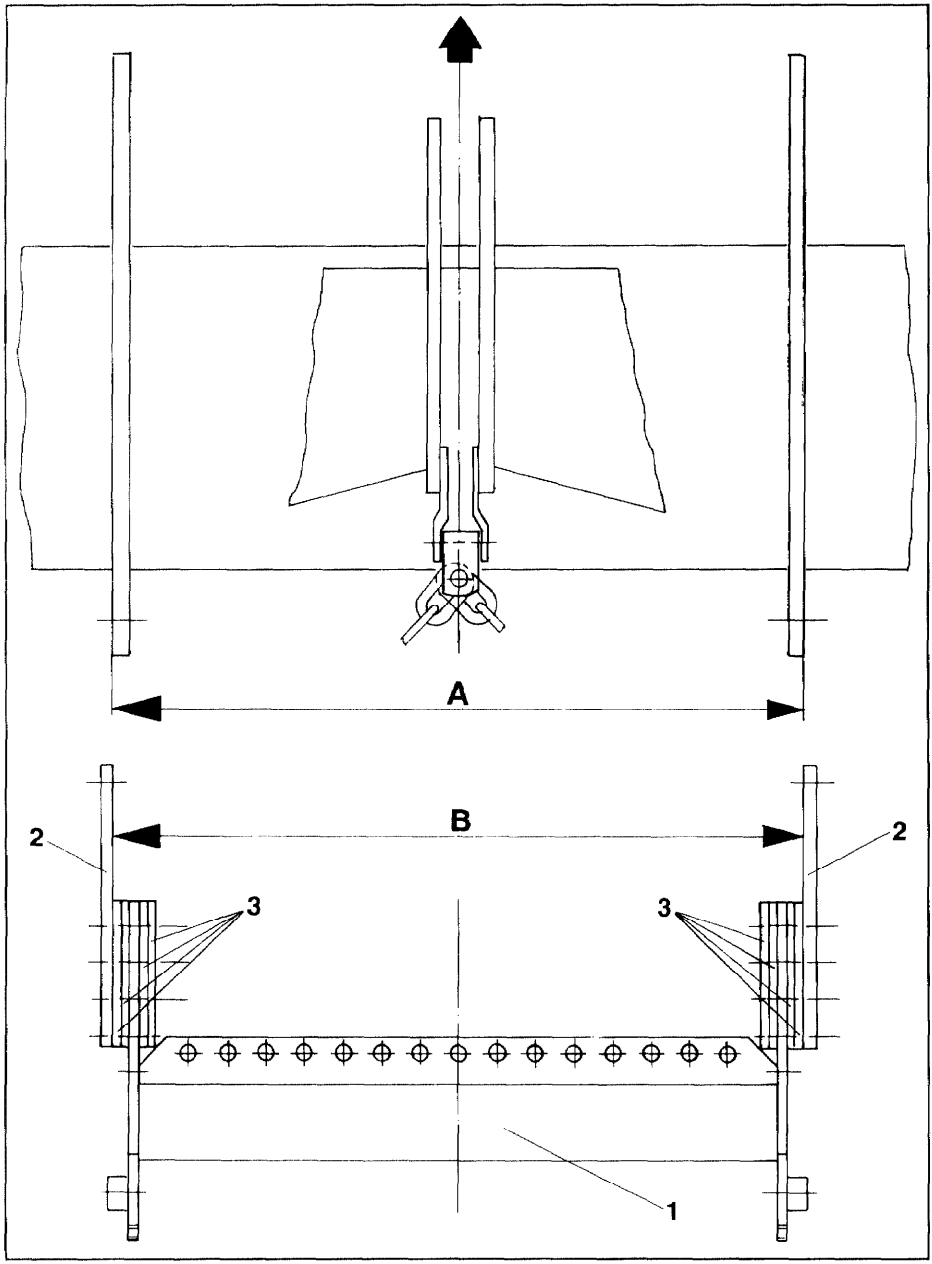


Fig. 17

6.2 Fitting the coupling frame

In order to be able to fit the coupling frame (Fig. 17/1) it is necessary first to determine the spacings "B" and "C" (see figures 17 and 18).

Determining the spacing "B" (see Fig. 17):

- Measure carefully spacing "A" (Fig. 17) of the lower rear linking point of your soil tillage implement.

Spacing A = ... mm
Spacing "B" corresponds to the measured spacing "A"

Determining the spacing "C" (see Fig. 18):

- Take spacing "C" from table on following page.
  If this measurement for your soil tillage implement cannot be taken from the table the spacing "C" should be determined as described on the following page.

Spacing C = ... mm

Mounting the coupling frame:

- Bolt by at least two hex. bolts (Fig. 19/6) to either side of the coupling frame (Fig. 17/1) linking plates (Fig. 17/2) and spacer plates (Fig. 17/3).

Set spacing "B" by repositioning the spacer plates (Fig. 17/3).

Usually the determined spacing "C" cannot be set completely accurately. As a result of the groups of holes in the coupling frame (Fig. 17/1) and in the linking plates (Fig. 17/2) only lengths of about 50 mm steps can be set.

If the determined spacing "C" cannot be set accurately, the next larger spacing "C" should be chosen.

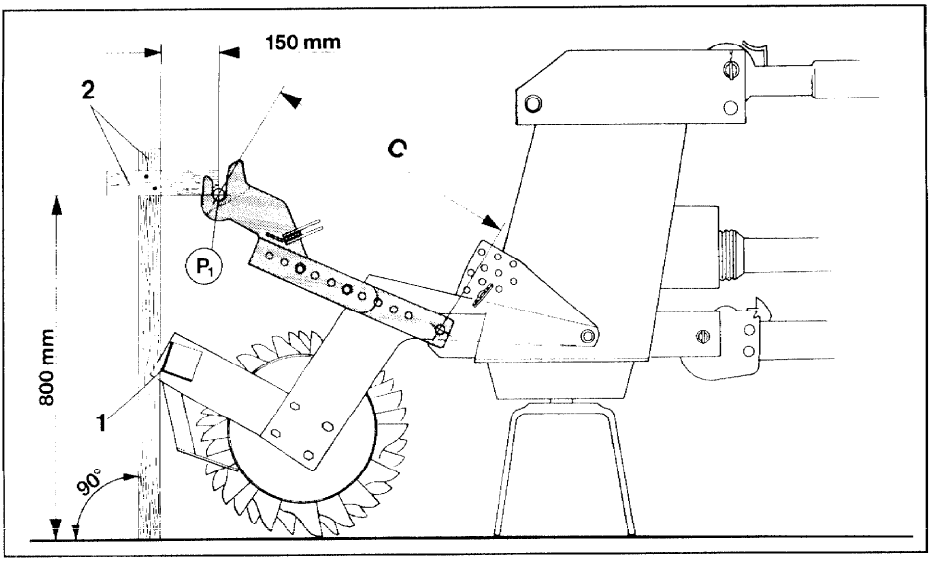


Fig. 18

Manufacturer/Type	Spacing "C" of the coupling frame	Length of top link approx.
EBERHARDT KE	550 mm	390 mm
FROST-FERABOLI	600 mm	590 mm
HOWARD	550 mm	675 mm
KRONE KES	500 mm	520 mm
KUHN HR	550 mm	850 mm
LANDSBERG-SICMA	550 mm	640 mm
LEMKEN-LELY	750 mm	580 mm
MASCHIO DS-DC	650 mm	850 mm
MASCHIO DM	750 mm	800 mm
NIEMEYER	600 mm	415 mm
RABE MKE	550 mm	450 mm
RABE PKE	500 mm	420 mm
VIGOLO	600 mm	440 mm

Should the spacing "C" be not available from the above table for your soil tillage implement, this measurement can be determined as follows:

The measurement "C" (Fig. 18) is the distance between the lower link point of the soil tillage implement and the theoretical coupling point "P_1" of the seed drill. Therefore first the theoretical coupling point "P_1" should be determined as follows:

- Place the soil tillage implement with the packer roller on a level ground.
- The point "P_1" is 800 mm above the ground and 150 mm in front of the rear outer edge of the roller frame (Fig. 18/1).

This is the position which the point "P_1" will have during operation on the field. As an aid for determination of the point "P_1" You may use two wooden boards (Fig. 18/2) with the mentioned lengths and an angle.

- The spacing "C" then results from the distance of point "P_1" towards the lower link point.

With the determined measurements "B" and "C" (see prior page) the coupling frame can be completely mounted.

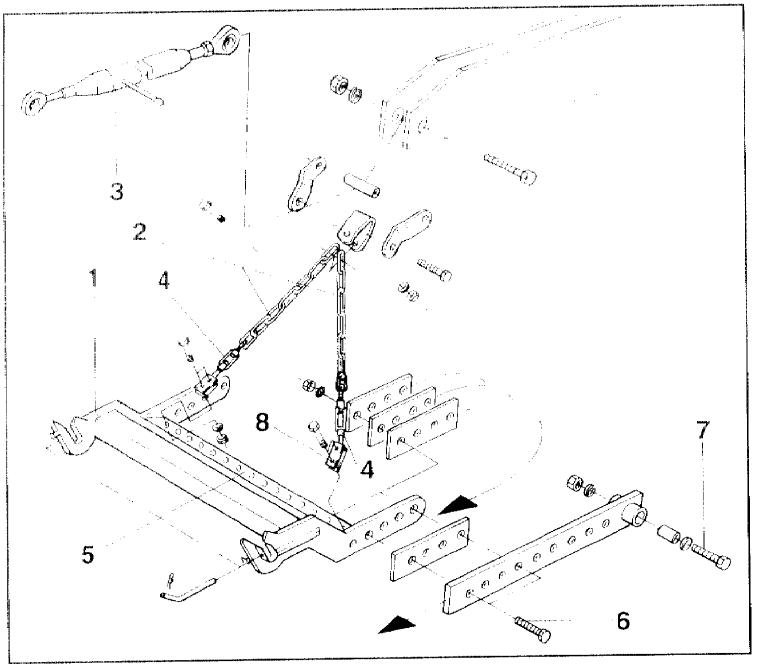


Fig. 19

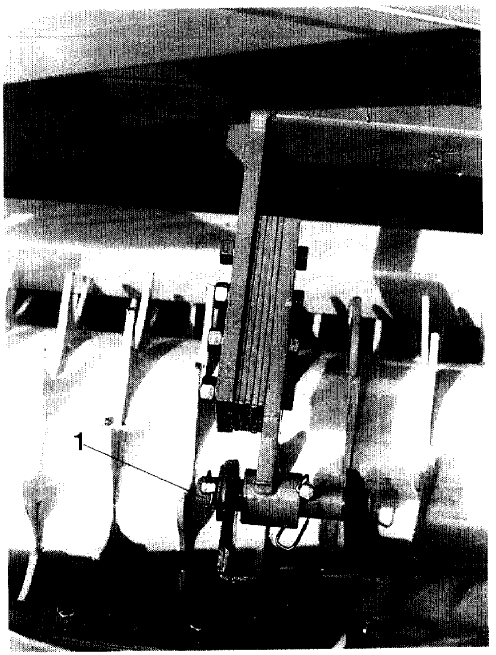


Fig. 20

6.3 Mounting the coupling frame to the soil tillage implement

Fix coupling frame (Fig. 19/1) **centrally** to the rear lower linking points of the soil tillage implement. The coupling frame should be fixed (depending on the manufacturer) as shown in Fig. 19 and 20 either by bolts (Fig. 19/7) or pins (Fig. 20/1) pivoting, i. e. not rigidly to the lower links.

Fix two chains (Fig. 19/2) together with the turnbuckle (Fig. 19/3) to the top link. The chain ends are equipped with shackles. Fix to each Shackle one turnbuckle (Fig. 19/4). The turnbuckles should be fixed as far as possible to the outside of the hole bar (Fig. 19/5) of the coupling frame with the aid of the pulling links (Fig. 19/8). The pulling links should only then be affixed more towards the centre if any parts of the machine are in the way making affixing to the outer area impossible.

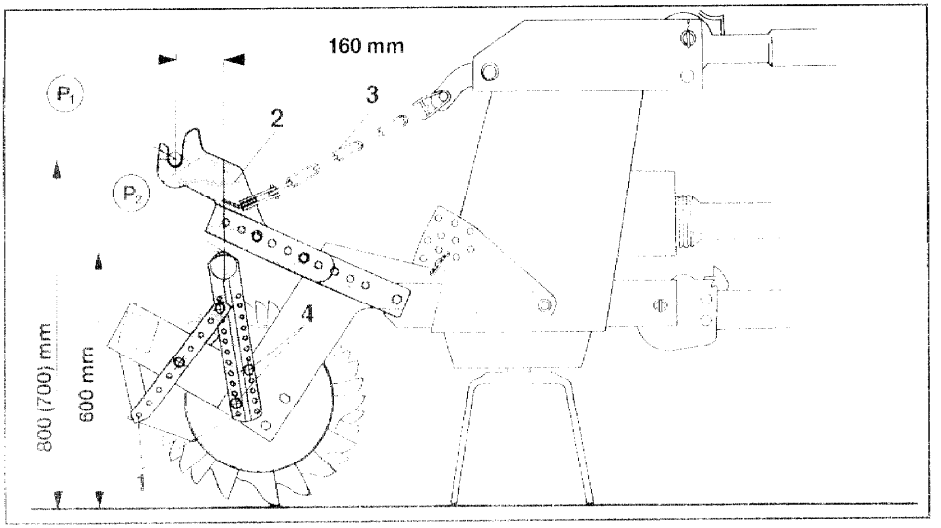


Fig. 21

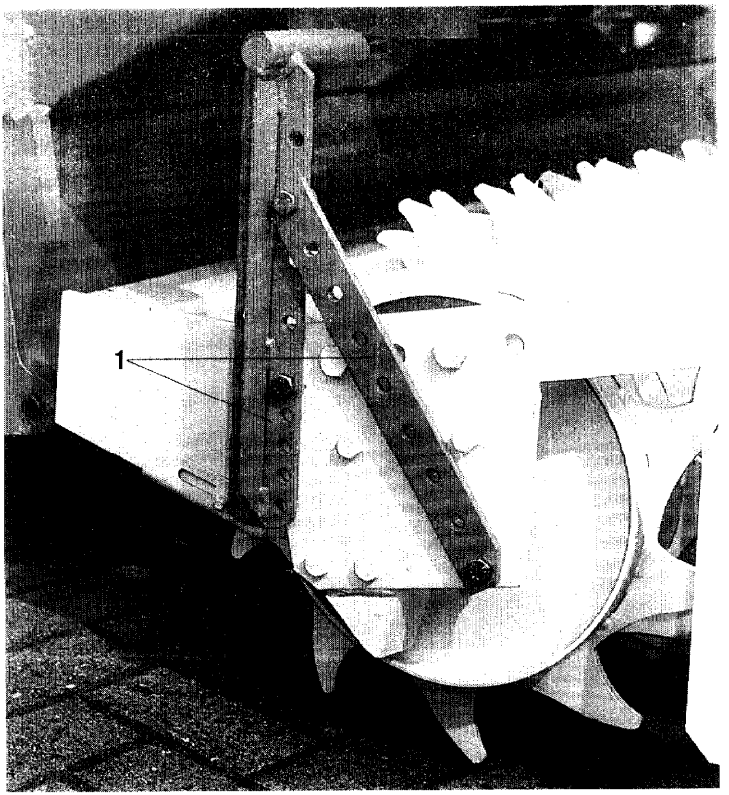


Fig. 22

6.4 Affixing supporting brackets to the packer roller

The packer roller should be equipped with supporting brackets (Fig. 22/1). The Pack Top seed drill will be resting on it lateron during operation.

Before fitting the supporting brackets (Fig. 21/1) the resting point 'P_2" must be determined. The resting point "P_2" again has a certain spacing towards the coupling point "P_1" at the coupling frame. Therefore it is necessary first to set the coupling point "P_1" accurately. For this purpose the coupling frame (Fig. 21/2) should be lifted and fixed accurately (800 mm above the ground) (see Fig. 21). In this position the coupling frame should be fixed, e. g. by tensioning the chains (Fig.2 1/3).

> Resting point "P_2" is 600 mm above the ground and 160 mm in front of the coupling point "P_1" (see Fig. 21).

Bolt supporting brackets (Fig. 21/1).

> **Note:**
>
> The wide supporting bracket with the double row of holes should be fixed to the packer roller with at least two hex. bolts (Fig. 21/4).

6.5 Setting chain length to the final measurement

After fitting all coupling parts to the soil tillage implement the length of the chain (Fig. 21/3) should be set to the final measurement. The chain length should be set in such a way that the measurement from the ground to the point "P_1" should only be 700 mm instead of the initial 800 mm (see bracket measure in Fig. 21). Due to this measure the chains will be slackened slightly during operation on the field and ensure this way an optimum stone safety for your soil tillage implement. The exact description of the function you will find in para. 7.

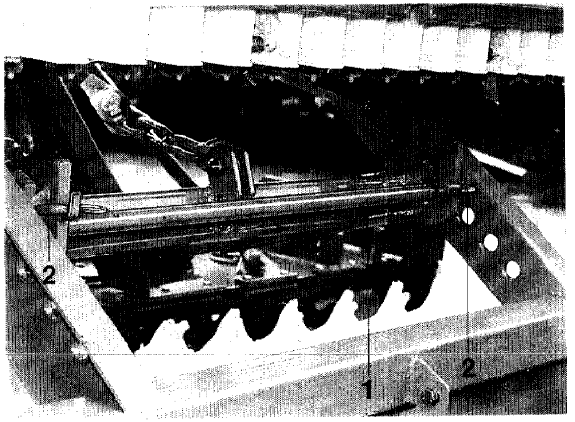


Fig. 23

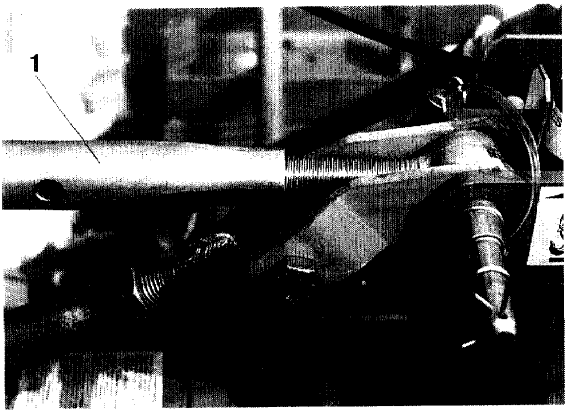


Fig. 24

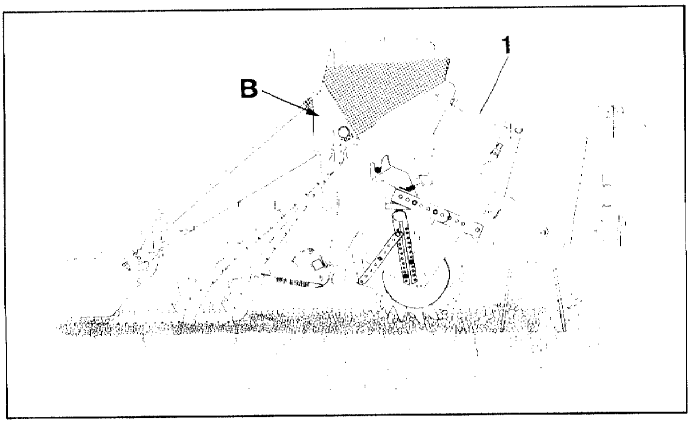


Fig. 25

6.6 Coupling the Pack Top seed drill to a soil tillage implement of another manufacturer

- For coupling the Pack Top seed drill, the soil tillage implement and its packer roller should be lifted by the tractor's hydraulic.

- Back up tractor with combination to the Pack Top seed drill standing on its parking supports (see Fig. 12).

  Pick up with the coupling frame the coupling shaft (Fig. 23/1) of the Pack Top seed drill below the seed box fixed with two pins (Fig. 23/2) and secure with clip pins.

  Attach turnbuckle (Fig. 24/1) to the seed drill and to the soil tillage implement by inserting pins which should be secured by lynch pins.

- Lift the total combination and remove the parking support (Fig. 12/1).

- The length of the top link (Fig. 25/1) should be adjusted in such a way that the seed drill's rear wall is standing about vertically in the area of "B" (Fig. 25).

Uncoupling the pack top seed drill is done in vice versa order.

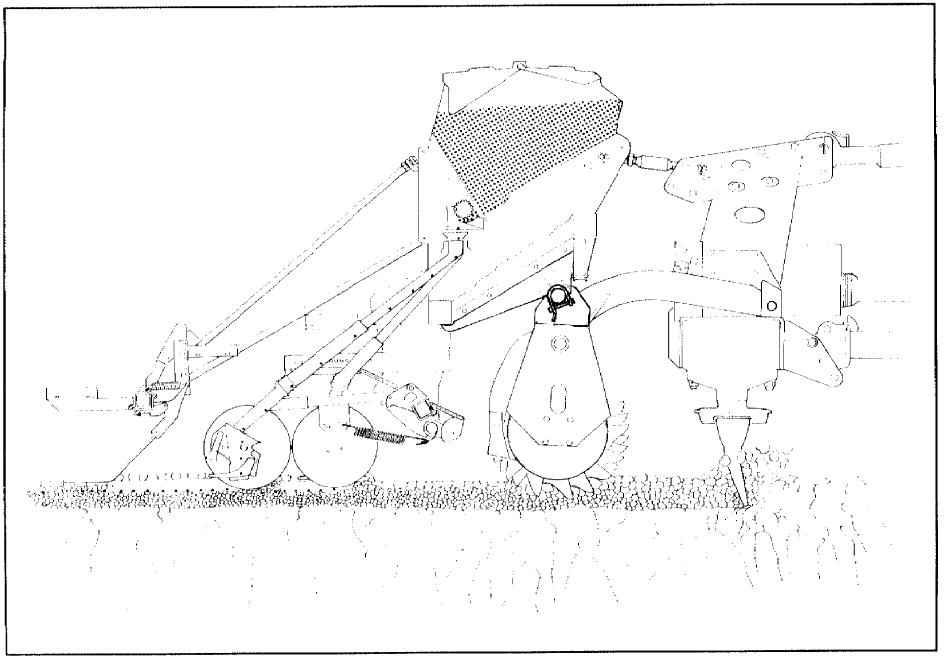


Fig. 26

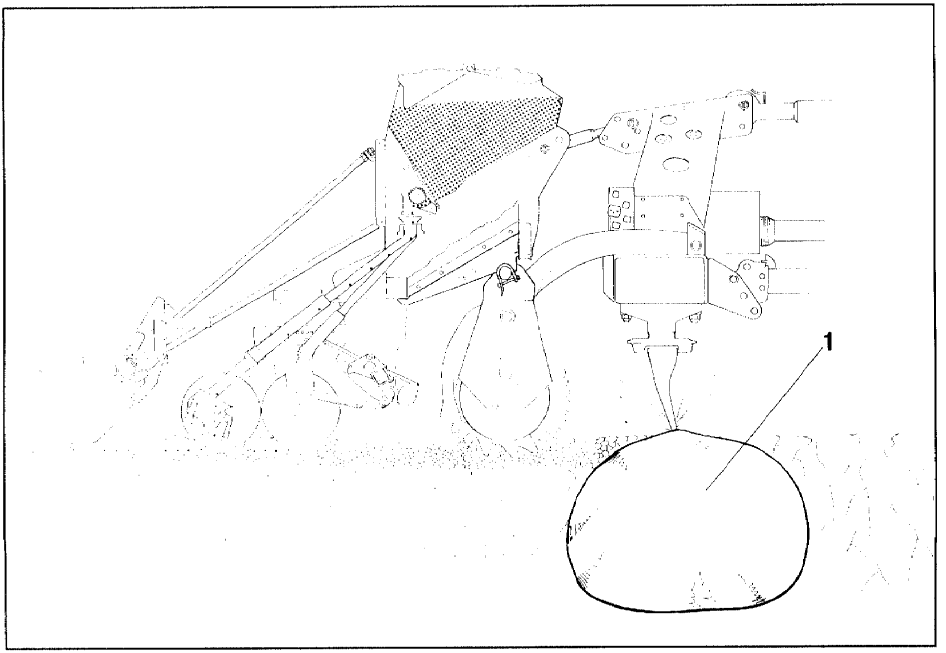


Fig. 27

7.0 Function of the coupling parts (General description for all types)

[illegible] Pack Top seed drill is mounted to the combination with AMAZONE soil tillage implements [illegible] resting in working position (Fig. 26) as well as in transport position on the [illegible] of the AMAZONE [illegible].

[illegible] AMAZONE Pack Top seed drill is mounted to rotary harrows of other manufacturers [illegible] on the packer roller. [illegible] the packer roller of other manufacturers is [illegible] to carry the weight of the Pack Top seed drill during transport position. Therefore it is necessary when operating with soil tillage implements of other manufacturers to transfer the weight of the Pack Top seed drill in the lifted position into the more stable frame of the rotary harrow. For this purpose AMAZONE [illegible] for rotary harrows of other manufacturers a new coupling system the function of which shall be described in the following.

7.1 Stone safety device

In working position (Fig. 26) the soil tillage implement is resting on the packer roller and this way always maintains the constant working depth.
Should the soil tillage implement during operation on the field hit a stone (Fig. 27/1) or another rigid obstacle in the soil, then the soil tillage implement can only give way upwards to pass the obstacle. During this the full weight of the soil tillage implement is resting on that tine which has hit the obstacle. The elasticity and the elastic fixing of the tines usually is just sufficient to bear the net weight of the soil tillage implement without breaking off the tines. Thus the soil tillage implement must not be additionally loaded with the weight of the pack top seed drill to pass the obstacle. A tine breakage would otherwise just be pre-programmed. For this reason the Pack Top seed drill is neither with the AMAZONE soil tillage implement nor with such of other manufacturers rigidly connected.

For soil tillage implements of other manufacturers therefore a coupling system had to be developed which meets the requirements for stone safety and additionally can transfer the weight of the Pack Top seed drill during transport into the stronger frame of the soil tillage implement. For this reason the coupling system for soil tillage implements of other manufacturers consists in the main of a coupling frame (Fig. 28/1) which is fixed to the lower link mounting points of the soil tillage implement. Additionally the coupling frame is linked by chains (Fig. 28/2) to the upper linking points of the soil tillage implement. In operation position (Fig. 28) these chains are hanging lightly loose. This way the weight of the pack top seed drill is resting on the packer roller. When passing an obstacle the soil tillage implement can load-free move so far upwards until the chains are tensioned.

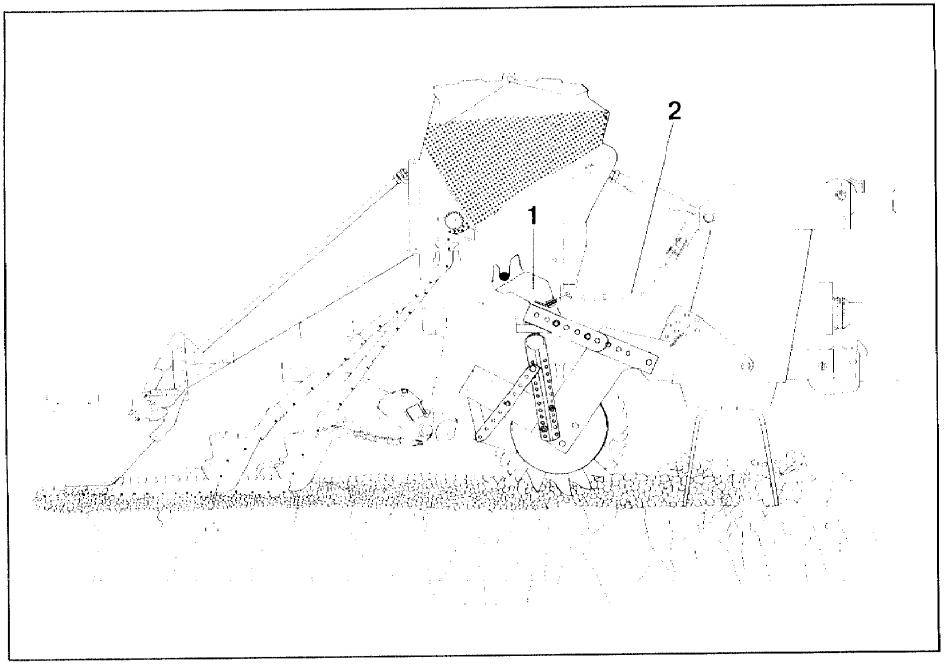


Fig. 28

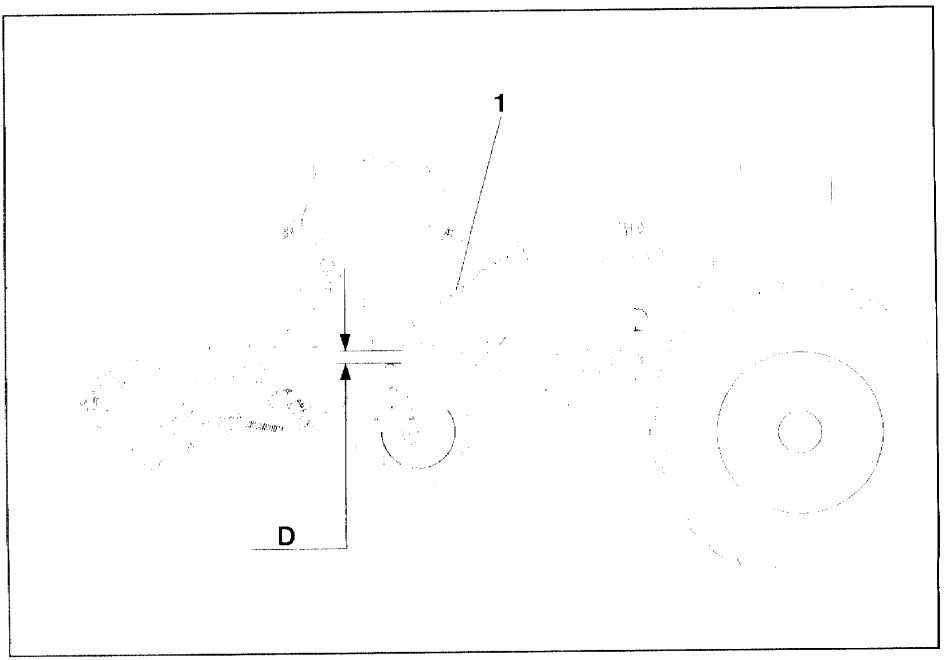


Fig. 29

7.2 Transporting the Pack Top seed drill in combination with soil tillage implements of other manufacturers

For operating with soil tillage implements of other manufacturers it is necessary to transfer the Pack Top seed drills weight into the stronger frame of the soil tillage implement. The strength of the packer rollers of other manufacturers usually is not sufficient to bear the additional weight of the Pack Top seed drill in transport position (Fig. 29). Therefore in transport position the packer roller should stay load-free.

When turning on the headlands or for road transport, the tractor's hydraulic first lift the soil tillage implement. The chains (fig. 29/1) will increasingly become tight the higher the combination is lifted. As soon as the chains are fully tensioned the Pack Top seed drill is lifted by the coupling frame whereby the weight of the Pack Top seed drill is taken from the packer roller. Only after a clearly visible distance "D" (Fig. 29) between packer roller and Pack Top seed drill also the packer roller is becoming lifted.

After the road transport or after turning on the headlands the individual implements of the till- and drill-combination become lowered into the operation position in vice versa order.

7.3 Soil tillage implements with rigidly mounted packer roller

The principle described under para. 7.1 for preventing damages to the soil tillage implements, tines and gear box elements can only function when the soil tillage implement and packer roller are **not rigidly** mounted to one another.

At soil tillage implements of some manufacturers the packer roller is rigidly fixed to the soil tillage implement. This means that also the rigidly fixed packer roller and thus the Pack Top seed drill mounted to it is simultaneously lifted when the soil tillage implement is pushed out of the ground to pass an obstacle. The stone safety as described under para. 7.1 will not function at this kind of soil tillage implement.

For this reason the Pack Top seed drill can in transport position also not be lifted off the packer roller. The "visible distance D" (Fig. 29) between the packer roller and Pack Top seed drill will not be achieved.

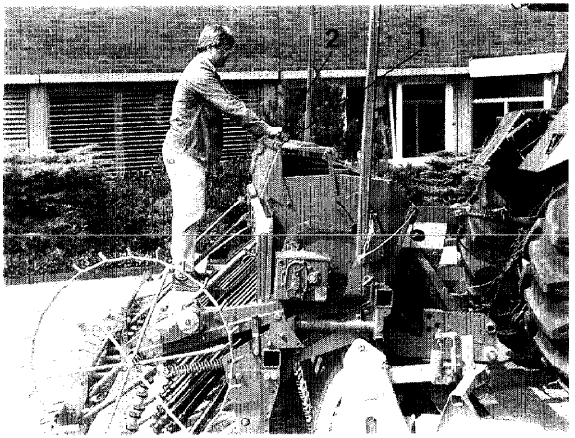


Fig. 30

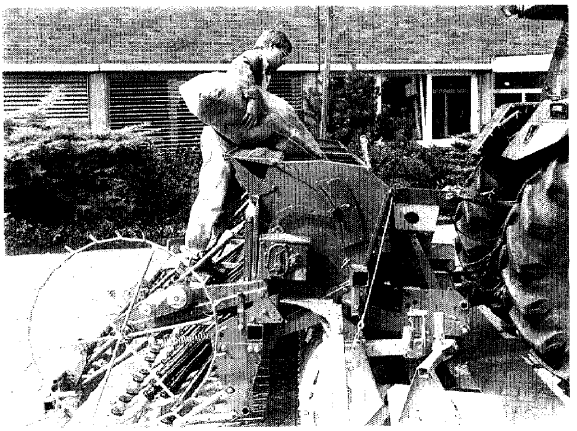


Fig. 31

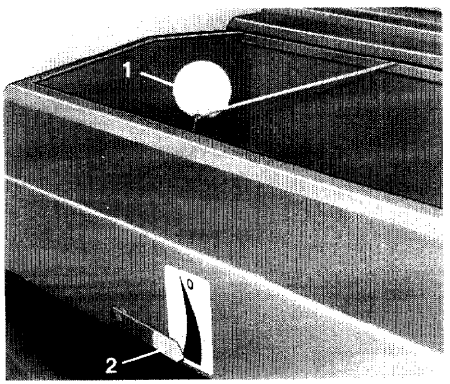


Fig. 32

For opening the seed box the folding lid should be pulled with both hands centrally on the grip rail (Fig. 30/1) or on the grip rails of the AD 402 (Fir. 30/2) to the rear.

Before filling the seed box
the Pack Top seed drill should be fitted to the soil tillage implement.

If the seed drill has been supplied with a seed box extension with hydraulic filling auger make sure the hydraulic's drive is stopped before opening the seed box.

Normally the filling of the relatively low positioned seed box is done from the back of the Pack Top seed drill. It is easier to fill the seed box from a loading step as shown in Fig. 31. It is also possible to fill the seed box from one side from a trailer when having equipped the Pack Top seed drill with the seed box extension with filling auger (see option).

Note:

the seed level indicator's ball (Fig. 32/1) is automatically lifted when the seed box cover is opened. For filling the seed box please note that no heavy items are placed on the ball of the seed level indicator.

Hint:

When the pointer (Fig. 32/2) at the front wall of the seed box is nearing the "0"-mark the seed box should be refilled. Never operate till the seed box is completely empty as this may cause varying seed rates by uneven distribution of seed inside the seed box.

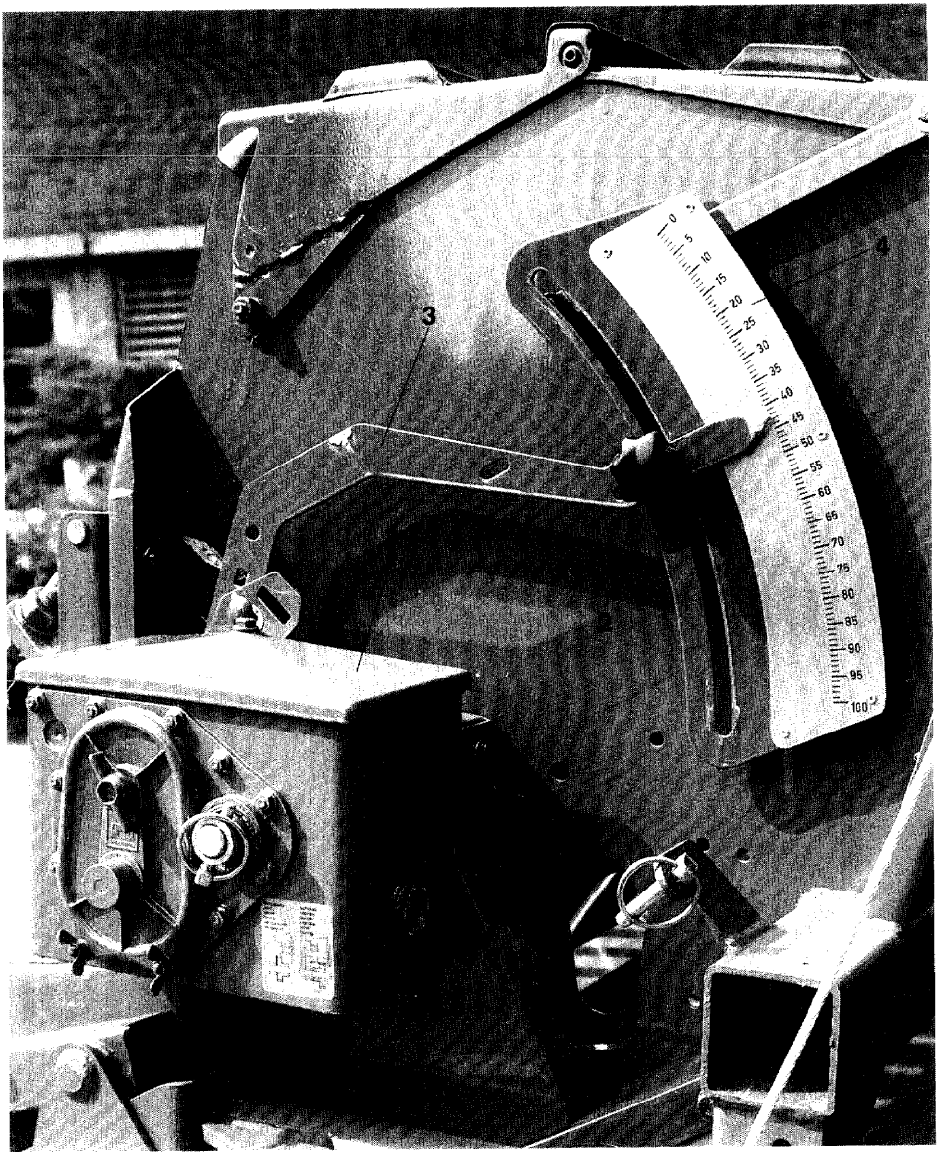


Fig. 33

9.0 Setting the seed rate

For setting the seed rate the following settings should be used - see:

Para. 9.1: Setting the seed rate by the setting lever of the gearbox;
Para. 9.2: Setting the shutter slides;
Para. 9.3: Setting the bottom flaps

The seed rate table shows all necessary setting data for the individual seed.

9.1 Setting the seed rate by the setting lever of the gearbox

For setting the seed rate at the gearbox (Fig. 33/1) the star knob (Fig. 33/2) of the gearbox setting lever (Fig. 33/3) should be slackened by turning it counter clockwise and be pushed **from below** into the setting position as prescribed in the seed rate table. Hereafter re tighten the star knob firmly.

Attention:
The seed rates shown in the setting table (kg/ha) can only serve as reference values. Deviations may occur from these reference values caused by the size, shape, bulk density of the grain and by the dressing agent. Therefore prior to any sowing always perform calibration trials to accurately determine seed rates.
Using the stepless variable free wheel gear box (Fig. 33/1) the speed of the metering wheel shaft and thus the seed rate is set steplessly. The higher the figure shown on the scale (Fig. 33/4) chosen by the gear box setting lever the bigger the seed rate.

Advice:
A stepped gear is integrated inside the free-wheel clutch variable gearbox (Fig. 33/19: By turning a sprocket inside the gearbox a slower or faster speed range of the metering shaft can be set. **The machine is supplied by the manufacturer with the gearbox set to the slower speed.** The gearbox setting figures in the setting chart are approximate for the calibration test in the slow speed. When wanting to drill unusually high seed rtes at large row spacings it may occasionally occur that the desired seed rate cannot be achieved even at the gearbox setting "100". Only in such a case should the high speed be set. Regarding this you may find the detailed description under para. 11.1. However, it is recommended whenever possible **to drill in the low gear**.

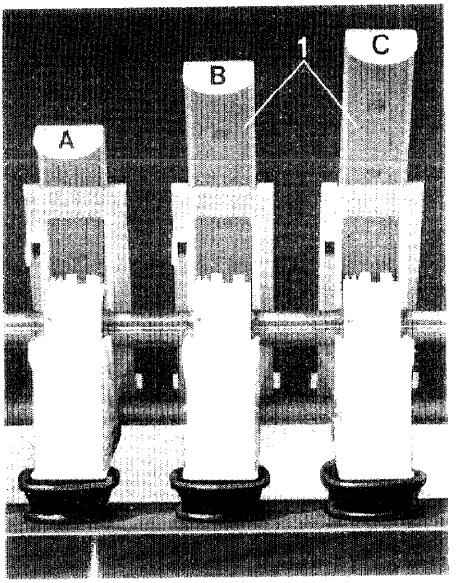


Fig. 34

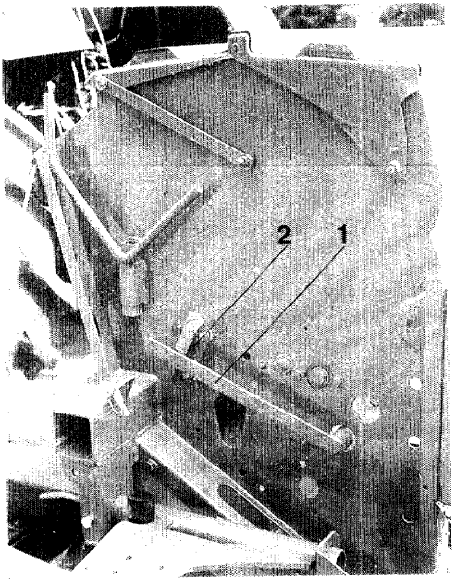


Fig. 35

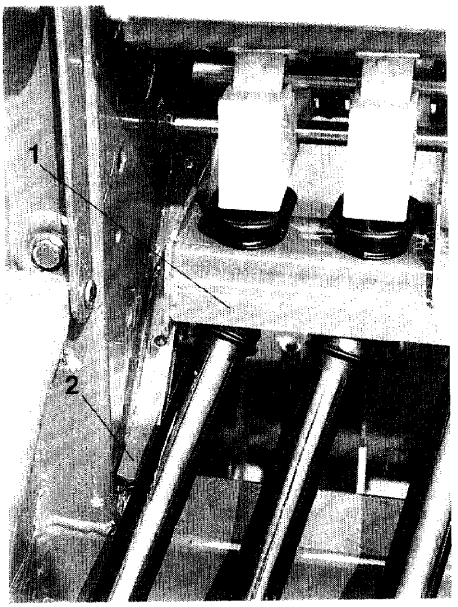


Fig. 36

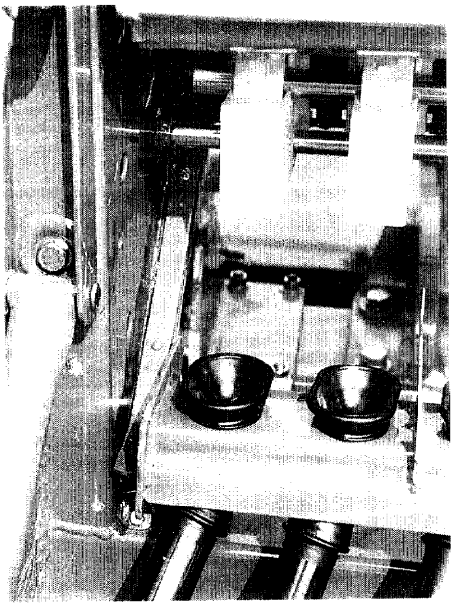


Fig. 37

9.2 Setting the metering wheel shutter slide

The varying flow properties of seed require different shutter slide positions which may be found in the setting chart for the individual type of seed. Accordingly the shutter slide (Fig. 34/1) may be brought into one of the three possible positions on the metering wheel housing.

Fig. 34/A	Fig. 34/B	Fig. 34/C
closed	3/4 open	open

9.3 Setting the bottom flaps

The bottom flap control lever (Fig. 35/1) is located on the left hand side of the machine (opposite to the gear box location). The varying sizes of seed require matching bottom flap clearance below the metering wheel. The lever (Fig. 35/1) allows the setting of 8 different bottom flap positions at the adjustment plate (Fig. 35/2).

The required position of the bottom flap control lever for the relative type of seed may be found in the seed rate setting chart. For some seeds two figures are given. The first figure is then related for seeds with a 1000-grain-weight (TGW) of more than 40 grams, the second figure for a TKG of below 40 g.

10.0 Calibration test

The calibration test should be done to ascertain whether the required seed rate is really achieved.

The calibration test should always be conducted prior to sowing a new delivery of seed.

The Pack Top seed drill may be calibrated stationary by following the succeeding steps:

- **For calibrating fill the seed box at least to one half with seed.**
- Lower the seed tube fixing rail (Fig. 36/1) as shown in Fig. 37 into the guide rails below. For this the seed tube mounting rail (Fig. 36/1) should be lowered as shown in Fig. 37 in the guide rails. For this briefly lift the lock keys (Fig. 36/2) at the guide rails.

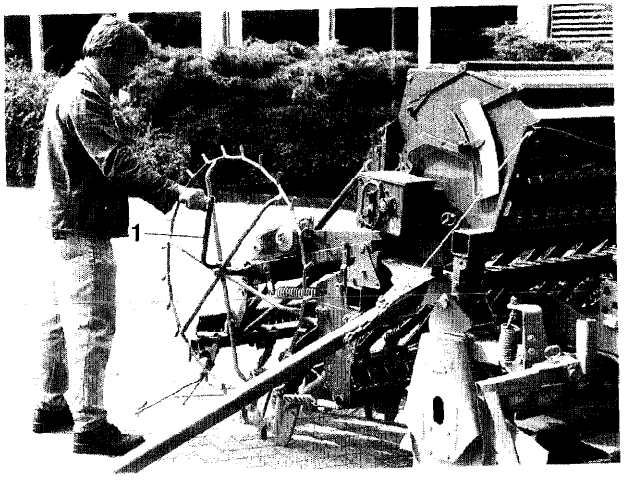


Fig. 38

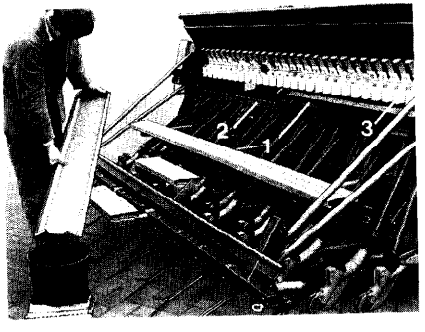


Fig. 39

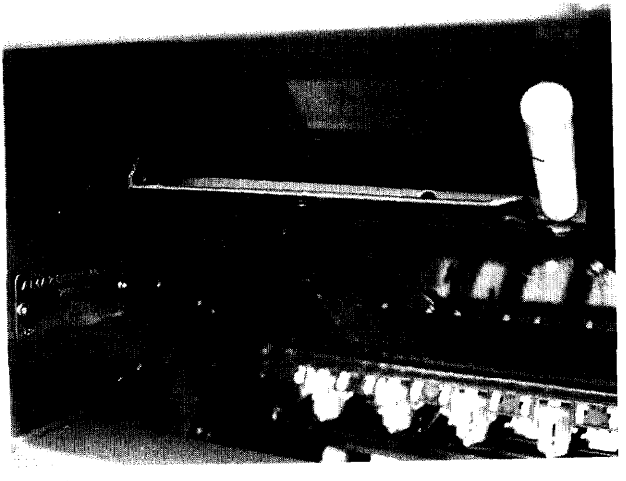


Fig. 40

- Place calibration trays (Fig. 39/1) onto the seed tube mounting rail (Fig. 39/2).
- Close all shutter slides (Fig. 34) of the metering wheel housings which are not needed.
- Please make sure that the indicator wheel of the tramlining control box (Fig. 84/3) is **not in position "0"**during the calibration test as otherwise no seed will be delivered by the metering wheels responsible for the tramline.
- Now conduct the three basic setting using the figures which may be taken from the setting chart, i. e.:

  Para. 9.1: Setting the seed rate at the gearbox setting lever
  Para. 9.2: Setting the metering wheel shutter slides
  Para. 9.3: Setting the bottom flaps.

For seeds which are not mentioned in the setting chart use the figures of a seed with similar grain size.

- Insert calibration crank (Fig. 38/1) into the bush provided at the star wheel and start turning clockwise until seed is flowing from **all** metering wheel housings (Fig. 39/3) which are left open for sowing into the calibration trays.
  To ensure proper filling of the seed metering housings prior to the calibration test continue to turn the crank until the calibration trays are nearly filled and then empty them into the seed box again. For fine seeds the calibration trays need not be fully filled; about 200 crank turns will be sufficient.

For quick access the calibration crank (Fig. 40/1) is placed in front of the seed box behind the gearbox of the seed drill.

- Conduct the calibration test with the number of crank turns as advised under para. 10.1.

Usually the calibration test is conducted for 1/40 ha. Only for very small seed rates, e. g. for rape etc. and when using imprecise scales the calibration test for 1/10 ha has advantages.

- Weigh the seed collected in the calibration trays (Fig. 39) during the calibration test.
- If the calculated seed rate (kg/ha) determined according to para. 10.2 of the first calibration test does not correspond to the desired seed rate it is no longer necessary to repeat the calibration tests until the desired seed rate has been found. AMAZONE has developed a seed rate calculation disc rule as shown on page 48, Fig. 43, with the aid of which the setting figure for the second calibration test can easily be determined (see para. 10.4).

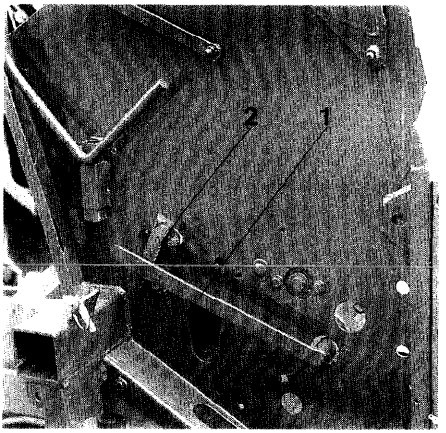


Fig. 41

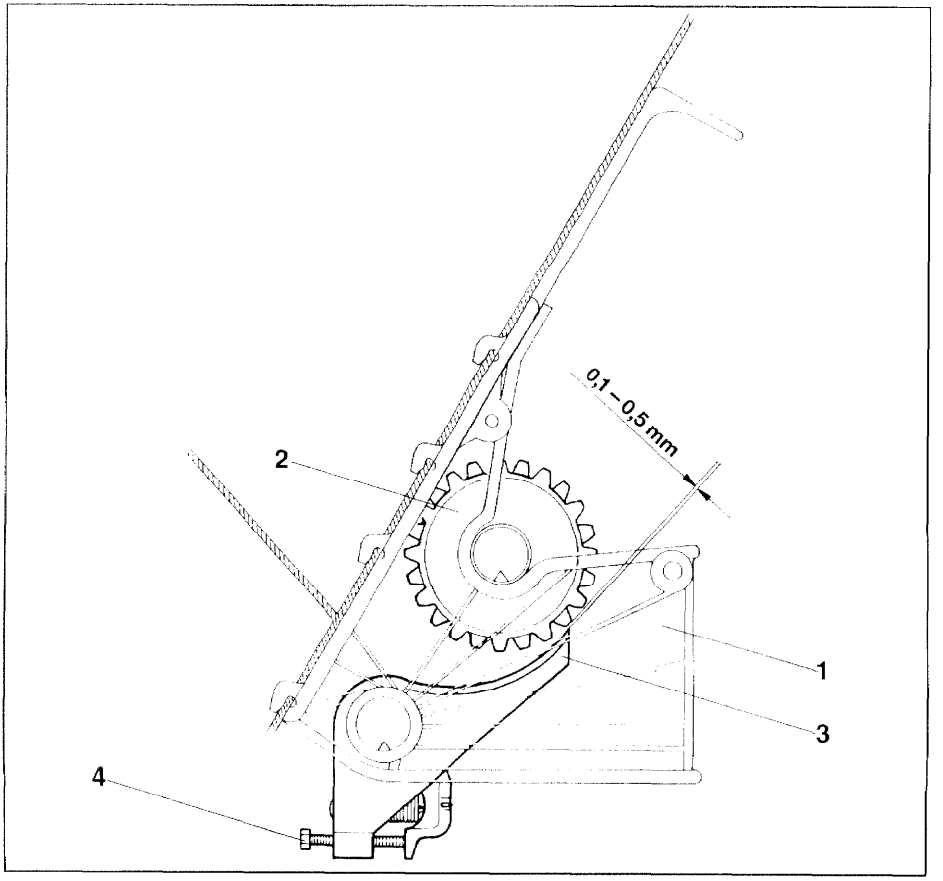


Fig. 42

Advice which you should note:

- Only once, when using your seed drill for the first time!
  Repeat the calibration test after having sown approx. 1 ha as at new machines the surfaces of the metering wheel housings of new machines are changed by dressing stain whereby the flowing properties of the seed and thus the seed rate is influenced.

- **At seeds which were dressed by dry (powder) dressings** the **calibration test** should be **repeated** after two or three seed box fillings.
- When the factor pre-set individual bottom flaps become incorrectly set it may lead to uncontrollable additional quantities of seed during sowing. **Therefore the basic setting of the bottom flap should be checked** prior to every sowing period at an empty seed box and metering housing as follows:

  1) Bring bottom flap lever (Fig. 41/1) at the setting plate (Fig. 41/2) into position "1".
  2) Check whether the prescribed spacing of 0.1 mm to 0.5 mm (see Fig. 42) between the bottom flap (Fig. 42/3) and metering wheel (Fig. 42/2) of each metering wheel housing is maintained. For this the metering wheel to be checked should be turned by hand on the metering shaft.
  3) In case of deviations set the prescribed spacing at the spring tensioning screw (Fig. 42/4).

Important hints
for the calibration test at AMAZONE Pack Top seed drills AD-2 with star wheel

AMAZONE Pack Top seed drill with large working widths are equipped with larger diameter star wheels to provide the necessary higher driving forces. The star wheels (Fig. 42a) therefore are supplied in to varieties, i. e.:

1. Star wheel with 1.02 m diameter
2. Star wheel with 1.18 m diameter

Before starting the calibration test please find out which of the two star wheels is supplied with your Pack Top seed drill. Conduct the calibration test with the correct number of crank turns which you may take from the table in para. 10.1.

10.1 Number of manual crank turns for calibration test

The number of crank turns to be conducted is equivalent to an area of 1/40 ha (250 sqm) or 1/10 ha (1000 sqm).
In the following table the number of crank turns is mentioned for the various available seed drill widths:

AMAZONE Pack Top seed drill AD-2				
Working width	Crank turns at star wheel 1.02 m Ø		Crank turns at star wheel 1.18 m Ø	
2.50 m	31.0	125.0	26.5	105.5
3.00 m	26.0	104.0	22,0	88.0
4.00 m	19.5	78.0	16.5	66.0
4.50 m	17.5	69.5	14.5	58.5
on	1/40 ha	1/10 ha	1/40 ha	1/10 ha
Conversion factor	78	312	66	264

10.1.1 Calculation of the number of crank turns for other working widths

With the conversion factor from the table above the number of hand crank turns for other working widths may be calculated as follows:

$$\text{Number of hand crank turns on 1/40 ha (250 sqm)} = \frac{\text{conversion factor}}{\text{(working width (m)}}$$

$$\text{Number of hand crank turns on 1/10 ha (1000 sqm)} = \frac{\text{conversion factor}}{\text{(working width (m)}}$$

10.2 Calculating the seed rate in kg/ha by the collected weight of seed

The seed collected in the calibration trays is weighed and multiplied by factor "40" for 1/40 ha) or by factor "10" (for 1/10 ha). The calculated result corresponds to the seed rate in kg/ha.

At 1/40 ha calibrated seed rate x 40 = actual seed rate in kgs/ha
At 1/10 ha calibrated seed rate x 10 = actual seed rate in kgs/ha

Usually the first calibration test does not bring the desired seed rate. The correct gearbox setting figure,, however, can easily be determined with the values from the first calibration test with the aid of the enclosed seed rate calibration disc rule (see para. 10.4).

10.3 Deviations between the calibration test and the actual seed rate

1. The most frequent cause for deviations between the calibration test and the seed rate lies in the following properties of the seed during sowing. These changes in the flowing properties result generally from reactions of the dressing agents on ambient conditions such as temperature, humidity or abrasion. Such changes in the flowing properties of the seed become especially evident when the bottom flaps are not set properly. If the bottom flaps leave too wide a gap an uncontrollable additional flow of seed can occur during sowing especially if it is assisted by a machine bouncing which was not simulated while conducting the calibration test. For this reason the basic adjustment of the bottom flaps should be checked at regular intervals. More details you may find under para. 33.

2. Residue from dressing on the bottom flaps and metering wheels may also influence the flow properties of the seed and thus the seed rate. In such a case a balance will occur only after a long period and it is recommended to repeat the calibration test for checking purposes after 2 - 3 seed box fillings. Only then a balance situation will occur and the seed rate will not change any further.

3. on a field ready for sowing the star wheel often turns less than on the same distance on a firm ground one has assumed for determining the number of wheel turns that the star wheel on the field has about 5 % wheel slip. This is a value from experience which in most cases is applicable.

   On very light and loose soils, however, the slip at the star wheel may also be higher. On very firm, cloddy soils the slippage may be less than 5 %. This, for example, may also be the reason when deviations are noticed between ca ibration test and the actual seed rate sown. In such a case it is necessary to determine the number of wheel turns for the calibration test newly.

   Measure on the field an area of 250 sqm. This corresponds to a machine with:

2.50 m working width	=	100.0 m travel distance
3.00 m working width	=	83.3 m travel distance
4.00 m working width	=	62.5 m travel distance
6.00 m working width	=	41.7 m travel distance

   For the calibration test the calibration crank is put into the bushing of the star wheel and the number of crank turns will be counted when travelling over the measured distance. With this number of crank turns the calibration test now is conducted.

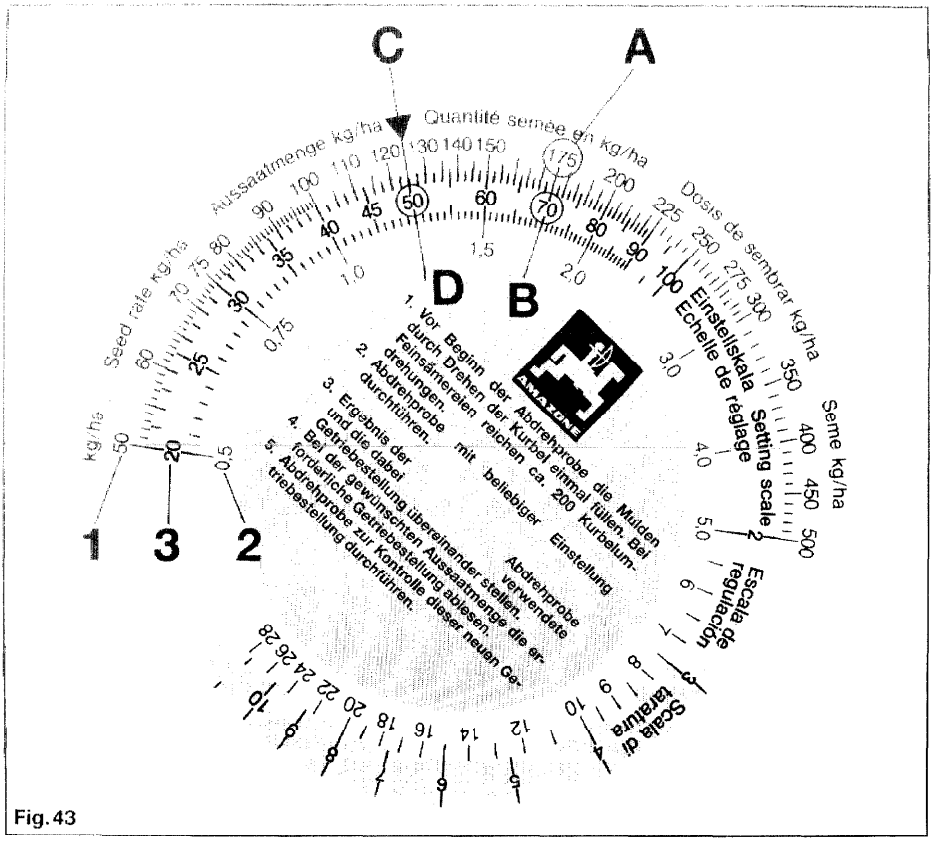


Fig. 43

1. Before beginning the calibration test fill trays by cranking. For fine seeds abt. 200 crank turns suffice.
2. Conduct calibration test with a setting of your choice.
3. Turn the disc until the weight figure determined by the calibration test is opposite to the gearbox setting figure used.
4. Now look for the desired seed rate figure. Opposite this you will find the corresponding gearbox setting figure.
5. To confirm this new gearbox setting a new calibration test is recommended.

1. Antes de comenzar con el ensayo, llenar una vez las bandejas mediante giro de manivela. Para semillas finas bastan aprox. 200 vueltas de manivela.
2. Realizar la prueba en vacío con cualquier número de posición de la transmisión.
3. Establecer la relación mediante el disco de cálculo, entre el peso recogido en la prueba y el número de posición de la transmisión.
4. Leer en el disco de cálculo, bajo la dosis deseada de siembra, el número de posición que la corresponde.
5. Realizar de nuevo la prueba con este nuevo número a fin de comprobar la exactitud de la dosis.

1. Avant d'étalonner, remplir 1 fois les augets à la manivelle (en graines fines, faire environ 200 tours)
2. Réaliser un étalonnage en choisissant un réglage arbitraire sur l'échelle de réglage du semoir.
3. Sur la reglette, faire correspondre la quantité obtenue en kg/ha avec le réglage initialement choisi.
4. Lire alors sur la réglette, le réglage à utiliser pour la quantité/ha souhaitée.
5. Réaliser un ultime étalonnage pour confirmer le réglage à *utiliser. Utilisation uniquement sur semoirs avec* **boîtier à double démultiplication.**

1. Prima d'effettuare la prova, riempire una volta le conche girando a manovella. Nel caso di sementi fini sono sufficiente circa 200 giri di manovella.
2. Effettuare la prova di taratura con valori a scelta.
3. Ruotare il disco facendo coincidere il peso determinato dalla prova di taratura con il valore di regolazione della scatola del cambio utilizzato per la prova stessa.
4. In corrispondenza al quantitativo di seme che si desidera distribuire.
Viene indicato il valore da utilizzare per la regolazione della scatola del cambio.
5. Cereare la convalida di questa nuova regolazione ripetendo la prova di taratura.

1. For indsåningen påbegyndes skal indsåningsbakkerne fyldes en gang med såsæd ved drejning på håndsvinget. Ved fin kornede frosorter er det tilstrækkeligt at dreje ca. 200 omdrejninger på håndsvinget.
2. Gennemfore indsåningsproven med vilkårlig indstilling.
3. Resultat af indsåningsproven og den derved anvendte gearkassestiling sættes over for hinanden.
4. Den krævede gearkassestiling aflæses ud for den ønskede udsædsmængde.
5. Indsåningsprove til kontrol af den nye gearkassestiling gennemfores.

10.4 Hints for sowing with the gear box setting number with the help of the disc rule (Fig. 43)

Usually the first calibration test does not bring the desired seed rate. However, with the values determined from the first calibration test it is easily possible to determine the correct gearbox setting number with the aid of the enclosed calculation disc rule (Fig. 43). The disc rule consists of three scales. An outer white scale (Fig. 43/1) for all seed rates above 30 kg/ha and an inner white scale (Fig. 43/2) for all seed rates below 30 kg/ha. On the middle coloured scale (Fig. 43/3) all gearbox setting numbers from 1 to 100 are given.

How to use the disc rule (example):

Desired seed rate 125 kg/ha

- From the first calibration test conducted at the gearbox lever setting of "70" (any other gearbox lever setting may also be chosen) the seed rate of 175 kg/ha was obtained.
- Now turn the inner disc until the obtained seed rate of "175 kg/ha" (Fig. 43/A) is in line with the related actual gearbox setting number of "70" (Fig. 43/B).
- Now read off the disc rule the necessary gearbox lever setting number for the required seed rate of 125 kg/ha (Fig. 43/C). In our example the correct setting number is "50" (Fig. 43/D).
- To be on the safe side you may check the new gearbox setting lever number by another calibration test.

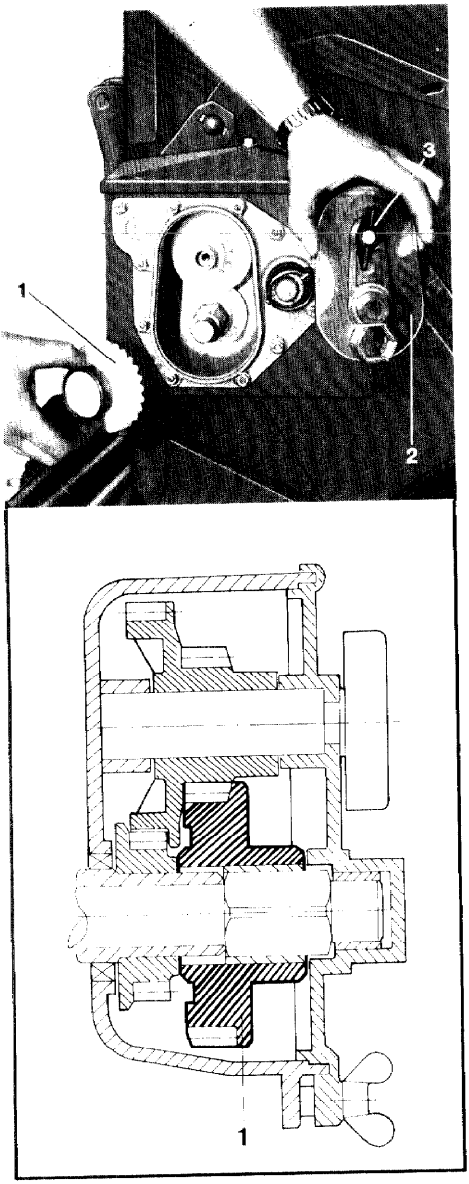


Fig. 44

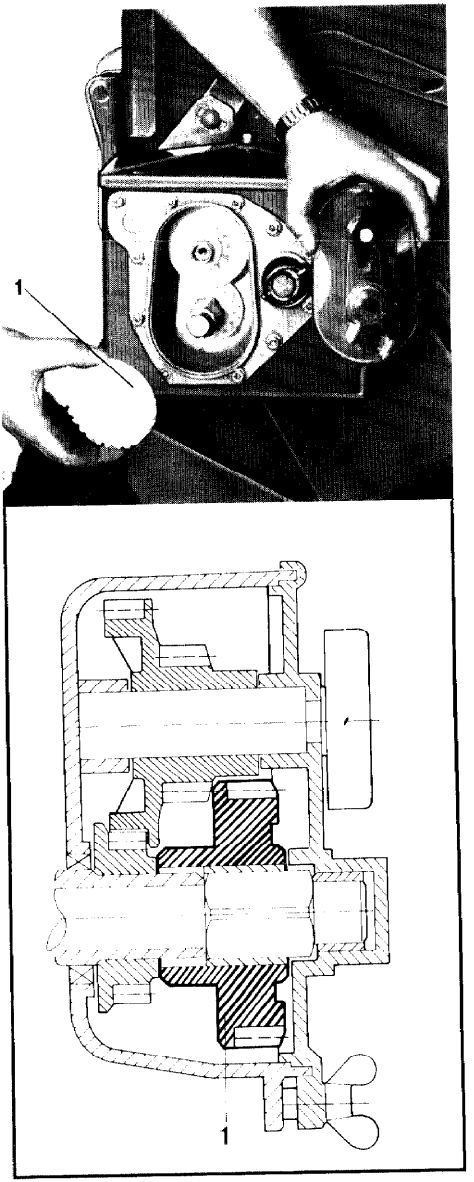


Fig. 45

11.0 Hints for sowing with the stepless variable gearbox with low/high rate adjuster

The AMAZONE seed drill gearbox (Fig. 45) allows a stepless change of the metering shaft speed and thus of the seed rate. Inside the gearbox housing an additional stepped gear is integrated. Two shaft speeds can be selected by turning a pinion of the low/high rate adjuster:

low speed (ref. Fig. 44)	high speed (ref. Fig. 45)

By changing the gearbox from low to high rate the setting range of the setting scale is increased. The factory supplies the gearbox always set on the low rate. The high rate should only then be used when a setting "100" on the scale in the low rate the desired seed rate cannot be obtained.

It is recommended to always drill in the low rate range

11.1 Setting the gearbox to high rate

If it is necessary to change the gearbox from low to high rate (speed) open the side cover (Fig. 44/2) at the gearbox housing by slackening the thumb bolt (Fig. 44/3) and the two thumb nuts.

Pull the lower pinion (Fig. 44/1) off the shaft and reinsert it after turning it as shown on Fig. 45/1). If it is impossible to remove the pinion by hand turn the metering shaft with a pair of pliers in the direction of rotation until the pinion can be removed easily from the shaft.

Whilst the pinion in the low rate setting (Fig. 44) is driven by the upper pinion, it is running free when in the right rate setting (Fig. 45). After changing the position of the pinions replace cover again.

Attention!
Whenever possible drill at low rate setting. After having drilled in the high rate setting put the pinion back into the low rate setting.

11.2 Determining the gearbox setting number after conversion of high rate setting

For determining the correct gearbox setting number after conversion of high rate setting conduct your first calibration test, e. g. with the gearbox setting number "50". With the weight of seed collected find your correct setting with the aid of the setting disc rule (see para. 10.4).
For the first calibration test the gearbox setting number can also be calculated by the seed rate chart as follows:
Divide the desired seed rate (kg/ha) by 3 and take from the setting table the setting number which corresponds to the calculated seed rate. Now conduct your first calibration test with this gearbox setting number.

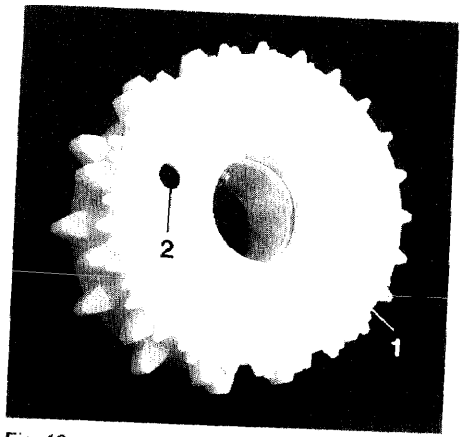


Fig. 46

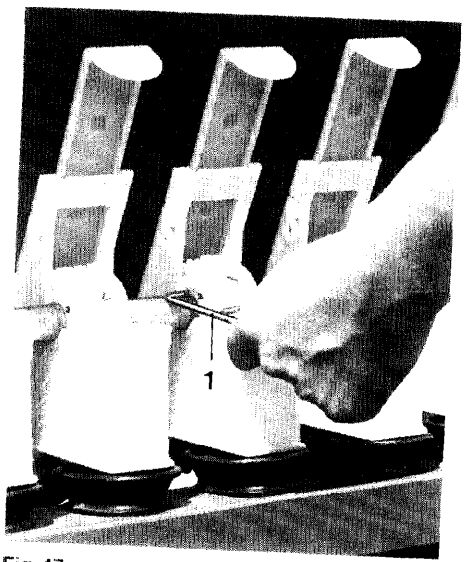


Fig. 47

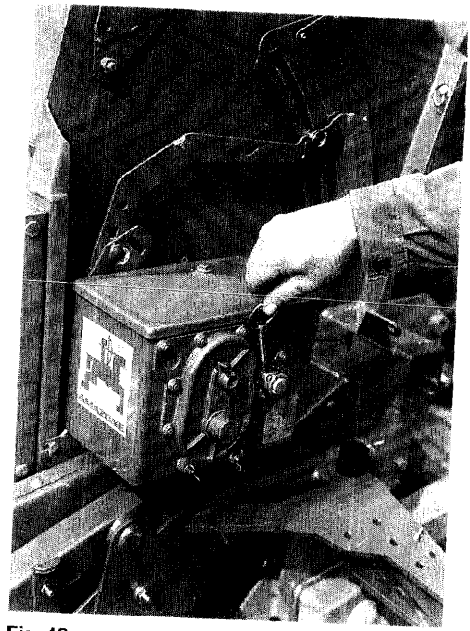


Fig. 48

12.0 Fine seed metering wheel: Sowing fine seeds

For sowing fine seeds each AMAZONE Pack Top seed drill type AD is equipped as standard with a combined normal and fine seed ELITE metering wheel (fig. 46/1).

During grain sowing normal and fine seed metering wheels are coupled and both rotate.

In order to convert the seed drill to sow fine seed move the gearbox setting lever (Fig. 48/2) repeatedly up and down until the holes (Fig. 46/2) of the fine seed metering wheels are visible. By the supplied key (fig. 46/2) disengage the pin inside the hole so that the normal metering wheel can rotate freely on the metering wheel shaft. Please also close those shutter slides which are not required for fine seed sowing.

If the seed shall be sown again with the normal metering wheel press the pin with the aid of the key back into the hole of the fine seed metering wheel.

12.1 Stopping agitator shaft: calibration test and sowing with non rotating agitator shaft

The fine seed metering wheel used in AMAZONE seed drills is especially well suited for sowing rape seed. Due to the intensive action of the agitator shaft, it may be that during the sowing operation the rape seed will stick together and hence may cause irregular sowing. We therefore recommend for sowing rape seed to stop the drive of the agitator shaft. To do this the coupling between the drive and the agitator shaft is disengaged by removing the clip pin (Fig. 48/1).

Deviations between the calibrated and the actually sown seed rate can occur when residue of the dressing agent sticks to the bottom flap and thus slows the flow of the rape seed. Before beginning with the actual calibration test fill the calibration trays by turning the crank at a high gearbox setting (about "80"). This will immediately cause the dressing agent to build up on the bottom flaps. Now, return the contents of the calibration tray and start with the actual calibration test. Due to the residue on the bottom flaps this test will be conducted under the same conditions as during later sowing. Thus deviations between the calibration and the actual sown seed rate will no longer occur.

To avoid weighing errors make the calibration test according to 1/10 ha (1000 sqm). Please use a suitable weighing scale (no spring scale please).

Note!

After sowing rape or green peas/bean seed do not forget to re engage the agitator drive by inserting the clip pin (Fig. 48/1). Otherwise errors may occur especially when sowing seed with beards or shoots in that the seed may cause bridging and thus result in inaccurate seed rates.

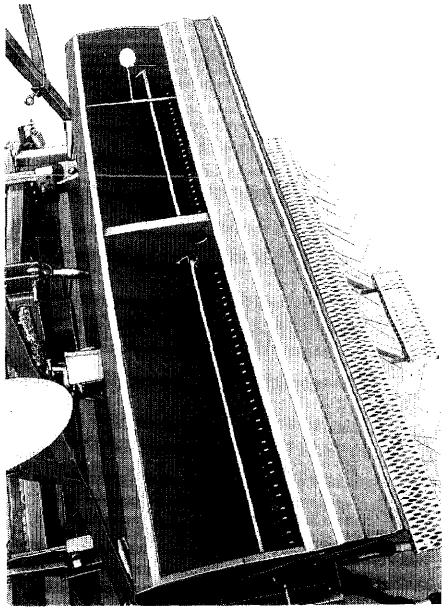


Fig. 49

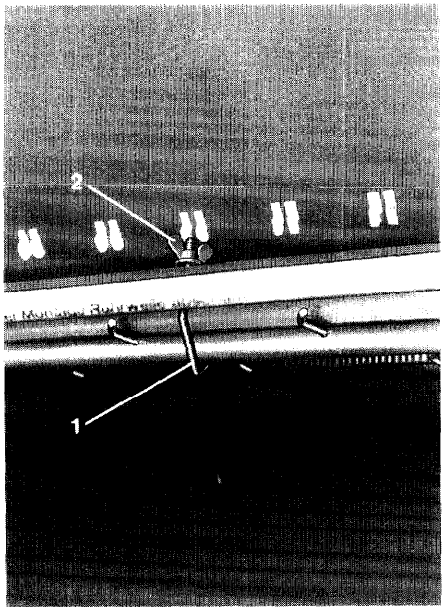


Fig. 50

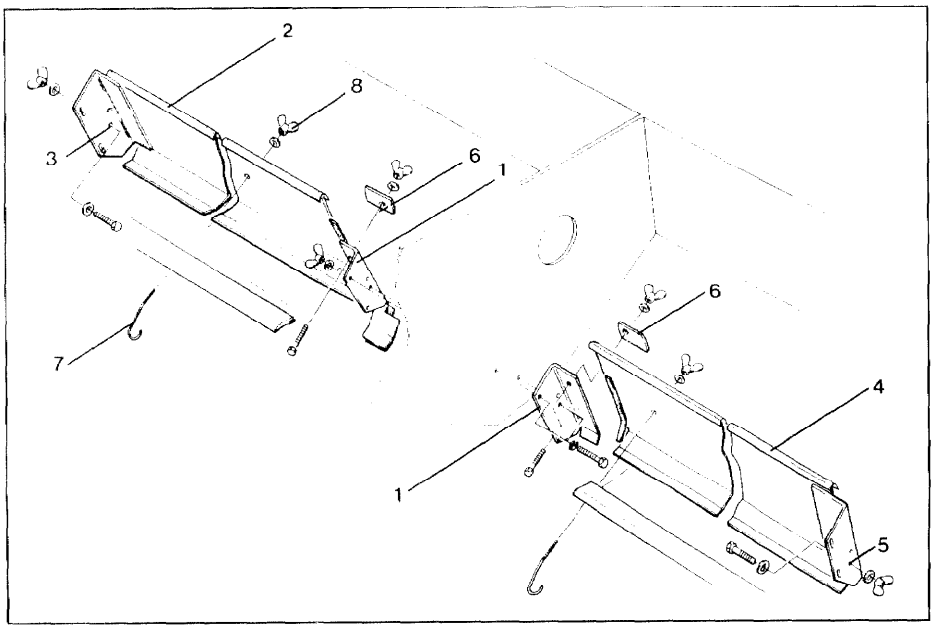


Fig. 51

12.2 Rape seed box insert (option)

For the AMAZONE Pack Top seed drill seed drills a rape seed box insert (Fig. 49) is available as option.

This seed box rape insert reduces the seed box volume considerably so that the rape seed can be almost completely metered out.

The seed box rape insert, of course, may also be used for other free flowing seeds which are sown in small quantities (with a stationary agitator shaft), i. e. for late turnip.

Before fitting the seed box rape insert the agitator shaft drive should be disengaged and the fingers of the agitator shaft should be placed in a vertical position. To do this remove the clip pin which connects the drive with the agitator shaft as shown in Fig. 61.

Attention!

The agitator shaft must be disengaged during the calibration test as well as during sowing as there is danger of breakage!

Fitting:

- Bolt on the middle side brackets (fig. 51/1) to the seed box central divider.
- Mount right hand seed box insert (Fig. 51/2) with hexagon bolt, 2 washers and wing nut to the right hand seed box outer wall. Use holes Fig. 51/3.
- Bolt on left hand seed box insert (Fig. 41/4) in the same manner to the left hand seed box outer wall. Use hole No. 51/5.
- Clamp rape insert boxes in the seed box centre by using the clamping brackets (Fig. 51/6).
- Mount each 2 hook bolts (Fig. 50/1. 51/7) in the middle of each insert between the agitator shaft and the rape seed insert box and tighten with wing nuts (fig. 50/2, 51/8).

For sealing off the seed box rape insert the side parts are provided with cellular rubber (black). However, should the seed still leak from the sides of the insert this area should be sealed off with the additional strips of cellular rubber.

Attention!

After sowing rape and having removed the seed box ape insert do not forget to re-engage the agitator shaft by inserting the clip pin (fig. 48/1). Irregular sowing may be caused due to blockage resulting from a stationary agitator shaft.

Replace the bolts of the seed box side parts after removing the seed box rape insert to avoid any leakage of the seed.

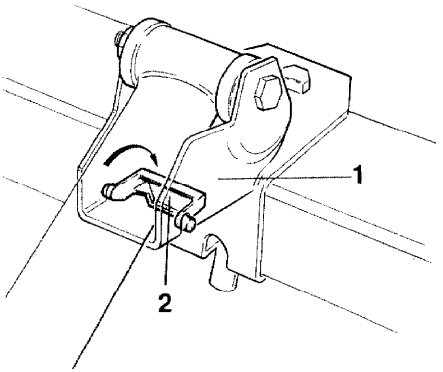


Fig. 52

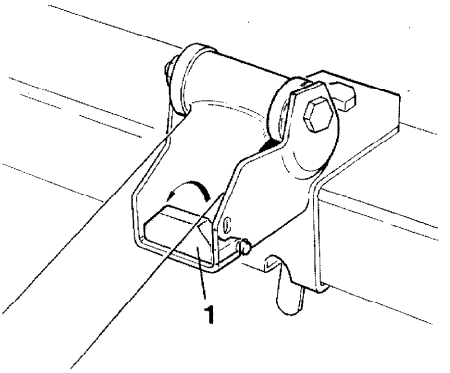


Fig. 53

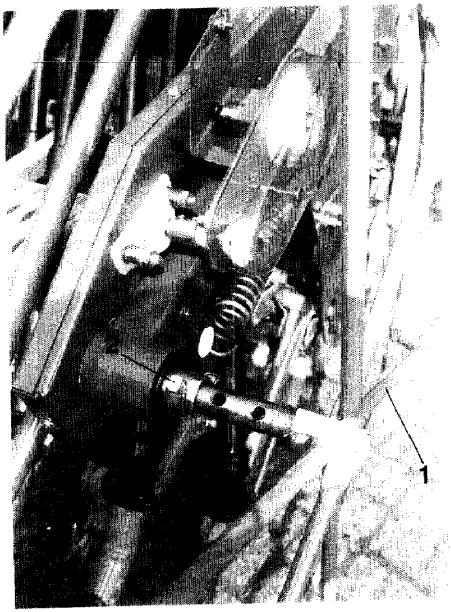


Fig. 54

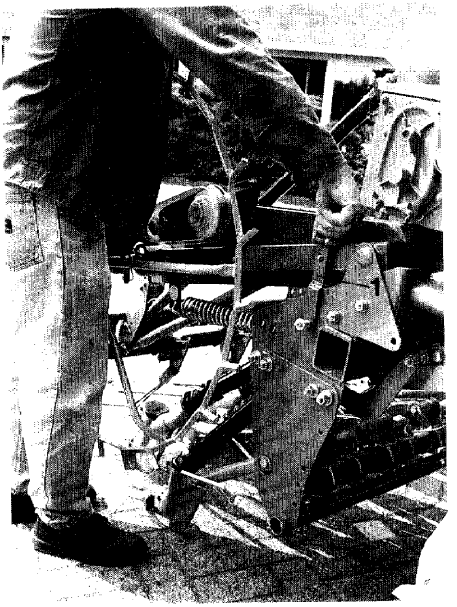


Fig. 55

13.0 Coulter lifting support

If it is intended to sow with larger row spacings than the seed drill normally has, such coulters may be lifted out of the ground which are not needed for sowing a particular crop. As illustrated in the figures 52 and 53 the coulter lifting support is integrated in the coulter hinge of each coulter. This polyethylene coulter support can be swung backwards (Fig. 53/1) only after having lifted the particular coulter high enough. This way the coulter stays in the raised position. Shall the coulter be brought back into an operational position lift it slightly to be able to swing the coulter lifting support forward as shown in Fig. 52/2 and lower it.

14.0 In the field

In the field the following settings should be conducted:

1. Pull out star wheel (Fig. 54/1) of the swivelable drive arm and fix it in a position by a lynch pin (Fig. 54/2) in the second or third hole as shown.

2. Hold the swivelable drive arm, pull the lever (Fig. 55/1) and lower the star wheel into working position.

Advice for road transport:

Lift the swivelable drive arm and secure it by the lever (Fig. 55/1).

Pull out lynch pin (Fig. 54/2) and push the star wheel fully into the retaining push off the swivelable drive arm and secure it there by a lynch pin (Fig. 54/2).

3. Bring markers (if existing) into operation position and set the automatic marker change over so that it starts to mark on the correct side.

4. Drill with the seed drill about 30 m on the field with the intended working speed. Thereafter check:
   - Placing depth of the seed. Re-adjust, if necessary, the coulter pressure as described in para. 15.
   - The operating intensity of the Extra Coverage Harrow (compare para. 16).

5. Set the tramling control box to the correct rhythm figure (see para. 23.00 ff and Fig. 84).

6. Set hectare meter to "Zero".

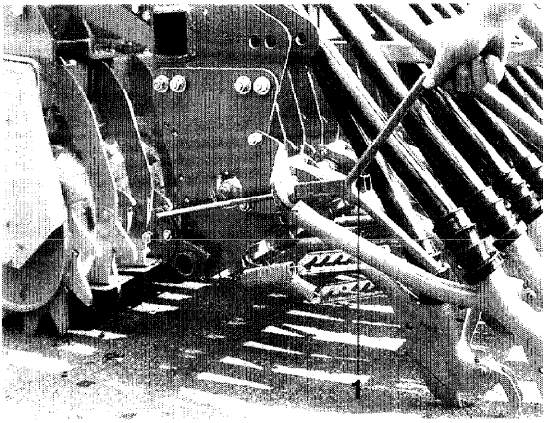


Fig. 56

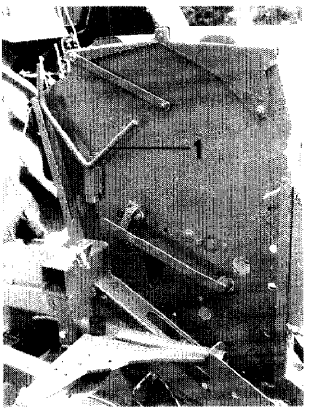


Fig. 57

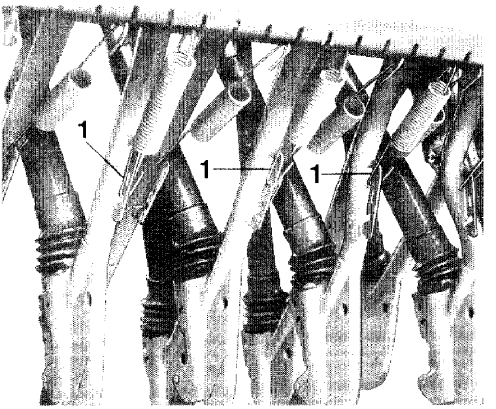


Fig. 58

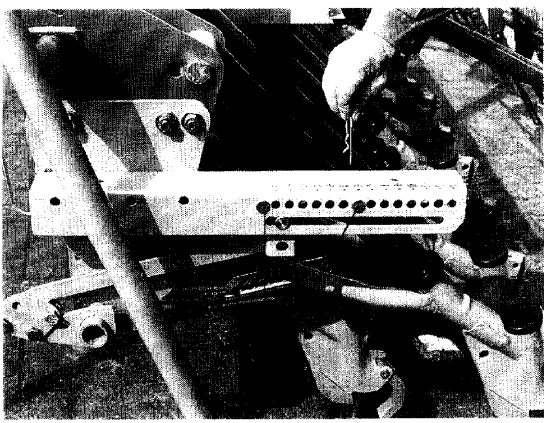


Fig. 59

15.0 Coulter pressure

One of the most important pre-conditions for high yields is the precise maintenance of the desired placing depth of the seed. The placing depth is determined by the coulter pressure.

The coulter pressure of all coulters can be set simultaneously and steplessly by a manual crank (fig. 56/1). For quick access the manual crank is placed on the left hand seed box side above the coulter pressure setting spindle (Fig. 57/1).

The coulter pressure of individual coulters can be re-adjusted if found necessary by simply hooking the spring (Fig. 57/1) into another rest.

15.1 Hydraulic coulter pressure adjustment (option)

The highest and lowest coulter pressure can be pre-selected by inserting two pins (Fig. 59/1) into the guide of the hydraulic ram. The tractor should be provided with a single acting hydraulic control valve. Once this hydraulic link-up is provided this hydraulic system could be supplemented with options which would logically and consequently be recommendable, especially on longer fields with changing soil structures such as the hydraulic remote seed rate control and hydraulic remote following harrow pressure control.

15.2 Checking the planting depth

For checking the planting depth travel about 30 m on the field with the later forward speed. Check the sowing depth and re-adjust the coulter pressure if found necessary.

If even with the lowest coulter pressure the sowing depth still is too deep, use options like depth limiters or band sowing shoes.

15.3 Special Options - (General Note)

All components listed under this heading are extras which do not form part of the standard equipment and must be ordered separately. However, they all can be fitted retrospectively, all mounting hoses and fixtures being available on the standard production tyre packer seed drill.
Note! As standard specification varies by country it is possible that some of the "special optional" equipment stated in the following is included in the scope of delivery of your machine and some of the "standard specifications" mentioned in this manual are left off.

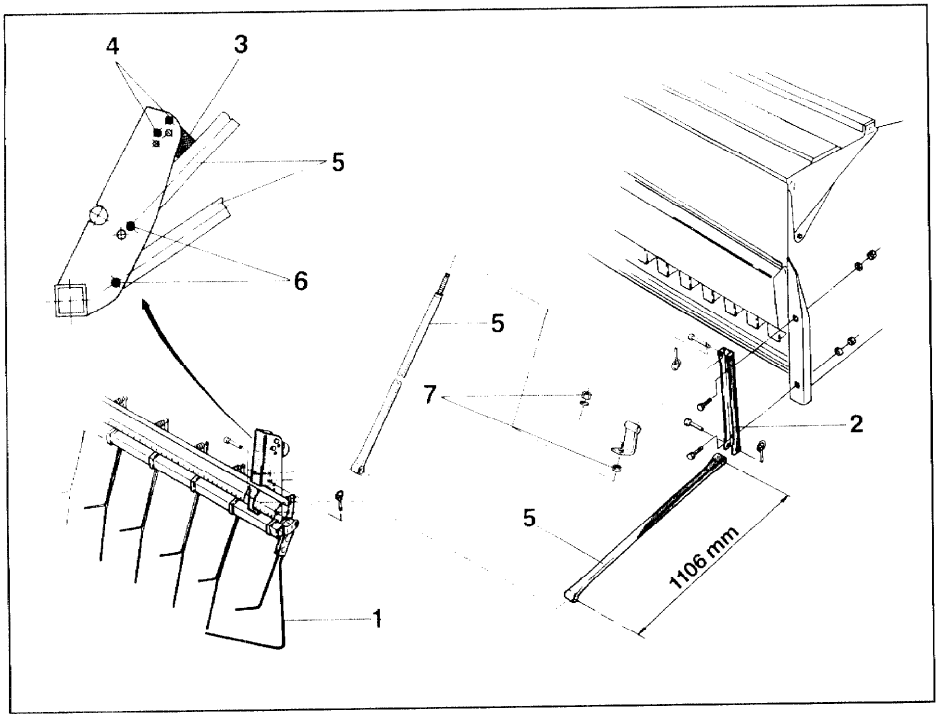


Fig. 60

Fig. 61

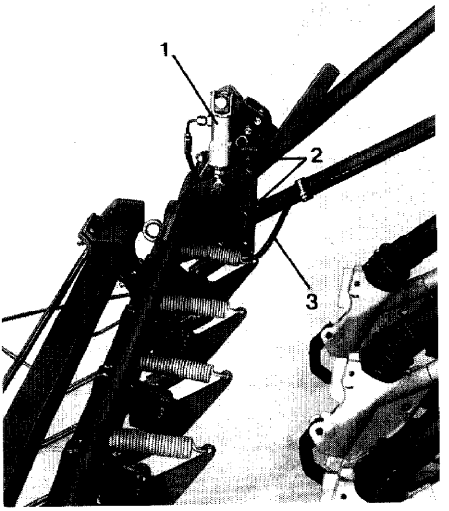


Fig. 62

16.0 Extra Coverage Following Harrow

After sowing the seed is evenly covered with soil by the Extra Coverage Following Harrow (Fig. 60/1). Like the roll disc coulters, the Extra Coverage Following Harrow operates totally without blocking even where there are large amounts of organic material (trash) on the field.

Fitting of the Extra Coverage Following Harrow.

As for transport reasons the Extra Coverage Following Harrow usually is being supplied loosely with the machine. The fitting is described in the following:

- Fit the corresponding number of mounting plates (Fig. 60/2) to the outer right hand and left hand part (at 4 m seed drills also in the centre) of the seed box. Bolt swing metal buffers (Fig. 60/3) into the holes (Fig. 60/4) of the harrow hinge plate as illustrated.
- Insert parallel guide rubes (Fig. 60/5) by pins to the hinging brackets of the Extra Coverage Harrow in the holes (Fig. 60/6) and of the mounting plates (Fig. 60/2). Secure all pins with lynch pins.

Setting to the correct working position:

Before commencing work two settings should be conducted:

1. The 'L'-shaped endings of the harrow tines should be set in such a way that they rest about level on the ground and are allowed to move downwards by approx. 5 to 8 cm. This is achieved by setting the length at the threaded end of the upper parallel tube by resetting the position of the nuts with a counter nut (Fig. 60/7).
2. Set the pressure of the 'L'-shaped endings of the harrow tines in such a way that now visible ridges of soil are left on the field after covering the seed. For changing the tine pressure of the Extra Coverage Harrow the position of the limiting pin - shown in Fig. 61 - can be changed by inserting it into another hole and by securing it. Use the calibration crank (Fig. 61/1) to overcome the spring tension. For checking the proper seed coverage travel approx. 30 m with the later on intended forward speed on the field.

Advice for road transport:

For road transport the **outer** harrow tine elements (Fig. 60/1) should be removed from the square tube by inserting and undoing the wing nut (Fig. 61/2) to avoid exceeding the permissible transporting width. Also put on traffic security board for the Extra Coverage Following Harrow as indicated in para. 31.

16.1 Hydraulic pressure control for Extra Coverage Following Harrow

With very changeable soil conditions it is practical to change - together with the coulter pressure - the pressure of the Extra Coverage Following Harrow (see para. 15.1). With the same hydraulic control valve simultaneously with the hydraulic coulter pressure adjustment also the following harrow tine pressure can be adjusted.

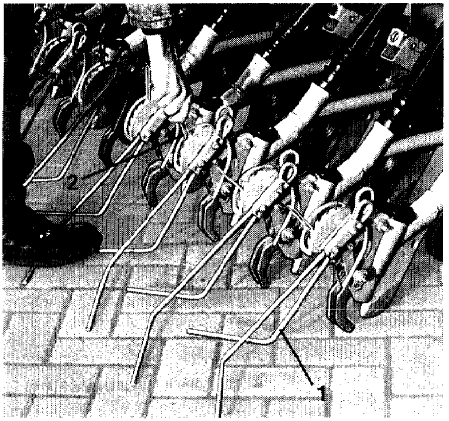


Fig. 63

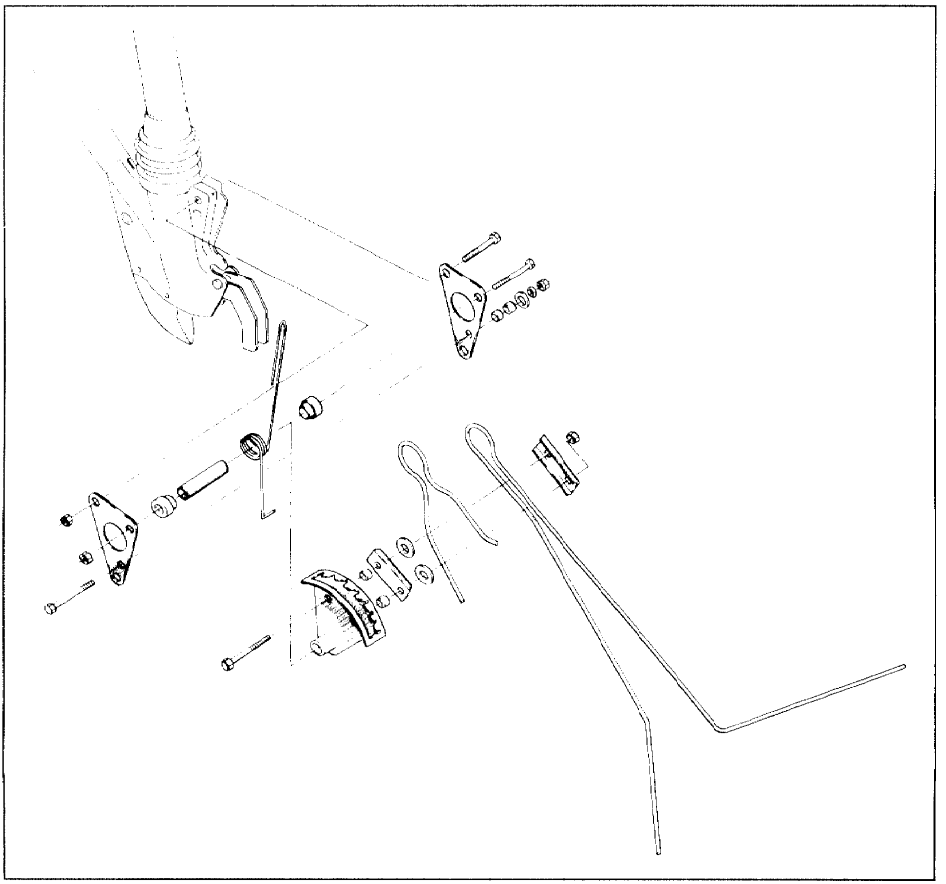


Fig. 64

For this purpose a hydraulic ram (Fig. 62/1) is mounted to the Extra Coverage Following Harrow. Then the pressure will be changed on the harrow at the same time as on the coulters. For the pressure control one single acting control valve is necessary at the tractor. By inserting two pins (Fig. 62/2) into the pre-selection hole plate a maximum and a minimum harrow pressure is pre-selected.

Attention!
Place the hydraulic hose (Fig. 62/3) with sufficiently large loops along the pivoting point of the following harrow mounting arms to avoid tearing the hose by the movement of the following harrow.

16.2 Single exact harrow

The single exact harrow (fig. 63/1) has the same extraordinary properties as the Extra Coverage Following Harrow. The seed is covered uniformly by soil.

The single exact harrow tines are fitted to the rear row of coulters (Fig. 64). Each of the single exact harrow tines is equipped with an adjustment segment. The following harrow pressure is set on every harrow tine by a lever (Fig. 63/2). The higher the lever is set, the higher the harrow pressure will get and this way it can be matched to the prevailing soil conditions.

An increasing of the single exact harrow pressure results only in a very little change of the sowing depth of the relative coulter. Should in exceptional cases the single exact harrow pressure increase result in a reduction of a sowing depth of the corresponding coulter the coulter pressure spring (Fig. 58/1) should be correspondingly hung in such a way that the coulter pressure of the long coulters is increased.

For checking the following harrow operation travel approx. 30 m on the field with the lateron intended operational speed. Check the sowing depth of the seed and the working intensity of the single exact harrow tines and readjust if necessary.

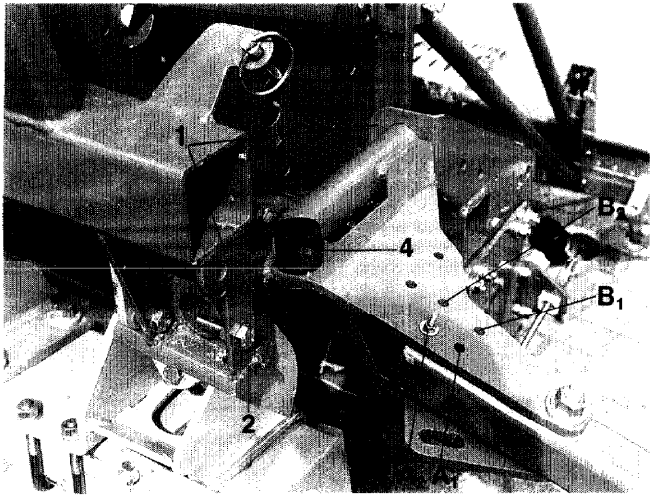


Fig. 65

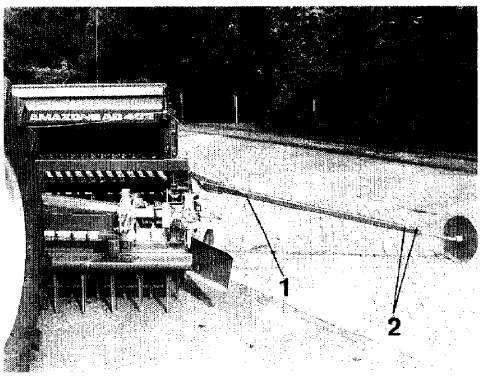


Fig. 66

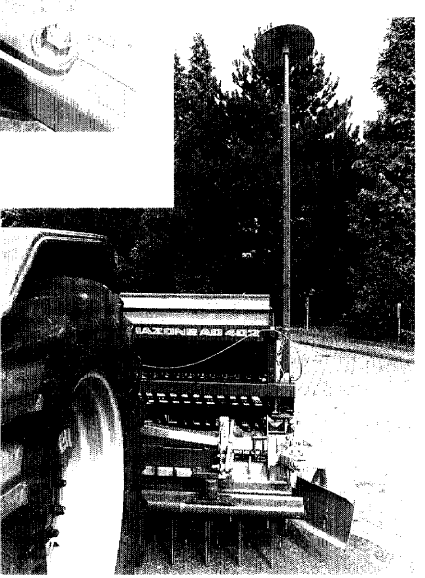


Fig. 67

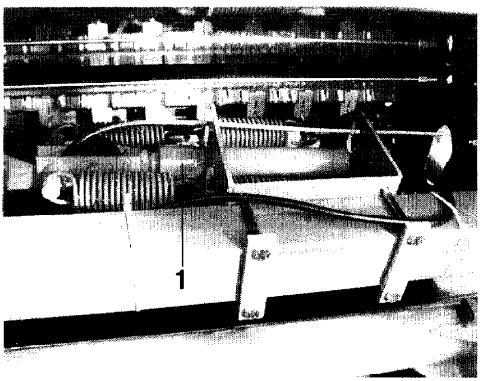


Fig. 68

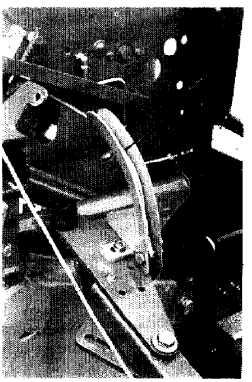


Fig. 69

17.0 Markers

At the AMAZONE Pack Top seed drill **the marker arms should be set to create a mark in the tractor's centre.**
Insert the marker arms into the carriers (Fig. 65/1). To do this the marker arm should first be inserted into the front and thereafter into the rear hole of the carriers and secured by a hexagon bolt (Fig. 65/2).
Affix steel cables to the marker (Fig. 66/1) and to the automatic marker change over (see para. 17.2) and secure. Fix the chain of the steel cable to the marker arm in such a way that the marker disc is limited to a working depth of 6 - 8 cm.
The length of the marker should be calculated as described in para. 17.4 and set. At the same time the marker discs should be set in such a way that on lighter soils they would be positioned parallel towards the driving direction and on heavier soils are set more aggressively ("on grip"). Tighten bolts (Fig. 66/2) to fix the markers in the desired position.

Should during operation the marker hit an obstacle it can give way to the rear. Thereby a **hexagon bolt M 6 x 90, 8.8 DIN 931** (Fig. 65/A_2) shears off. The shear bolt should be fixed as follows:

Hole (Fig. 65/A_1): for Pack Top seed drill up to 3 m working width Hole (Fig. 65/A_2): for Pack Top seed drill above 3 m working width

If your seed drill has been equipped with a filling auger correspondingly the holes B_1 and B_2 should be used.

⚠ **Advice for transport on public roads:**
For road transport the markers should be folded vertically as shown in Fig. 67 and secured by a lynch pin (Fig. 65/3). The rubber buffers (Fig. 65/4) prevent that the securing by lynch pins is forgotten.

Attention! When lifting the Pack Top seed drill for transport danger exists at some tractor types that the markers collide with the open tractor cab window. Close window before transport.

17.1 Hydraulic marker change over

The markers can additionally be equipped with a hydraulic ram each available as option (Fig. 68/1) for lifting and lowering the marker arms. For this the hoses of the hydraulic rams should be connected to two single acting control valves at the tractor. The switching over of the markers at the headlands is automatically done by the hydraulic marker change over.

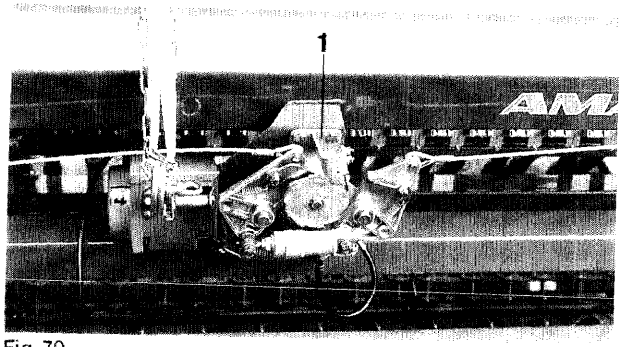


Fig. 70

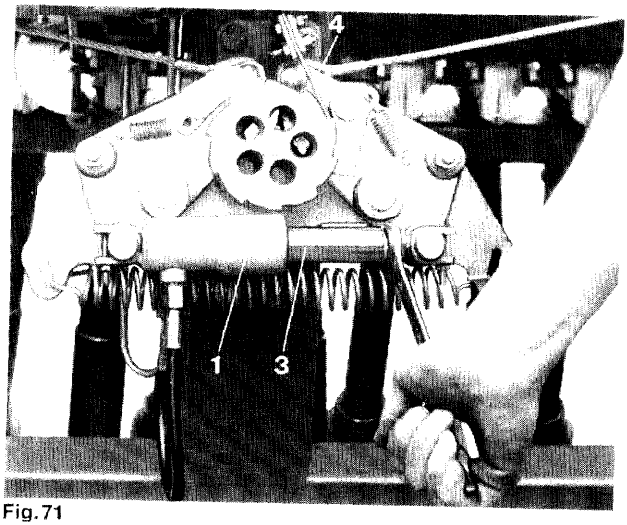


Fig. 71

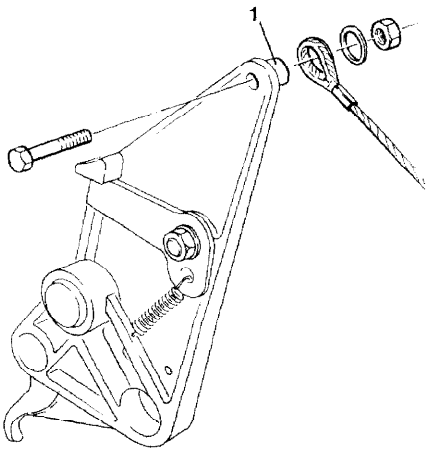


Fig. 72

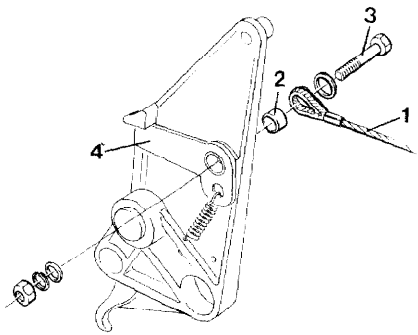


Fig. 73

Danger of injury!

When actuating the hydraulic marker change over make sure no one is near the marker discs on both sides. Danger of injury by moving parts!

At obstacles in the field the hydraulically controlled marker may individually be folded upwards. Strong return springs bring back markers into the working position after opening the corresponding control valve. Both markers are connected to the hydraulic ram by a steel cable (Fig. 69/1).

17.2 Hydraulic automatic marker change over

The changing over of the markers is done by the hydraulically actuated marker change over (Fig. 70/1), the hose of which is connected to a single acting control valve at the tractor. For changing over markers at the headlands the control valve is set on "lift". Both markers are then lifted upwards for the turning operation. After the turning the control valve lever is set on "lowering" so that then automatically the correct marker disc is lowered.

Bruising area!

When actuating the automatic marker change over make sure no one is standing within reach of the marker arms and markers. Danger of injury by moving parts.

Advice:
The cables which lead from the markers to the automatic marker change over are each fitted to the upper hole of the change plate (Fig. 72/1) of the automatic marker change over. At the Pack Top seed drill AD 402 the cable eyes (Fig. 73/1) each are slid over a spacer bushing (Fig. 73/2) and mounted with the bolt (Fig. 73/3) for the change over trip (Fig. 73/4).

17.3 Resetting the automatic marker change over

When supplied the automatic marker change over is set in such a way that it operates trouble free. After the first hours of operation it may perhaps become necessary to readjust the automatic marker change over slightly if the change over is no longer regularly and properly possible. In this case the hydraulic ram (Fig. 71/1) is pressurised. The counter nut (Fig. 71/2) on the eye bolt is slackened and the piston (Fig. 71/3) of the hydraulic ram turned with a fork wrench until the leaf spring (Fig. 71/4) at the automatic change over mechanism trips in and until a gap of 1 to 2 mm between the leaf spring and the tooth is obtained.

Now check by test change over whether the automatic change over mechanism has been set again properly. Hereafter the counter nut must be locked on the eye bolt of the hydraulic ram again.

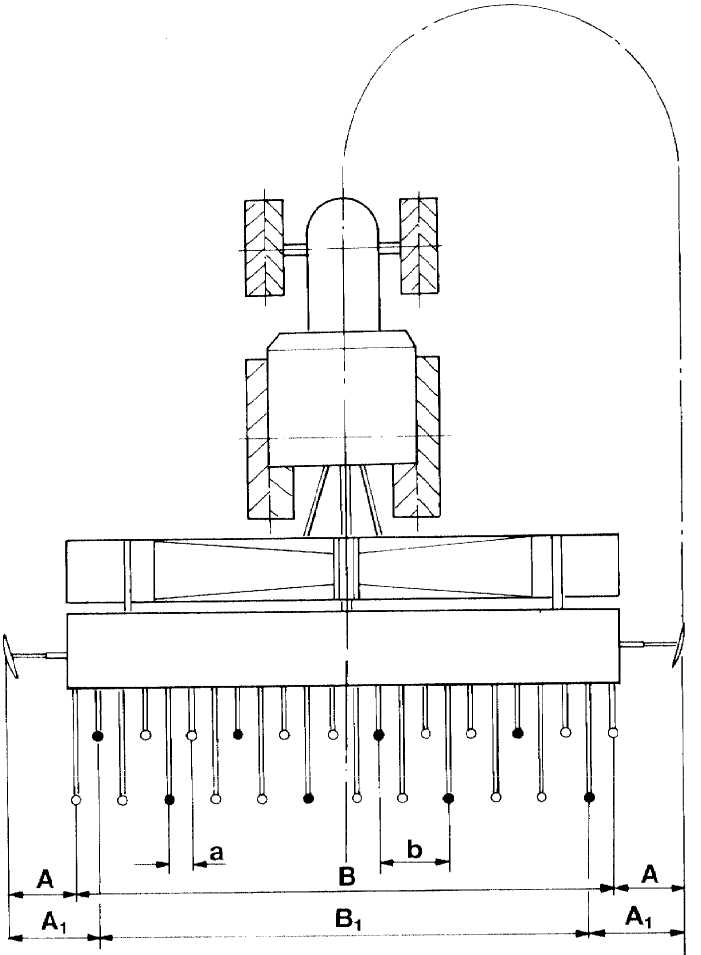


Fig. 74

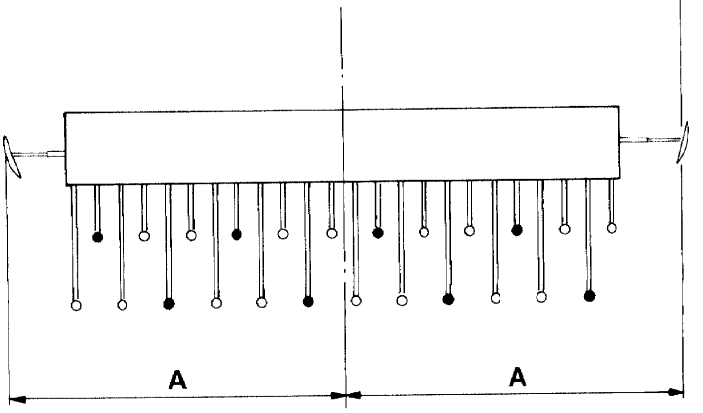


Fig. 75

17.4 Calculating the length setting of the marker arms

The length setting of the marker arms depends on the tractor wheel mark, the working width and the number of rows of the seed drill. **The markers are designed to create a mark in the centre between the tractor wheels as follows:**

a) Calculating the marker length for carving a mark in the tractor centre measured from the outermost sowing coulter

The correct marker setting measurement A (Fig. 74) may be calculated according to the following formula at **symmetrical** placement of the coulters:

$$\text{Marker setting measure A} = \frac{\text{Distance B of the outermost sowing coulters}}{2} + \text{Row spacing}$$

$$\text{Spacing B} = \text{Working width} - \text{Row spacing}$$

Example 1: If all coulters shown in Fig. 74 are sowing

Working width: 3.0 m Row spacing a: 12.5 cm
Number of rows: 24

Distance B = 300 cm - 12.5 cm = 287.5 cm

$$\text{Marker setting measure A} = \frac{287.5 \text{ cm}}{2} + 12.5 \text{ cm} = 156.3 \text{ cm}$$

Example 2: If only the coulters marked black in Fig. 74 are sowing

Working width: 3.0 m Row spacing b: 37.5 cm
Number of rows: 8

Distance B1 = 300 cm - 37.5 cm = 262.5 cm

$$\text{Marker setting measure A1} = \frac{265.5 \text{ cm}}{2} + 37.5 \text{ cm} = 168.8 \text{ cm}$$

b) Calculating the marker length for carving a mark in the tractor's centre measured from the seed drill's centre

With seed drills with a **symmetrical** placement of coulters the marker setting measure A (Fig. 75) measured from the marker disc to the drill's centre is:

AD 251:	Marker setting measure A = 2.50 m
AD 301:	Marker setting measure A = 3.00 m
AD 401:	Marker setting measure A = 4.00 m

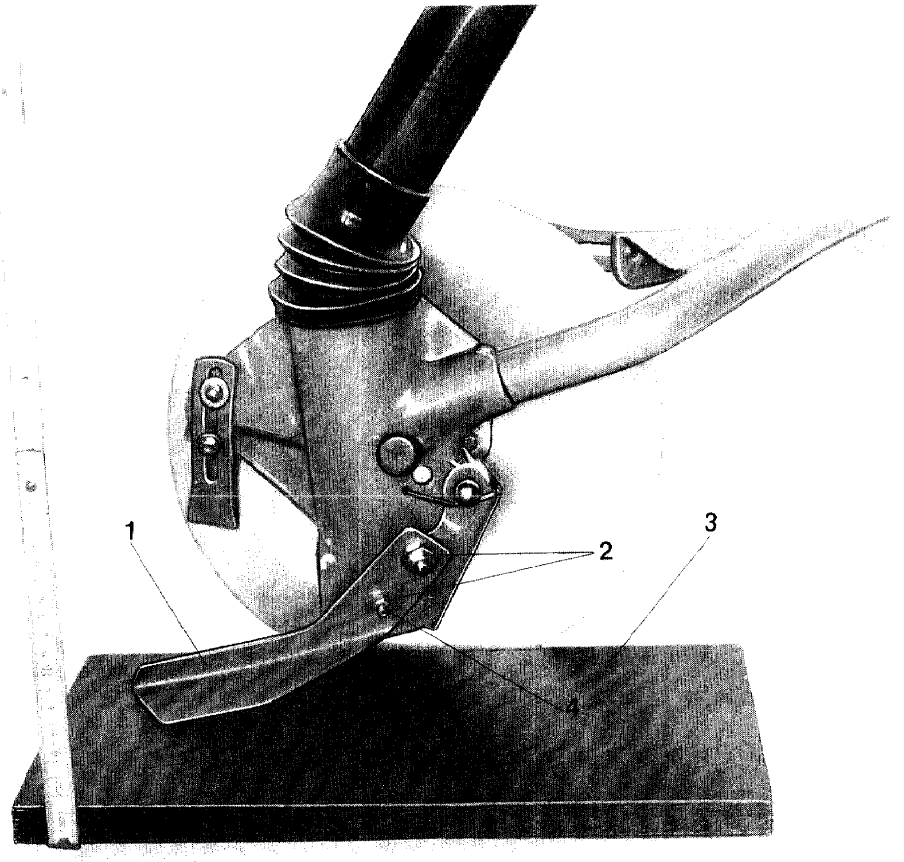


Fig. 76

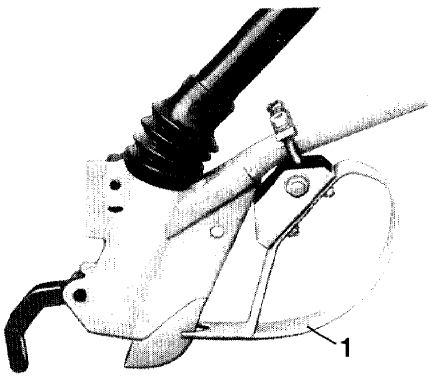


Fig. 77

18.0 Depth limiter of roll disc coulter

Roll disc coulters for AMAZONE seed drills are equipped as standard with depth limiters. In conjunction with the central coulter pressure adjustment the desired seed placement depth is always accurately maintained.
On sticky soils it is practical to operate with high coulter pressure. The seed placement depth always stays the same even when soil sticks to the front side of the disc.
Especially in very frequently changing soil conditions the use of the depth limiters ensures a very uniform sowing depth.

Setting the sowing depth:
For determination of the seed placement depth travel with the seed drill on the field a distance of approx. 30 m at the speed with which it is intended to do the sowing operation later on. Thereafter check the seed placement depth. To increase the sowing depth slightly it is usually sufficient to increase the coulter pressure.
If it is necessary to set the seed placement depth newly the seed drill with roll disc coulters should be placed on a level ground and the bolts (Fig. 76/2) be slackened. Place under the skid (Fig. 76/1) of the first depth limiter a board of a corresponding thickness (Fig. 76/3) and tighten the bolts again (Fig. 76/2) which hold the skid to the upper part of the depth limiter. Now use the same depth spacing board on all other skids.
The skids are **set by the factory** with a 1.2 cm thick spacing board which equals to about a planting depth of 2.5 cm on medium heavy soils. On heavier soils the depth limiters should be set with a thicker spacing board, e. g. of 2 cm thickness.
At a very shallow sowing depth on extremely light soils it may be necessary to set the skids on the same level as the roll disc coulters. In extreme cases it may even be necessary to set the skid deeper than the roll disc coulter. In this case a smaller hexagon bolt (Fig. 76/4) should be fixed in the second hole of the upper part of the depth limiter.

19.0 Depth limiter for 'K'-(Suffolk) coulter

On very light soils it is possible that the 'K'-(Suffolk) coulters will operate to deeply even without any spring pressure. This can be prevented by depth limiters (Fig. 77/1) which are available as option.
Also when the soil structure is changing within one field the use of depth limiters in connection with the central hydraulic coulter pressure control is ideal. On heavier soils the required sowing depth is achieved by increased coulter pressure, whereas the coulter pressure can be reduced on lighter soils.

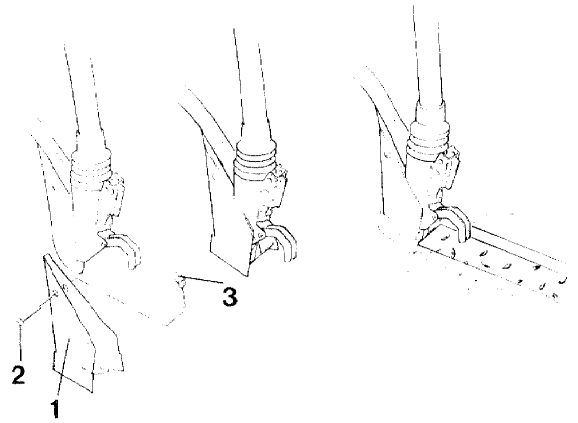


Fig. 78

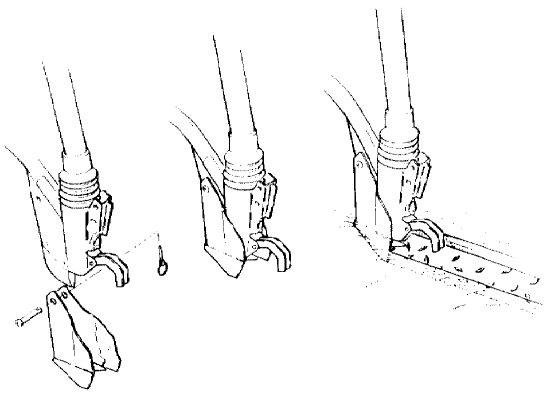


Fig. 79

20.0 Band sowing shoes for the 'K'-(Suffolk) coulter (option)

Band sowing improves the individual growing area of grain plant compared with the ordinary row sowing. Therefore, yield increases result over row placement of grain. Comparison tests over many years with various chambers of agriculture, agricultural institutes and consultancy groups have shown that yield increases of between 4 and 8 % over the row placement at the same coulter spacing may result.

Precondition for the usability of the band sowing shoe is a seed bed with fine tilth and a clean surface. In such cases, the band sowing shoe (Fig. 78/1) can be clipped on the "K"-(Suffolk) coulters and fixed with the pin (Fig. 78/2) and secured by a lynch pin (Fig. 78/3) in a simple way.

Should these preconditions not be available, i. e. on heavy, sticky soils in winter grain the band sowing shoes can be quickly removed again.
For the proper covering of the band-sown seed the use of the Extra Coverage Following Harrow or single exact harrow is imperative. The Extra Coverage Following Harrow works under all conditions absolutely free of blocking and, of course, also behind the normal "K"-(Suffolk) coulters without band-sowing shoe.

20.1 Band sowing shoe I

The band sowing shoe I (Fig. 78/1) is used preferably on heavy soils. The wedge clears the band furrow from clods.

20.2 Band sowing shoe II

The band sowing shoe II (Fig. 79) works especially well on light and medium heavy soils. The tapered skid shoe compacts the sowing surface and reduces the planting depth.

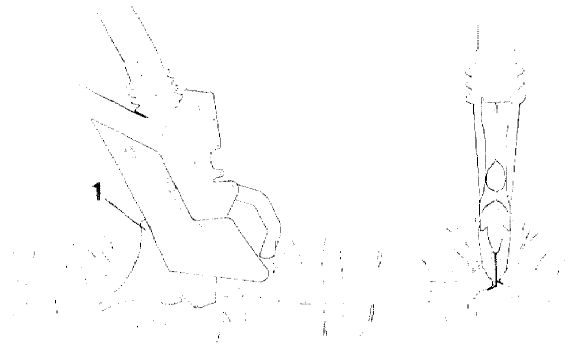


Fig.80

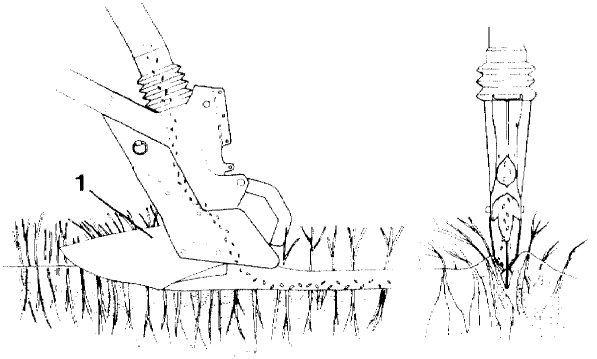


Fig.81

21.0 Greenland rejuvenation by grass-slit shoes (option)

Regular resowing of productive grass types are is a precondition for high grass land yields. Experts recommend unanimously to conduct this resowing every 2 - 3 years. As breaking over and sowing newly of old grass land is risky and the carrying ability of the grass sward at new sowings is not maintained the grass slit shoe is increasingly used in practice of grassland rejuvenation.

The farm owned AMAZONE seed drill can easily be converted for sowing into the existing grass sward by simply clipping on the grass slit shoes (Fig. 80/81). The grass slit shoe is fixed to the K-coulter as the band sowing shoe (Fig. 78) by a pin and secured by a lynch pin.

Before resowing with the grass slit shoe the grass land should be mowed to a short height or be grazed. Long grass, mowed grass residue or a dead sward may lead to blockage problems. Should such blockages occur in the area of the coulter stagger it is recommended to sow with a double row spacing.

21.1 Grass slit shoe I

The grass slit shoe I (Fig. 80/1) is suited for all soils with the exception of peat soils. The short cut grass may not be felted and covered with dead grass.

21.2 Grass slit shoe II

The grass slit shoe II (Fig. 81/1) is especially suited for peat- and light soils. On matted sward with dead grass on the surface the grass slit shoe II does not break up roots of grass.

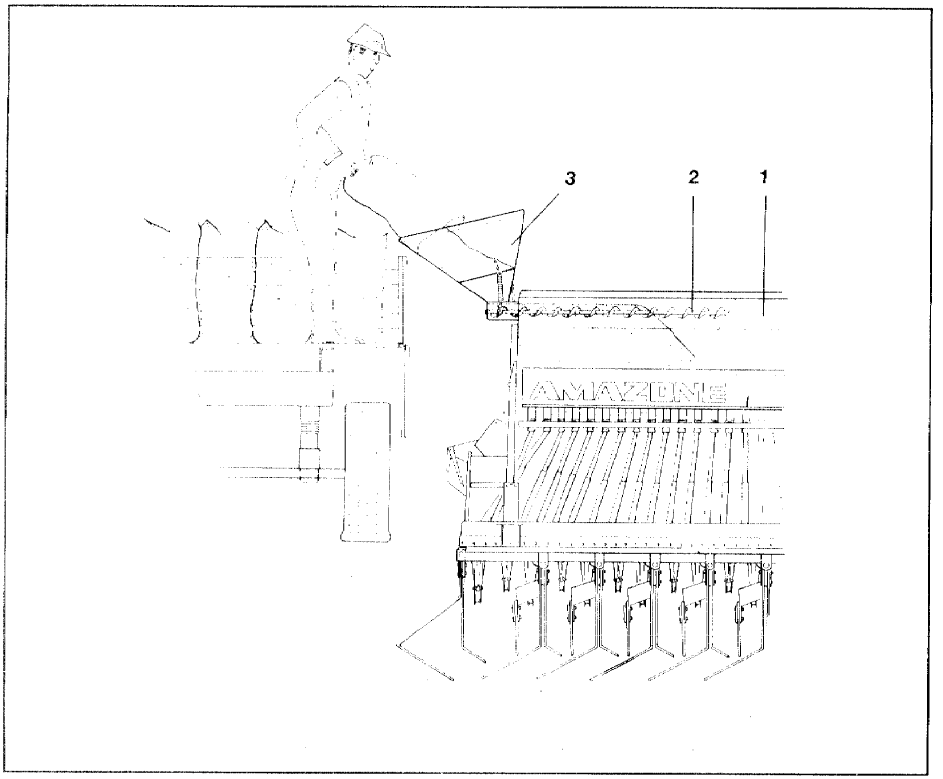


Fig. 82

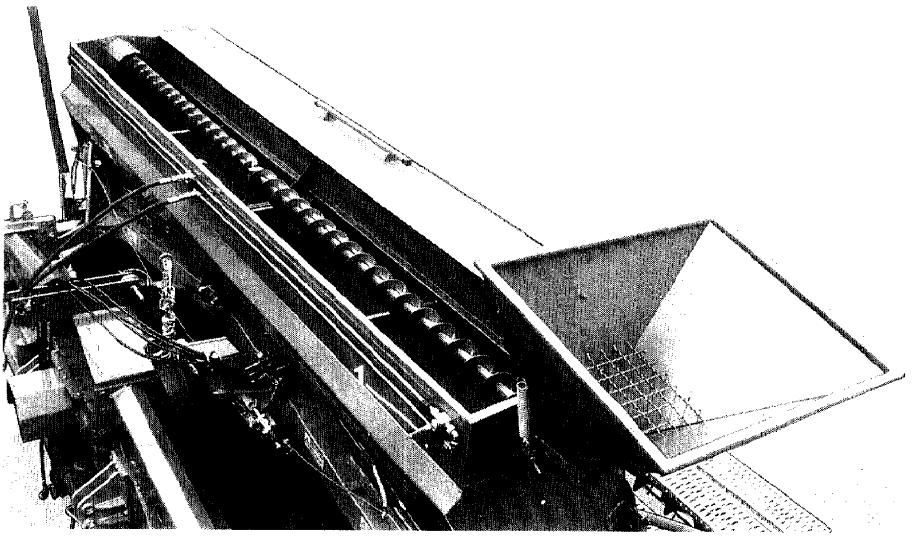


Fig. 83

22.0 Seed box extension (option)

The seed box extension (Fig. 82/1) increases the hopper capacity of the seed box of the AMAZONE Pack Top seed drill as follows:

AD 302: from 560 litres to **750 litres**

AD 402: from 760 litres to **1050 litres**

22.1 Seed box extension with filling hopper and -auger (option)

The seed box extension (Fig. 82/1) is also available with a filling auger (Fig. 82/2) for a central filling of the seed box with seed from a filling hopper (Fig. 82/3). this way it is possible to deliver the seed evenly into the seed box from the loading platform of a transporting vehicle. The filling auger is driven by a hydrostatic motor which is linked to the tractor's hydraulic. The hydrostatic motor is switched on or off by a hydraulic control valve (Fig. 83/1).

⚠ For transport on public roads the swivelable hinge filling hopper (Fig. 82/3) should be folded over the top of the seed drill and secured there.

Important advice:

Never place your hands inside the seed box!
Danger of injury by rotating filling auger!
Keep seed box lid closed when filling auger is rotating!

Hints for filling the seed box with filling auger extension:
Close the seed box lid before connecting the hydrostatic motor to the tractor. Connect the hydrostatic motor to the tractor in such a way that the filling auger rotates clockwise when standing in front of the filling hopper. During filling, the spring of the seed-level control should be hooked-in above.

⚠ **Even when the connected hydraulic static motor's control valve is in stop position do not reach inside the hopper. The filling auger can even rotate when the control lever is in "stop" position. Rotating of auger in "stop" position is possible if pressure is given to the tractor's hydraulic by the tractor's pump and if the auger is not fully covered by seed.**

Open the seed box cover only after the hydrostatic motor hoses are disconnected from the tractor or when the hydraulic pump of the tractor is switched off so that the hydraulic circuit is without pressure.

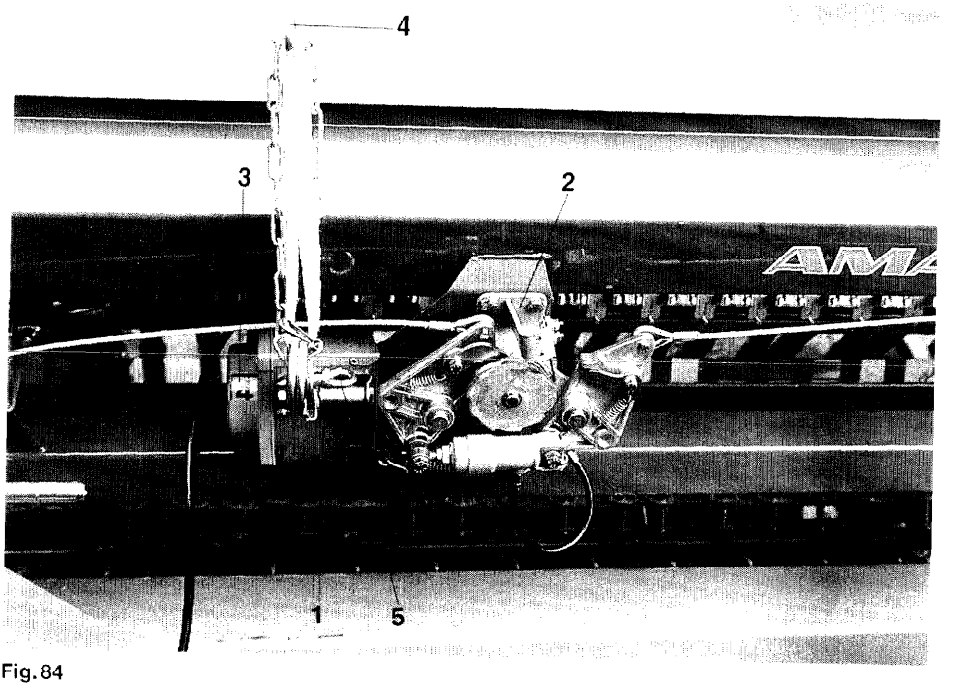


Fig. 84

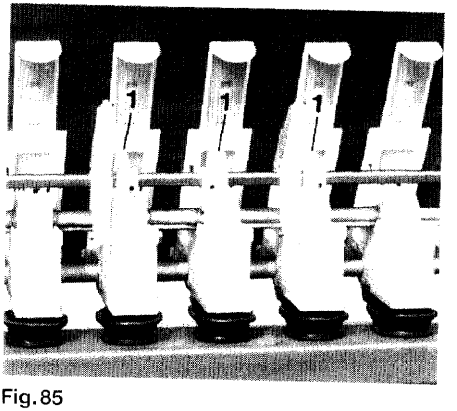


Fig. 85

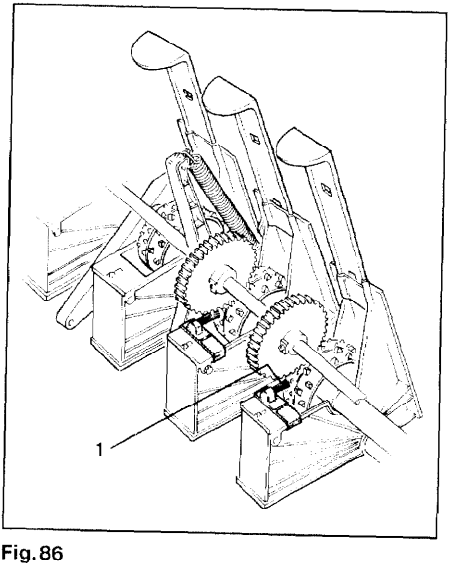


Fig. 86

23.0 Hydraulic metering wheel tramlining control (option)

With the aid of the tramlining unit on the seed drill it is possible to create at certain distances so-called "tramlines" by which some rows behind the tractor's wheel marks are not sown. The spacings dependent on the working width of the following operations (fertiliser spreader, sprayer etc.). In para. 23.3 you may find some examples.

If no seed is being sown in the tractor wheel marks tramlines are developed. These missing (tram-)lines can then be used as guide lines ("roads") in the field for the subsequently following husbandry operations (fertiliser spreading/pest control spraying). To achieve this it is possible to switch off up to 3 - in exceptional cases up to 4 or 5 - metering wheels **in the desired rhythm and in the desired track width** on both sides of the seed drill.

The rhythm is controlled from the switch box (Fig. 84/1) which is linked to the automatic marker change over (Fig. 84/2) if existent, so that when switching over the markers also the tramlining kit switches over to the next job.
The metering wheel tramlining control is connected to single acting control valves to the tractor's hydraulic.

A tramline indicator wheel (Fig. 83/3) in the switch box is visible from the tractor seat to show which position of the automatic tramlining kit is actually on. As soon as the indicator number "0" can be seen, the drive sprockets (Fig. 85/1) and the metering wheels come to a stand still so that no further seed is delivered by these metering wheels resulting in the laying down of tramlines. A shifting sprocket inside the switch box controls the rhythm by which the tramlines are laid down. The metering wheel housings for the stoppable metering wheels are equipped with fine seed metering wheel brushes (Fig. 86/1). During sowing the brushes clean the fine seed metering wheel so that especially when sowing rape seed no "gluing" between the drive wheel and the fine seed metering wheel can occur.

When beginning with the operation the tramline unit has to be shifted by pulling by hand the overriding lever (Fig. 84/4) until the correct number is shown in the window of the switch box. Further details you may see in para. 23.2 explaining some examples of the creating of tramlines. When beginning with the operation make sure that the marker changeover lowers the desired marker disc.

If it is desired to **discontinue creating tramlines** but still create bout marks, the tramlining unit has to be overridden by moving the clamping bolt (Fig. 84/5) in the slotted hole so far downwards that any movement of the shifting lever becomes impossible.

Attention:

Now the figure (Fig. 84/3) in the switch box window must **not show "0"** as otherwise continuously tramlines would be created.

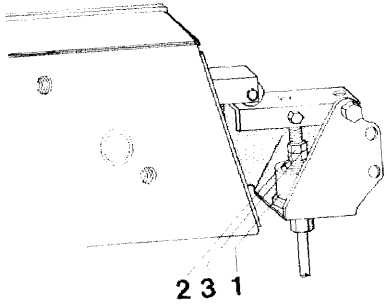


Fig.87

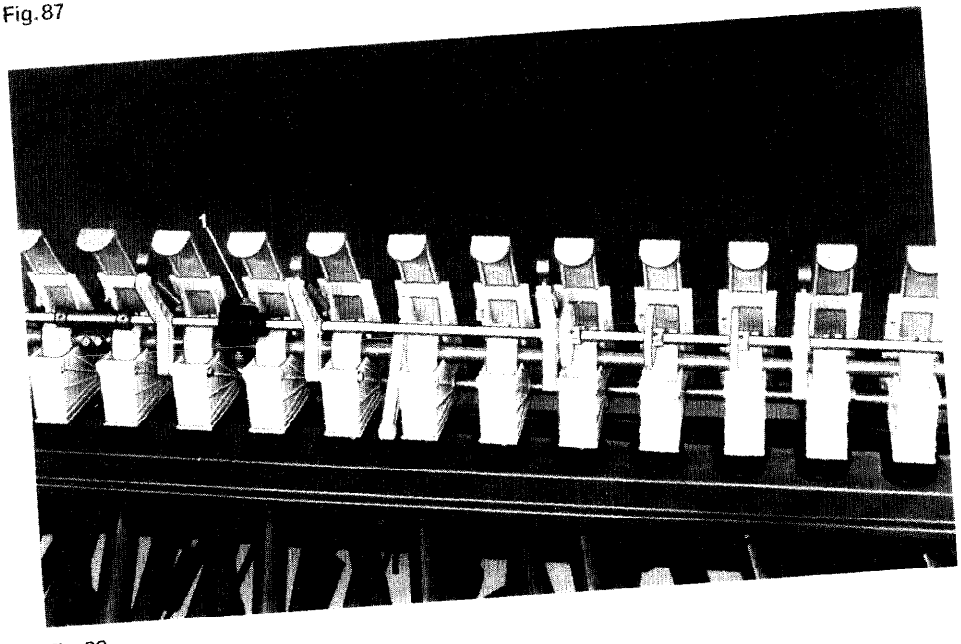


Fig.88

23.1 Function check-up and maintenance of the tramlining control

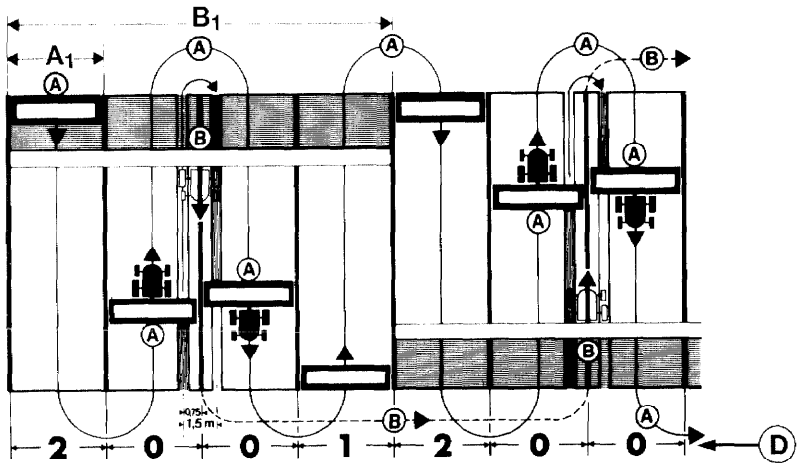
The metering wheels for putting down tramlines are driven by sprockets (Fig. 85/1) which are mounted onto a counter shaft. The metering wheels in charge for making tramlines are fitted to the metering shaft loosely and can turn freely. The switch box (Fig. 84/1) actuates in the desired rhythm a coupling which switches the counter shaft on or off. The coupling is again controlled by a coupling lever (Fig. 88/1). As soon as the coupling lever catches into a gap of the coupling the counter shaft comes to a stand still and the metering wheels connected do not supply seed any more. In the control window (Fig. 84/3) of the switch box the rhythm position **"0"** is shown.

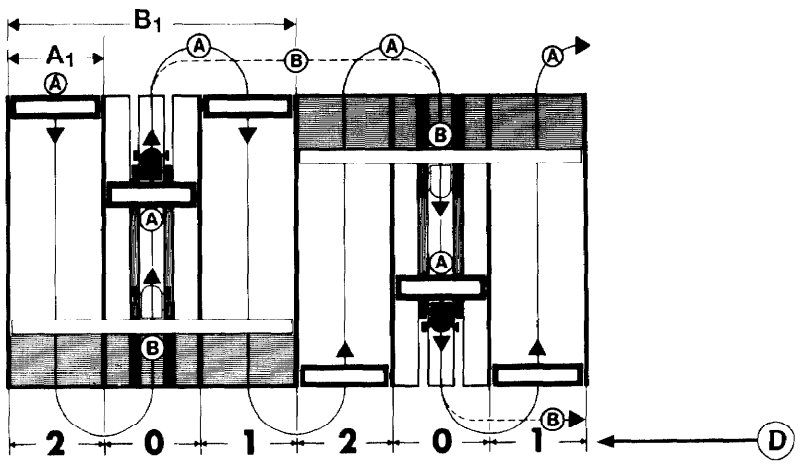
The tramlining control can be checked by pulling and releasing the manual control lever (Fig. 84/4) at the switch box for several times. In position "0" the clutch trip (Fig. 88/1) catches the gap of the coupling to stop the drive to the tramline metering wheels. After switching from "0" to "1" the coupling trip lifts away from the coupling and the tramline metering wheels are again being driven by the drive sprockets on the counter shaft.

When checking the tramlining control also instead of the manual control lever (Fig. 84/4) the hydraulic ram (Fig. 87/1) in the switch box should be actuated. Should the hydraulic ram of the switch box not switch over the following settings at the pressurised (extended) ram should be conducted:

- Slacken counter nut (Fig. 87/2)
- Turn nut (Fig. 87/3) so far to the left until the switch box switched audible, thereafter turn the nut by two full turns and lock it by the counter nut.
- Tighten counter nut (Fig. 87/2) against setting nut.

If your seed drill has not been used for a long period, please check whether the tramline metering wheels can be moved freely on the shaft. Some residue of seed dressings may cause a sticking of the tramline metering wheels on the metering shaft. In such a case the tramlining unit is no longer functioning properly. Disengageable tramline metering wheels which have, due to seed dressing residue, got stuck on the metering shaft can be freed by turning these metering wheels by hand. Never use oil as this would very quickly soak up the seed dressing powder and cause a very quick sticking of the metering wheels again.


B1
A1
A
B
0,75 m
1,5 m
2
0
0
1
2
0
0
D


B1
A1
A
B
2
0
1
2
0
1
D

23.2 Review and examples for creating tramlines

Review	Working width "A_1" of the seed drill					
Switching rhythm	2.50 m	3.00 m	4.00 m	4.50 m	4.80 m	6.00 m
	Spreading or spraying width "B_1"					
2-fold sequence	10.0 m	12.0 m	16.0 m	18.0 m		
3-fold sequence		9.0 m	12.0 m			18.0 m
4-fold sequence	10.0 m	12.0 m	16.0 m	18.0 m		24.0 m
5-fold sequence		15.0 m	20.0 m		24.0 m	30.0 m
6-fold sequence	15.0 m	18.0 m	24.0 m	27.0 m		
7-fold sequence		21.0 m	28.0 m			
8-fold sequence	20.0 m	24.0 m				
9-fold sequence		27.0 m				

Example 1, see left, top and hint in para. 23.5:

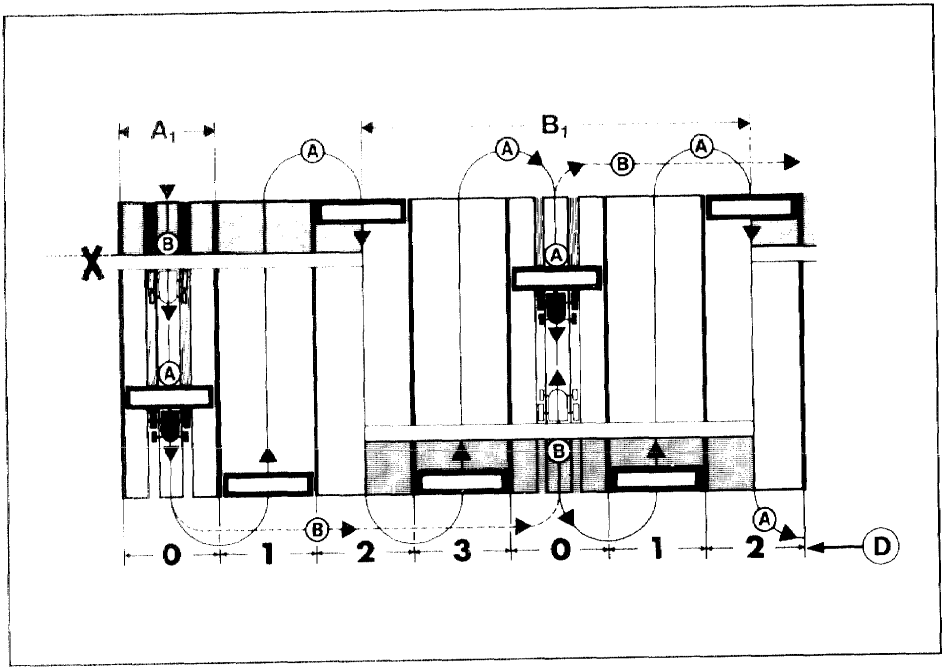
2-fold sequence	working width "A_1" of the seed drill	2.50 m	3.00 m	4.00 m	4.50 m
	working width "B_1" of fertiliser spreader and field sprayer	10 m	12 m	16 m	18 m

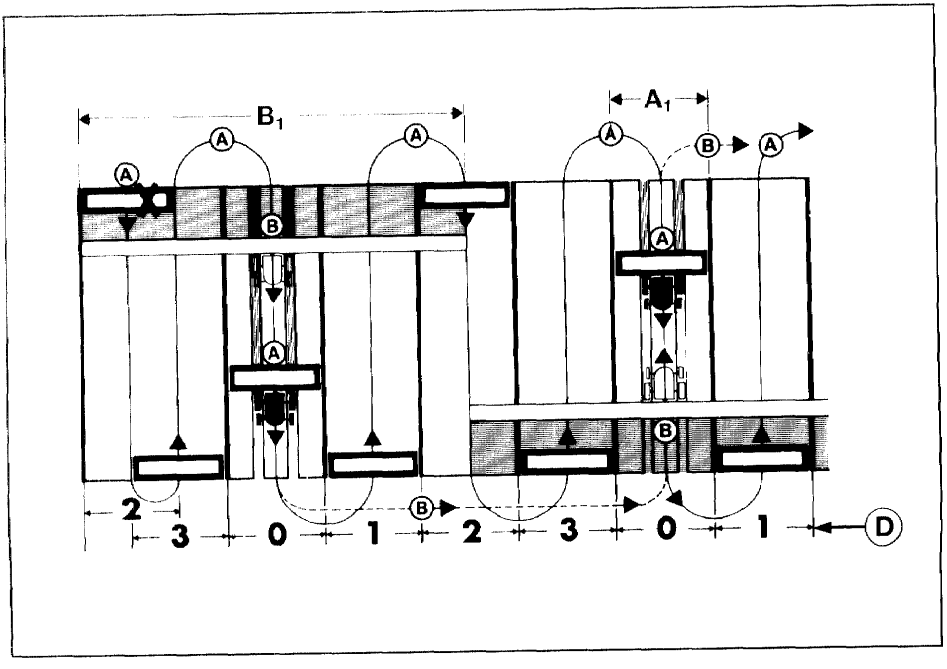
A = Travel distance of the seed drill in the field
B = Travel distance of fertiliser broadcaster of field sprayer in the field
D = Display in switch box. When "0" is displayed tramlines are being created.

Example 2, see lower left illustration:

3-fold sequence	working width "A_1" of the seed drill	3.00 m	3.33 m	4.00 m	6.00 m
	working width "B_1" of fertiliser spreader and field sprayer	9 m	10 m	12 m	18 m

A = Travel distance of the seed drill in the field
B = Travel distance of fertiliser broadcaster of field sprayer in the field
D = Display in switch box. When "0" is displayed tramlines are being created.


A1
B1
X
A
B
0
1
2
3
0
1
2
D


B1
A1
A
B
2
3
0
1
2
3
0
1
D

Example 3, see upper and lower left hand illustrations:

4-fold sequence	working width "A_1" of the seed drill	2.50 m	3.00 m	4.00 m	4.50 m
	working width "B_1" of fertiliser spreader and field sprayer	10 m	12 m	16 m	18 m

A = Travel distance of the seed drill in the field
B = Travel distance of fertiliser broadcaster of field sprayer in the field
D = Display in switch box. When "0" is displayed tramlines are being created.

Notes regarding upper illustration:

Seed drill sows with full working width
Fertiliser broadcaster spreads to one side only (with boundary spread discs or boundary spread deflector).
Field sprayer (one boom half switched off and folded inwards).

Notes regarding lower illustration:

Shutter slides of half the seed drill's working width are closed.
Fertiliser broadcaster and field sprayer operate with full working width.

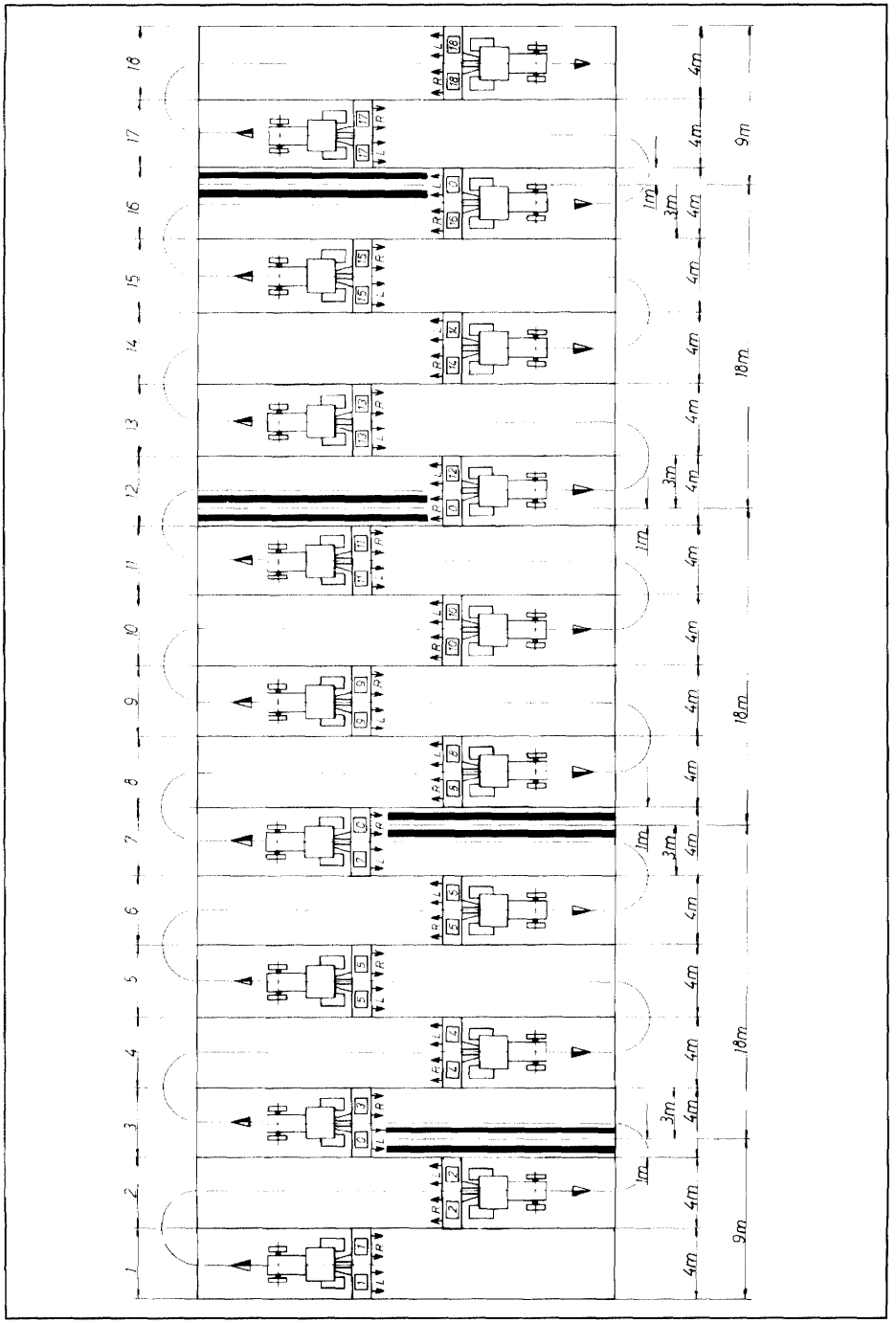


Fig. 89

23.3 Creating 18 m tramlines with 4 m working width (with two 18-fold sequences)

If making 18 m tramline spacings to be created by 4 m wide seed drills a hydraulic dual tramlining control should be installed. Pre condition for this is the equipping of the seed drill with two switch boxes and two counter shafts with drive wheels for the disconnectable metering wheels each one on the right hand and left hand seed box half of the drill. If one of the switch boxes shows the Figure **"0"** the tramline metering wheels in the tractor wheel mark are switched off.

Note should be taken:

1) The operation should begin only on the left hand field side.
2) When beginning operation both switch boxes should show the Figure **"1"**.
3) During operation both switch boxes show the switching rhythm as follows (compare Fig. 89):

switch box right hand	1	2	3	4	5	6	0	8	9	10	11	0	13	14	15	16	17	18
switch box left hand	1	2	0	4	5	6	7	8	9	10	11	12	13	14	15	0	17	18

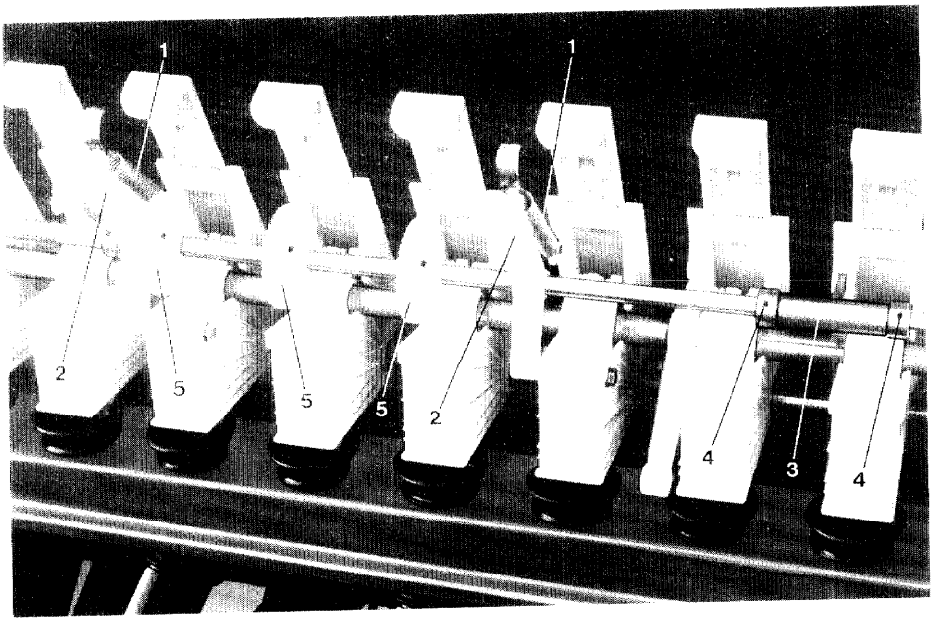


Fig. 90

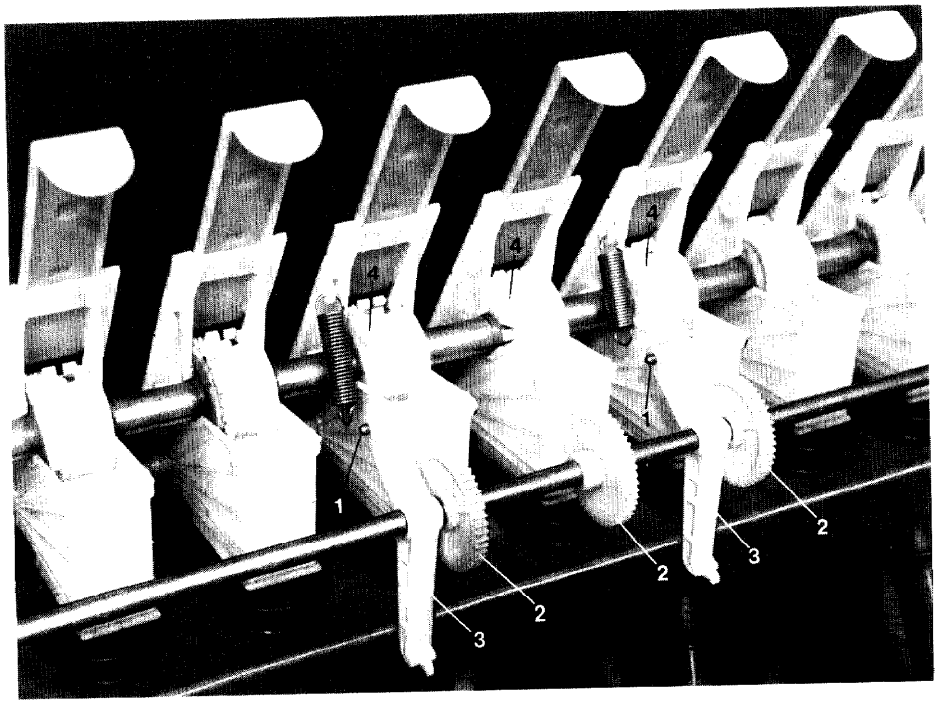


Fig. 91

23.4 Setting the tramline spacing to the required tractor wheel mark

The tractor wheel mark spacing for the tramlines has been set by the factory. Should it become necessary, e.g. by purchase of a new tractor, to change the tractor track spacing of the tramlines to the new tractor's wheel mark the following procedures should be carried out:

- Remove the coil springs (Fig. 90/1) after having lifted the metering housings and the swivel bearings (Fig. 90/3) and lost counter shaft to the rear (Fig. 1/1).

- Unscrew the set screw (Fig. 90/3), which secures the counter shaft from axial movement, on the outside of the metering housing. When pulling the counter shaft to the rear the linking bush is being pulled out of the hole and can after complete withdrawal be re-inserted in the corresponding hole of the adjacent metering wheel housing. The linking bush (Fig. 90/3) is axially secured by setting rings (fig. 90/4) on the counter shaft.

Mark **new** tramline metering wheels or the corresponding metering housings.

- The metering wheels driven by the metering shaft are fixed to the metering shaft by threaded pins. Loosen threaded pins (Fig. 91/4) of the **new** tramline metering wheels until the **new** tramlining metering wheels can freely be moved on the metering shaft.

Loosen hexagon bolts (Fig. 91/1) by which the swivel bearings are mounted to the **old** tramline metering wheel housings.

Slide swivel bearings (Fig. 91/3) and polyethylene-drive sprockets (Fig. 91/2) on the counter shaft to the desired position.

Now affix the swivel bearings (Fig. 91/3) to the **new** tramline metering wheel housings and hang in the coil springs (Fig. 90/1) between the swivel bearings and the metering housings.

- Let the teeth of the polyethylene drive sprockets (Fig. 90/5) and those of the fine seed metering wheels match and fix the drive sprocket onto the counter shaft.

Now reconnect the **formerly used** fine seed metering wheels with the metering wheel shaft. For this the threaded pin (Fig. 91/4) should be driven into the fine seed metering wheel until it is engaged with the metering shaft with a little play left. Never tighten the threaded pin too much as this will cause a buckling of the metering wheels.

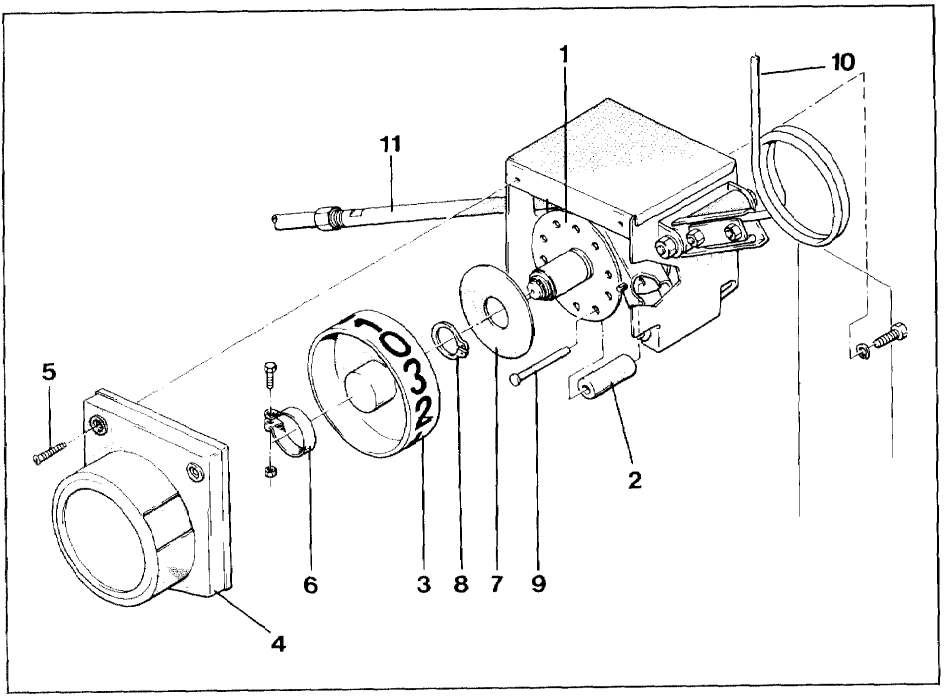


Fig. 92

23.5 Creating tramlines with the 2-fold sequence

Seed drills which are equipped with the 2-fold sequence tramlining control are equipped only on the right hand drill side with disengageable metering wheels for creating tramlines. The desired traktor wheel track will be formed each by driving to and fro on the field (compare para. 23.2, example 19: Therefore the counter shaft is only fitted with polyethylene drive sprockets (Fig. 90/5) on the right hand drill side. The drive sprockets are to be fitted on the counter shaft in such a way that the spacing of the tramline metering wheels measured from the right hand outer machine's side equals to half a tractor wheel track. The fitting of the drive sprockets is done according to para. 23.4, the converting of the switch box according to para. 23.6. At operations with the pre-emergence marker the left hand marker disc should be removed.

The operation is stated on the right hand field boundary (see tramliring plan para. 23.2).

23.6 Converting the control box to another tramline frequency.

A divider wheel (Fig. 92/1) inside the control box controls the seed supply to the rows in which the tramlines shall be created. The following table holds the required divider wheels for the various working widths of the drills and the spacing of the tramlines:

Working width	2.50 m	3.00 m	4.00 m	4.80 m	6.00 m
Divider wheel for	Tramlining spacing				
2-fold sequence	10.0 m	12.0 m	16.0 m		
3-fold sequence		9.0 m	12.0 m		18.0 m
4-fold sequence	10.0 m	12.0 m	16.0 m		24.0 m
5-fold sequence		15.0 m	20.0 m	24.0 m	30.0 m
6-fold sequence	15.0 m	18.0 m	24.0 m		
7-fold sequence		21.0 m	28.0 m		
8-fold sequence	20.0 m	24.0 m			
9-fold sequence		27.0 m			

The divider wheel (Fig. 92/1) is the same for the 2-, 3-, 4- and 6-fold sequence. If the order of the sequences should be changed, only the shift rollers (Fig. 92/2) in the divider wheel (Fig. 92/1) need to be repositioned or added.
For the 5-, 7-, 8- and 9-fold sequence it is necessary to exchange the existing divider wheel (Fig. 92/1) for a matching divider wheel.
When changing the control box to another sequence, it is necessary to put on the correct self-adhesive number-strip on the counter wheel (Fig. 92/3).

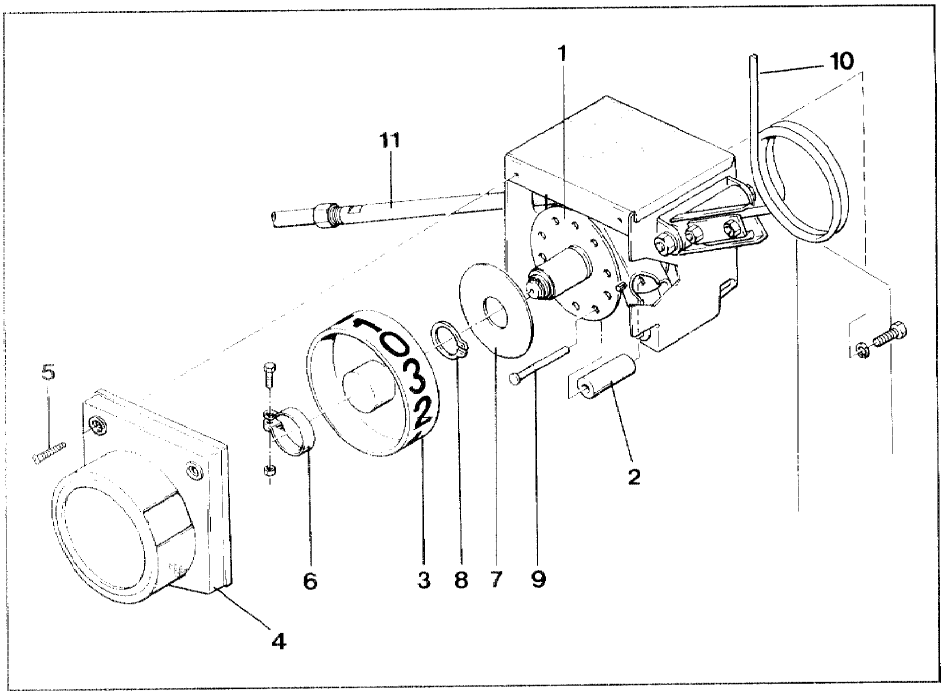


Fig. 93

23.6.1 Converting a 2-, 3-, 4- or 6-fold sequence to another sequence of this group

It is only necessary to change the position of the switch rollers (fig. 93/2) or to add them. This change is also possible if the switch box is still mounted to the seed drill:

- Remove protective cover (Fig. 93/4) after taking off two of the screws (fig. 93/5).
- Remove clamp (Fig. 93/6) and pull off together with the counter wheel.
- Remove the securing disc (Fig. 93/7) after removing the circlip 24 x 1 2 (Fig. 93.8).
- Now the position of the free accessible shifting rollers (Fig. 93/2) may be changed according to Fig. 94 after having pulled out the pins (fig. 93/9).

The assembly of the switch box is done in the vice versa order:

- Mount securing disc (Fig. 92/7) and circlip (fig. 93/8).
- Apply new number tape (Fig. 94) to the counter wheel (Fig. 93/3) and mount it with the aid of the clamp (Fig. 93/6) onto the divider wheel.
- Now shift the operating lever a few times (Fig. 93/10) switch box until the clamping tube (Fig. 93/11) is pulled by a switch roller (Fig. 93/2) and held in that position. The protective cover (Fig. 93/4) is held to the switch box and the number wheel (Fig. 93/3) is turned until the number **"0"** shows up in the window of the protective cover.

At the 2-fold sequence again a **"0"** must show up due to the two consecutive following switch rollers, and the clamping tube must stay in the pulled position due to the second switching roller:

- Fix the counting wheel (Fig. 93/3) by the clamp (Fig. 93/6) and mount the protective cover (Fig. 93/4).
- Switch divider wheel by pulling the operating spring lever (Fig. 93/10) a few times until the counting wheel (Fig. 93/3) has made at least three complete turns and check whether the switch box operates properly, i. e. whether in every **"0"**-position the clamping tube (Fig. 93/11) is being pulled properly.

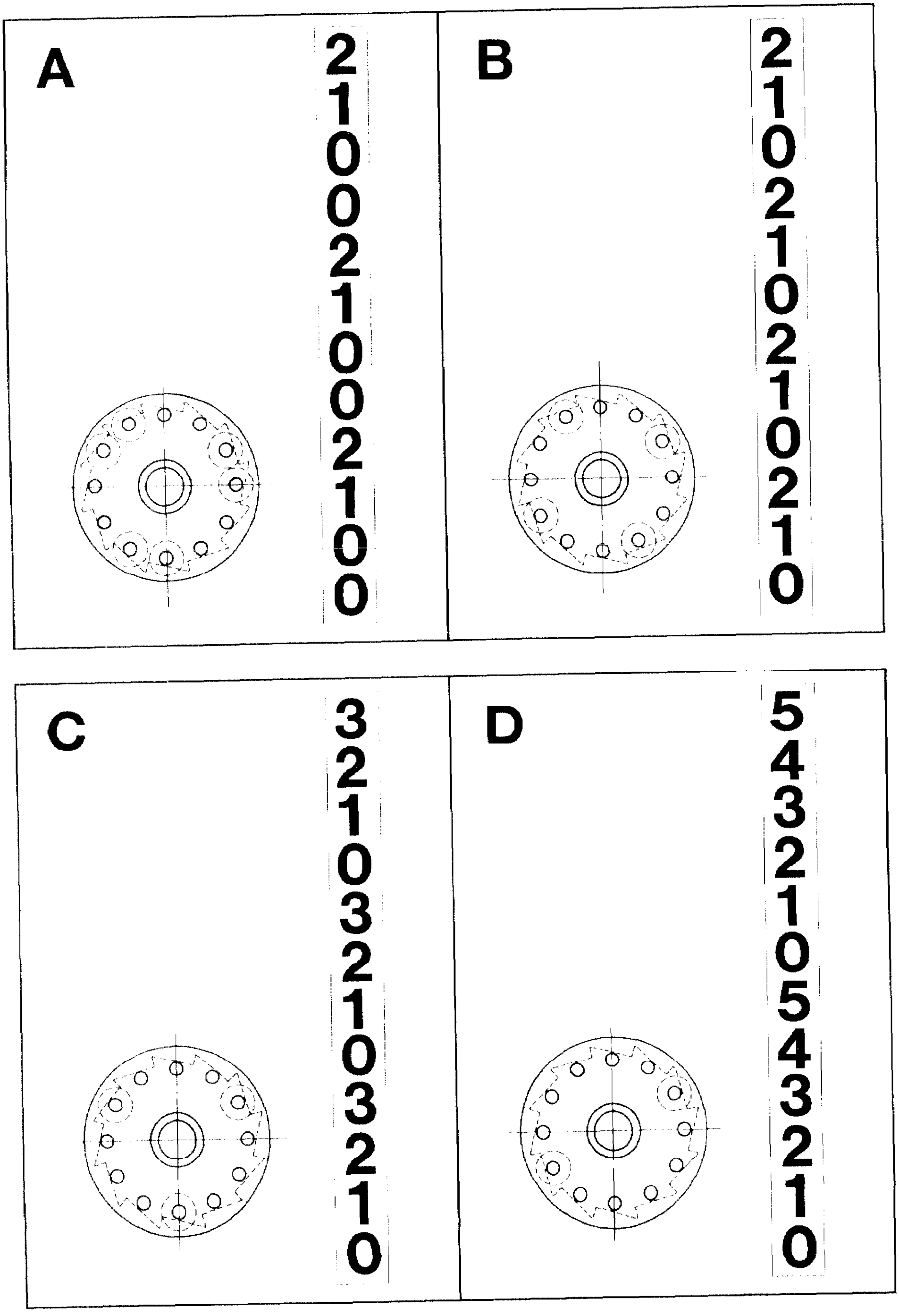

A
2 1 0 0 2 1 0 0 2 1 0 0
B
2 1 0 2 1 0 2 1 0 2 1 0
C
3 2 1 0 3 2 1 0 3 2 1 0
D
5 4 3 2 1 0 5 4 3 2 1 0

Fig. 94

Divider wheels and number tapes are illustrated in Figure 94:

Figure 94/A: **Divider wheel for 2-fold sequence**
Division 12, 6 switching rollers

Divider wheel cpl.	Order-No. 30574
Divider wheel	Order-No. 30734
Switching roller	Order No. 30794
Pin	Order-No. 30804
Collar bush	Order-No. 34931

Number tape for 2-fold sequence **Order-No. 30654**

Figure 94/B: **Divider wheel for 3-fold sequence**
Division 12, 4 switching rollers

Divider wheel cpl.	Order-No. 30584
Divider wheel	Order-No. 30734

Number tape for 3-fold sequence **Order-No. 30664**

Figure 94/C: **Divider wheel for 4-fold sequence:**
Division 12, 3 switching rollers

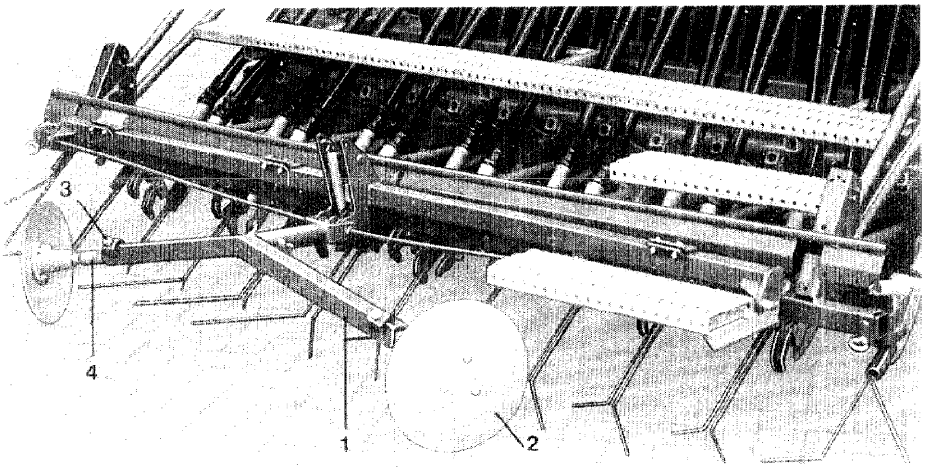
Divider wheel cpl.	Order-No. 30594
Divider wheel	Order-No. 30734

Number tape for 4-fold sequence **Order-No. 30674**

Figure 94/D: **Divider wheel for 6-fold sequence:**
Division 12, 2 switching rollers

Divider wheel cpl.	Order-No. 30614
Divider wheel	Order-No. 30734

Number tape for 6-fold sequence **Order-No. 30694**



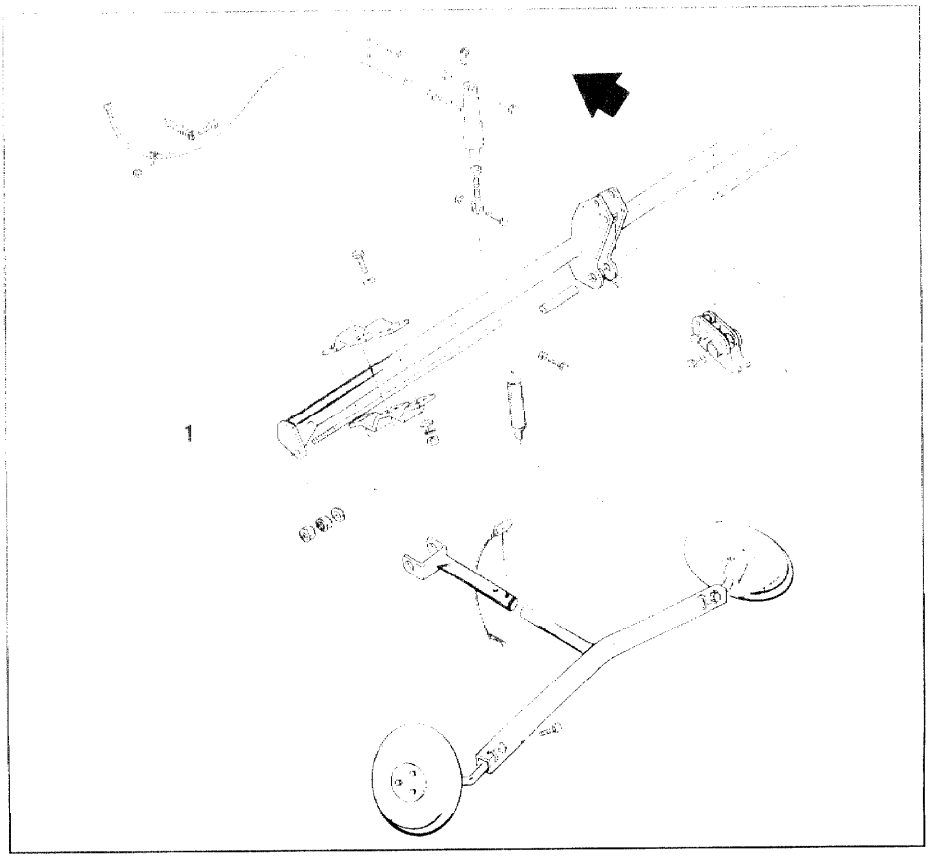


Fig.97

24.0 Hydraulic pre-emergence marker

Together with the hydraulic marker change over and the hydraulic metering wheel tramlining control, a hydraulic remote controlled pre-emergence marker (Fig. 96/1) may be combined. If the drive to the metering wheels is cut off for laying out tramlines the two large pre-emergence marking discs (Fig. 96/2) of the hydraulically controlled pre-emergence marker are lowered, marking the wheelmarks of the tractor so that it is visible before the appearance of the crop.

Following sowing it is possible to drive along the not yet visible tramlines for pre-emergence spraying. The discs (Fig. 96/2) are raised if all metering wheels are in operation, that is to say, when no tramline is laid out.

The pre-emergence marker kit is mounted by clamps (Fig. 97/1) to the Extra Coverage Following Harrow.

Bruising area!

When actuating the pre-emergence marker change over do not stay and do not allow anyone to stay in the swivelling area of the marker discs. Danger of injury by moving parts.

Setting the pre-emergence marker discs

The spacing of the pre-emergence marker discs is set with the aid of the hexagon bolts (Fig. 96/3) to the track width of the tractor to be used.
On lighter soils the marker discs can be set by turning the marker disc axle (Fig. 96/4) so that the marker disc runs approximately parallel to the seed drill wheel. On heavy soils, however, the marker discs are turned to stand "on grip" so that they work more aggressively and a clearly visible trace is left behind.

When having 2-fold sequence rhythm:

If a metering wheel tramlining control unit with a 2-fold tramlining rhythm is used only one pre-emergence marker disc may be fitted. This marker disc has to be set in such a way that a tramline is created in a to and fro bout of the field (see para. 23.5).
The marker disc carrier (Fig. 93/1) should after removing the securing pin (Fig. 99/3) be angled to that side on which the marker disc is mounted and set as follows:

- Lower setting hole (Fig. 99/4) for one-sided marking, right hand.
- Upper setting hole 8Fig. 99/5) for one-sided marking, left hand.

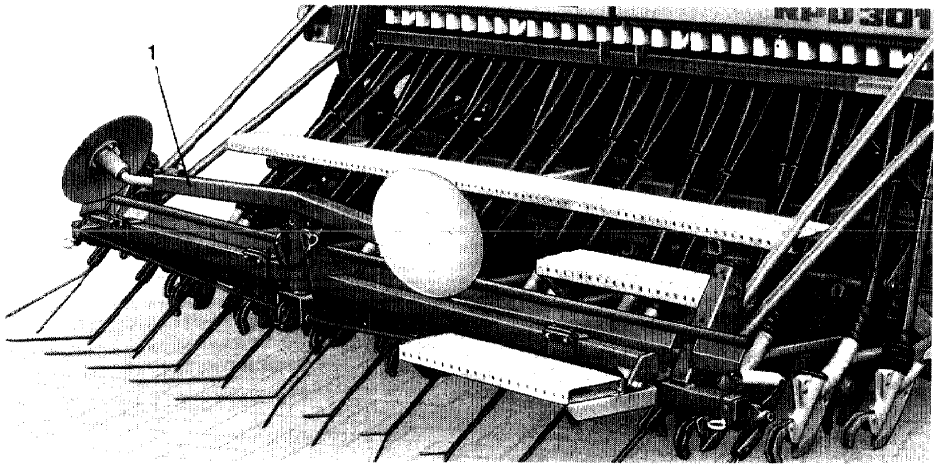


Fig.98

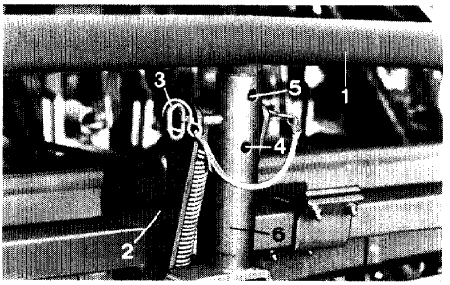


Fig.99

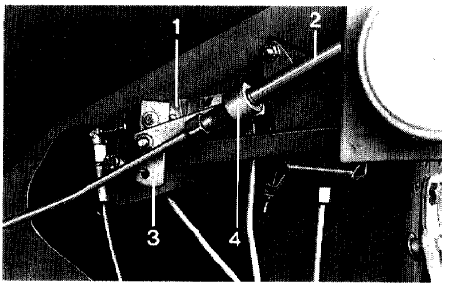


Fig. 100

24.1 Transporting position of the pre-emergence marker

In transporting position the marker carriers (Fig. 99/2) and carrying arms (Fig. 99/6) should be mounted with the pin (fig. 99/3) and secured. The pre-emergence marker now is fully lifted and the marker carrier (Fig. 98/1) with the marker discs stands parallel with and above the Extra Coverage Following Harrow.

⚠ When **travelling on public roads** the marker carriers (Fig. 98/1) with the marker discs must be taken off.

24.2 Setting the control valve

The hydraulic ram of the pre-emergence marker controls the lifting and lowering of the marking discs and is controlled by one control valve (Fig. 100/1) which in return is linked with the tramlining kit by a shifting rod.

In position "0" of the tramlining control box the push rod (Fig. 100/2) is pulled, the lever of the control valve brought to forward position and the pre-emergence marker discs are lowered. After a further switching of the control box to position "1" the control valve lever swivels backwards resulting in lifting of the pre-emergence marker discs.

In this position "1" the setting of the control valve is conducted. The lever (Fig. 100/3) of the control valve is pushed by hand fully backwards and the prior loosened setting ring (Fig. 100/4) is now tightened firmly.

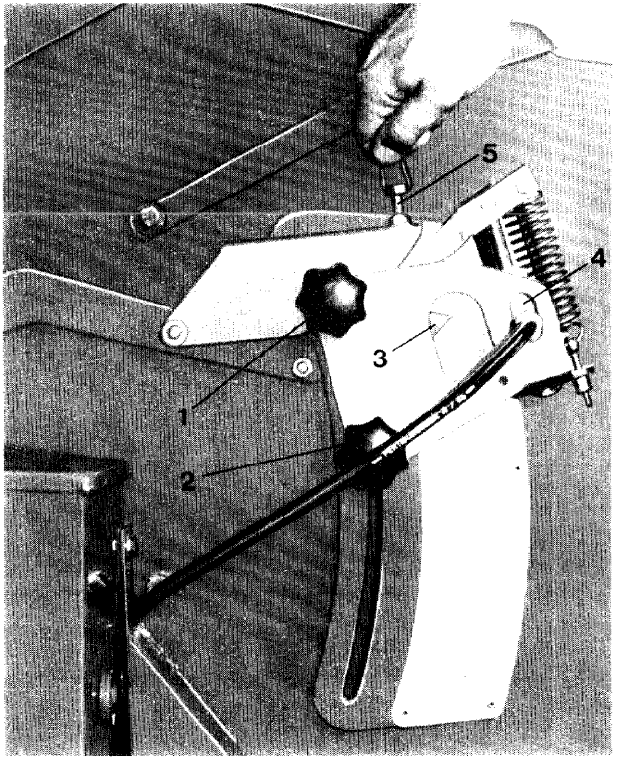


Fig. 101

25.0 Hydraulic seed rate remote control (option)

This can be of interest when wanting to sow in soils with frequently changing soil conditions on the same field, whereby one wants to set a higher seed rate on patches of heavier soil or when wanting to sow on hill tops with a minimum of top soil etc. With the aid of the hydraulic remote controlled adjustment of seed rate (Fig. 101) it is possible to change the seed rate within a preselected range from the tractor seat.

The hydraulic remote controlled adjustment of seed rate is coupled with the coulter pressure setting and the hydraulic followoing harrow pressure setting (if fitted). If the coulter-/harrow pressure is increased the seed rate will also automatically be increased. After having passed the patch with heavy soil on which the higher seed rate was sown the pressure of the hydraulic ram is taken back so tht the machine returns sowing the originally set seed rate again.

25.1 Setting the seed rate

For setting the **normal seed rate** both star knobs (Fig. 101/1, 101/2) are slackened and the pointer (Fig. 101/3) moved to the desired gearbox setting. Hereafter retighten the star knob nuts and conduct a calibration test, as described earlier.

The **higher seed rate** for the heavy soil should be set as follows:

Pressurise the hydraulic ram (Fig. 1017$) and screw the adjuster bolt (Fig. 101/5) into the welded-on nut. This will push the gearbox setting lever down via the lever mechanism. The adjuster screw is turned until the pointer position for the desired increased seed rate is reached on the scale. By means of a calibration test in this position, i. e. with pressurised hydraulic ram, a calibration test is carried out to see if the desired higher seed rate has been attained.

If in places with heavy soils, the coulter pressure is increased but no increase in the seed rate is desired, the adjusting screw (Fig. 101/5) is turned fully out. Then an increase in coulter pressure will not be accompanied by an increase in seed rate.

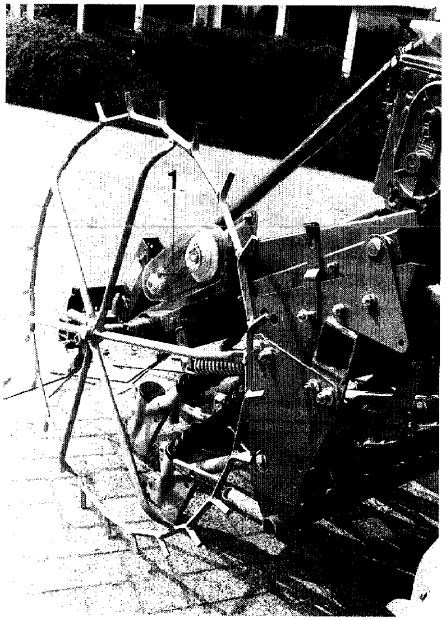


Fig. 102

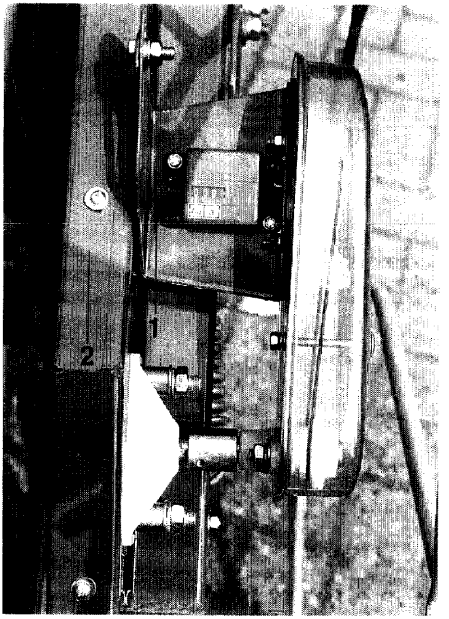


Fig. 103

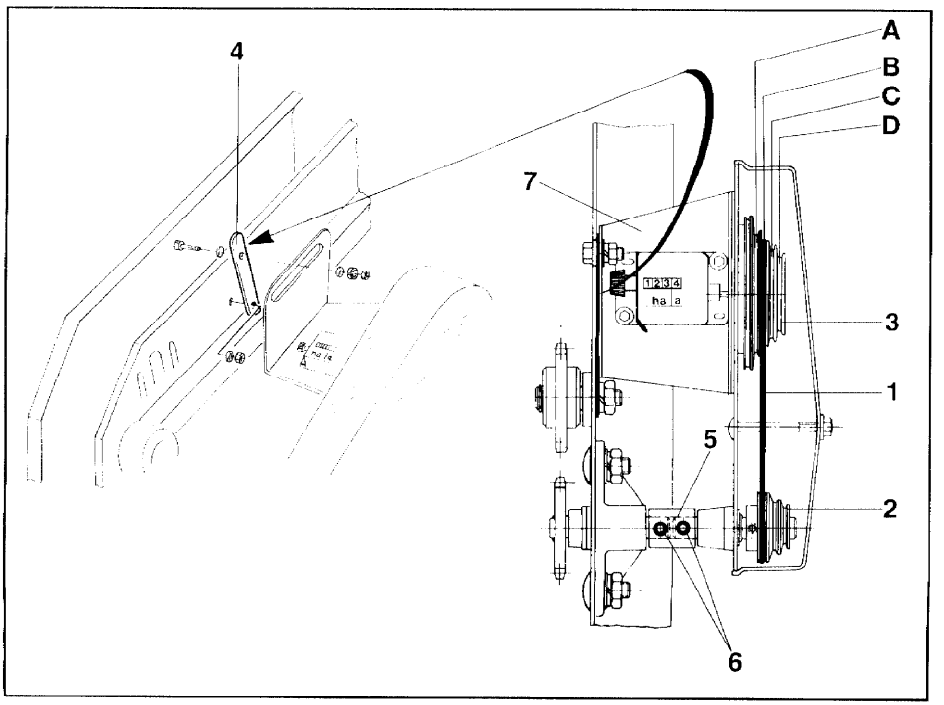


Fig. 104

26.0 Hectare meter (mechanic) (option)

Note: Please see page 126 for electronic hectare meter

The hectare meter (Fig. 102/1) is fitted under the seed box to the right hand seed box support wall.
Place the round belt (Fig. 104/1) onto the belt pulleys according to Fig. 104. The position of the round belt on the small diameter pulley (Fig. 104/2) remains unchanged. The position of the round belt on the pulley with the large diameter (Fig. 104/3) is set depending on the bout width of the drill as follows:

Fig. 104/A	=	Working width 2.50 m
Fig. 104/B	=	Working width 3.00 m
Fig. 104/C	=	Working width 3.33 m
Fig. 104/D	=	Working width 4.00 m

Before starting operation the hectare meter is put on "0" by turning the set-screw (Fig. 103/1.

The hectare meter shows the worked area up to one digit behind the point:

0 0 0 . 1	**ha** equals **0.1 ha = 10 a = 1000 sqm**

Fitting procedure:

- The hectare meter is supplied completely assembled on a console. Before fitting the hectare meter to the seed drill it should be checked whether the round belt (Fig. 104/1) is positioned according to the bout width of your seed drill on the right belt pulleys.
- Remove chain guard (Fig. 103/2) of the swivelable drive arm.
- Bolt fixing bracket (fig. 104/4) to the pin of the sprocket (Fig. 172/1).
- Connect hectare meter with coupling bush (Fig. 104/5) to the shaft end of the chain sprocket and connect it with threaded pins (Fig. 104/6).
- Mount console with hexagon bolts M 8 x 50 (Fig. 104/7) to the fixing brackets.
- Reinstall chain guard (Fig. 103/2).

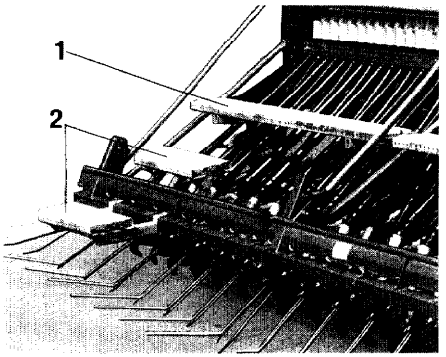


Fig. 105

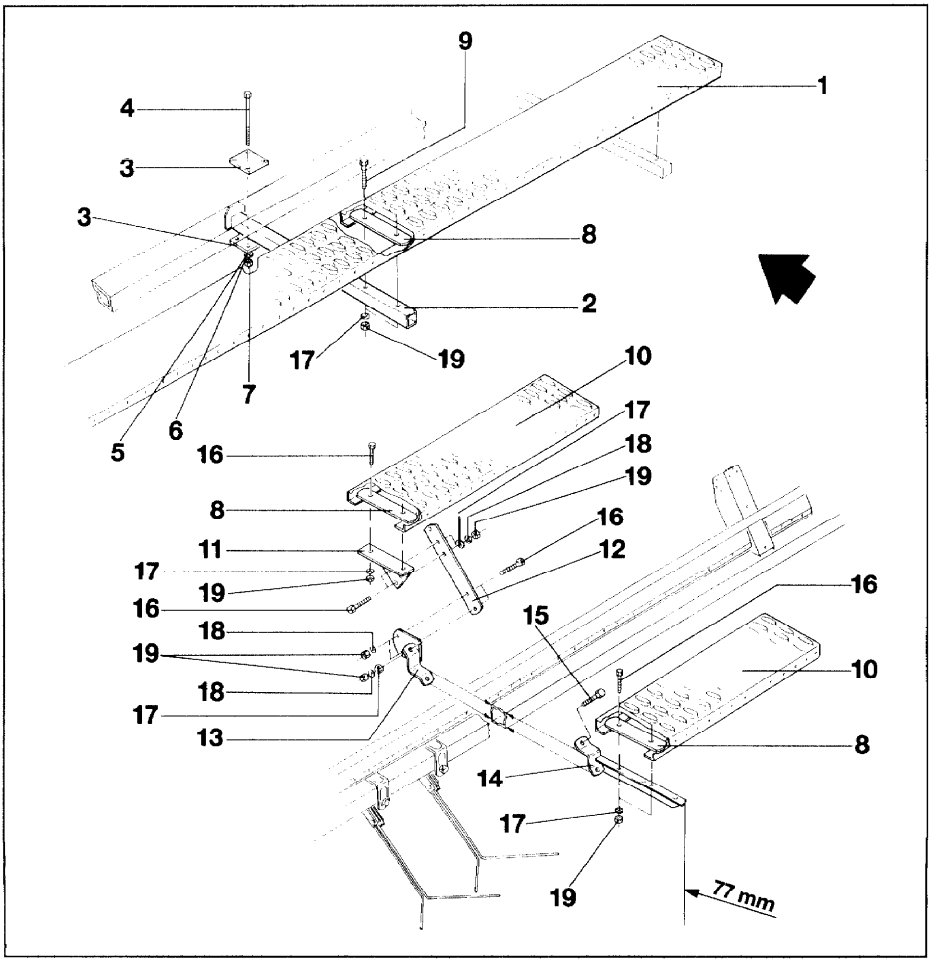


Fig. 106

27.0 Loading step (option)

For easier filling of the seed box from the rear side of the seed drill the seed drill can be supplied with a loading step. Also drills with Single Extra Coverage Following Harrows may be equipped with a loading step in 2 levels, seed drills with single exact harrows with one loading step.

The loading step may only be used for filling of the seed drill. Never allow any person to stay on it during sowing operation.

27.1 Fitting the loading step for seed drills RPD-EN, ER and SR with Extra Coverage Following Harrow

The loading step (Fig. 105/1) is fitted to the frame of the Pack Top seed drill, the two additional steps (Fig. 105/2) are fitted to the Extra Coverage following Harrow main tube. The steps should be centrally mounted as shown in Fig. 105. When the Extra Coverage Following Harrow is equipped with a pre-emergence marker the steps should be mounted to the outer sides of the Extra Coverage Following Harrow as shown in Fig. 96.
When no pre-emergence marker is fitted the supports for the safety step (Fig. 106) may be shortened by 77 mm (Fig. 106/14).
Follow Fig. 106 for fitting the loading step. In the following table the individual parts and numbers required for all working widths of the loading step are listed:

Fig. 106 Position	AD 252 Qty.	AD 302 Qty.	AD 402 Qty.	Description
01	1			Security step l = 2050, AD 252
		1		Security step l = 2550, AD 302
			2	Security step l = 1710, AD 402
02	2	3	4	Carrier for security step, AD
03	4	6	8	Mounting plate 80 x 6 x 115 mm
04	8	12	16	Hex. bolt DIN 931, M 10 x 150 8.8 A2G
05	8	12	16	Washer DIN 125, 10.5 x 21 x 2
06	8	12	16	Spring washer DIN 127, B 10 A2G
07	8	12	16	Hex. nut, DIN 934, M 10 8 A2G
08	6	7	12	Fitting bracket for loading step
09	4	6	8	Hex. bolt DIN 931, M 8 x 60 A2G
10	2	2	4	Security step 600 x 180 x 40 x 2
11	2	2	4	Mounting angle 110 x 175 x 4 for loading step
12	2	2	4	Step support 40 x 8 x 305 for loading step
13	2	2	4	Fitting bracket for loading step
14	2	2	4	Support for security step
15	4	4	8	Hex. bolt DIN 933, M 8 x 50 8.8 A2G
16	16	16	32	Hex. bolt DIN 933, M 8 x 25 8.8 A2G
17	20	22	40	Washer DIN 125, 8.4 x 17 x 1.6 A2G
18	12	12	24	Spring washer DIN 127, B 8 A2G
19	24	26	48	Hex. nut DIN 934, M 8 8 A2G

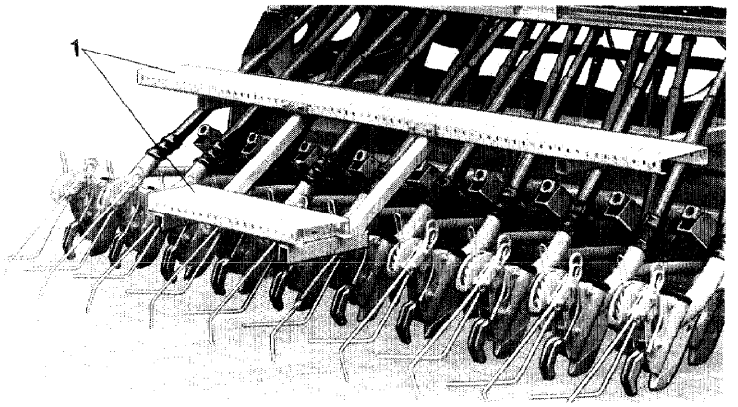


Fig. 107

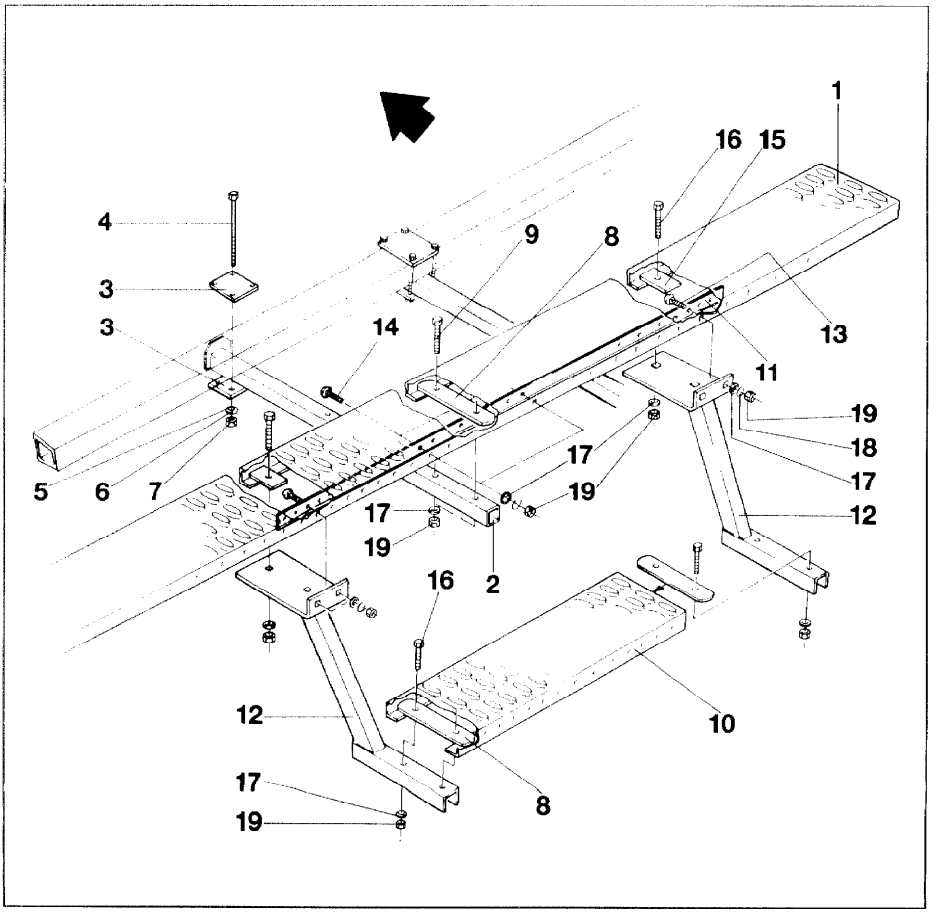


Fig. 108

27.2 Fitting the loading step to seed drills AD with Single Exact Following Harrow

The loading step (Fig. 107/1) with one additional step is fitted to the main frame of the seed drill. For fitting follow Fig. 108. The loading step can also easily be retrofitted to the seed drill. In the following table the individual parts and quantities of the loading step are listed for all working widths:

Fig. 106 Position	AD 252 Qty.	AD 302 Qty.	AD 402 Qty.	Description
01	1			Security step I = 2050, AD 252
		1		Security step I = 2550, AD 302
			2	Security step I = 1710, AD 402
02	3	4	6	Carrier for security step, AD
03	6	8	12	Mounting plate 80 x 6 x 115 mm
04	12	16	24	Hex. bolt DIN 931, M 10 x 150 8.8 A2G
05	12	16	24	Washer DIN 125, 10.5 x 21 x 2
06	12	16	24	Spring washer DIN 127, B 10 A2G
07	12	16	24	Hex. nut, DIN 934, M 10 8 A2G
08	5	6	10	Fitting bracket for loading step
09	6	8	12	Hex. bolt DIN 931, M 8 x 60 8.8 A2G
10	1	1	2	Security step 600 x 180 x 40 x 2
11	1	1	2	Reinforcement bracket for security step
12	2	2	4	Carrier for security step AD, single exact harrow
13	4	4	8	Counter sunk bolt DIN 603 M 8 x 30 A2G
14	2	2	4	Counter sunk bolt DIN 603 M 8 x 20 A2G
15	2	2	4	Tensioning washer f. loading step AD-single exact harrow
16	6	6	12	Hex. bolt DIN 933, M 8 x 25 8.8 A2G
17	20	22	40	Washer DIN 125, 8.4 x 17 x 1.6 A2G
18	4	4	8	Spring washer DIN 127, B 8 A2G
19	20	22	40	Hex. nut DIN 934, M 8 8 A2G

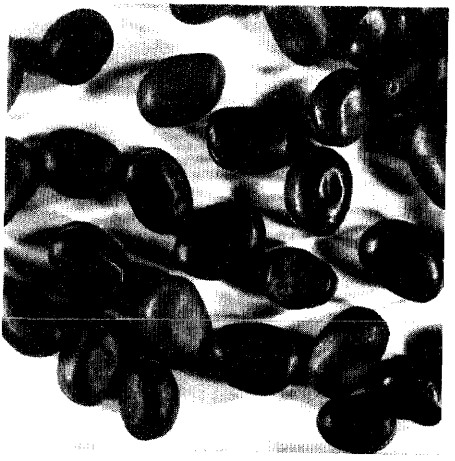


Fig. 109

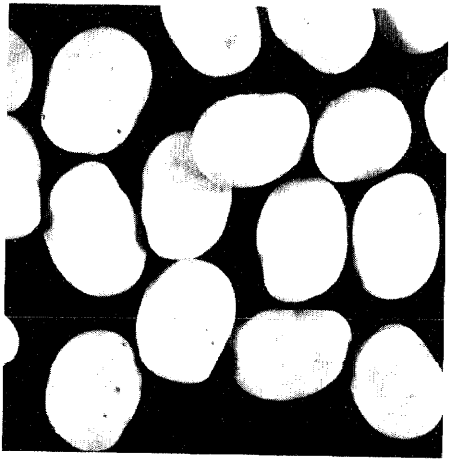


Fig. 110

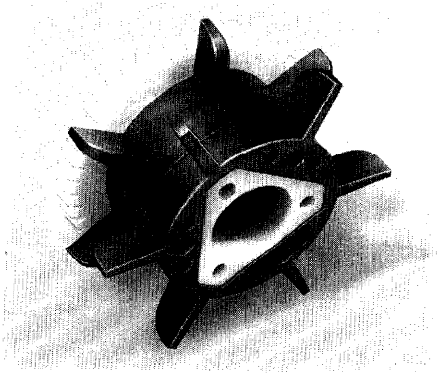


Fig. 111

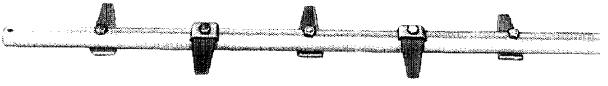


Fig. 112

28.0 When sowing beans (option)

Beans, up to a thousand grain weight (TGW) of about 600 g which have the shape and size as shown in Fig. 109 may be sown without any problems by the normal metering wheel of the Pack Top seed drill. The agitator shaft must rotate wher sowing these beans whereby it should be taken into account that a certain amount of beans (less than 1 %) is being destroyed. To avoid the damage of a small amount of beans the machine must be equipped with a special bean agitator shaft (fig. 132) with flexible agitating fingers.

Of course, these beans may also be sown with the special **bean metering wheel** (Fig. 111) without any problems.

Especially large beans (a thousand grain weight [TGW] above 600 g) as they are shown in Fig. 110 require the use of a special **bean metering wheel** (Fig. 111) and a special bean agitator shaft (Fig. 112). The bean metering wheel as well as the bean agitator shaft are equipped with flexible wings of high grade polyethylene. Hereby the beans are metered and sown very carefully.

The flexible fingers of the bean metering wheels are long enough that they reach down to the bottom flap and hereby guarantee a uniform metering of the seed. The bottom flap setting lever is set on position "8".

The changing from normal seed metering wheels to bean seed metering wheels is especially easily conductible at AMAZONE seed drills (see para. 28.2). Also when sowing beans tramlines can easily be laid down.

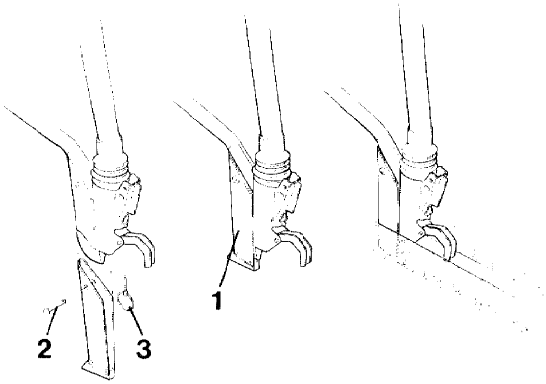


Fig. 113

28.1 Deep sowing shoe for K-coulters (option)

The AMAZONE 'K'-(Suffolk) coulter is designed in such a way that shallow planting depths can be achieved. For this a long drawn coulter tip with shallow sliding angles is required. The shape of the AMAZNE 'K'- (Suffolk) coulter tip has, moreover, the advantage that straw and weed trash slides off the coulter tip easily and makes the coulter blockage resistant.

Especially on heavy, **dry soils**, however, it is very often impossible to drill beans in the desired extreme planting depth by the 'K'- (Suffolk) coulter just by simply increasing the coulter pressure. In such cases then the AMAZONE 'K'- (Suffolk) coulter is equipped additionally with the **AMAZONE deep sowing coulter**. For sowing seeds in extreme sowing depths of between 6 - 10 cm the deep sowing show (Fig. 113/1) has been developed to fit to the AMAZONE 'K'- (Suffolk) coulter.

The deep sowing coulter is pushed over the 'K'- (Suffolk) coulter in the same way from the front as the band sowing shoe and fixed with pin (Fig. 113/2) and lynch pin (Fig. 113/3).

The tip of the deep sowing shoe stands "on grip" and is slender and aggressive so that this coulter penetrates easily into the soil. Additionally the tip of the deep sowing shoe stands about 3.5 m lower than the tip of the 'K'- (Suffolk) coulter so that the desired deep planting depth can also be achieved in accidental furrows.

On heavy, **moist** soils which frequently prevail when sowing beans the use of the deep sowing shoe has not been approved. We then recommend the sowing by the 'K'Ä- (Suffolk) coulters of the front row of coulters **without the use of the Extra Coverage Following Harrow**. The rear coulters then are only used for ploughing additional soil onto the sown rows of beans and thus increase the planting depth (this applies also for roll disc coulters).

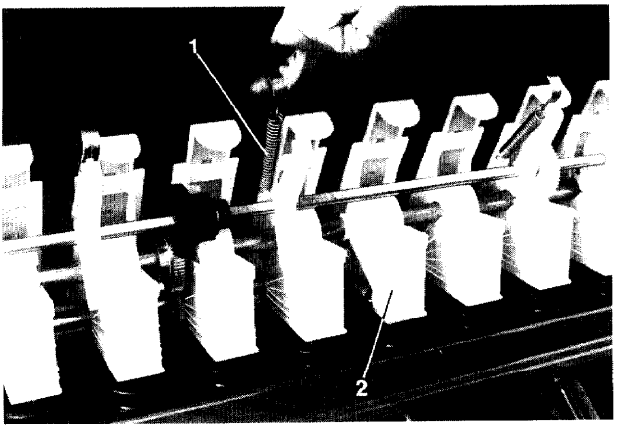


Fig. 114

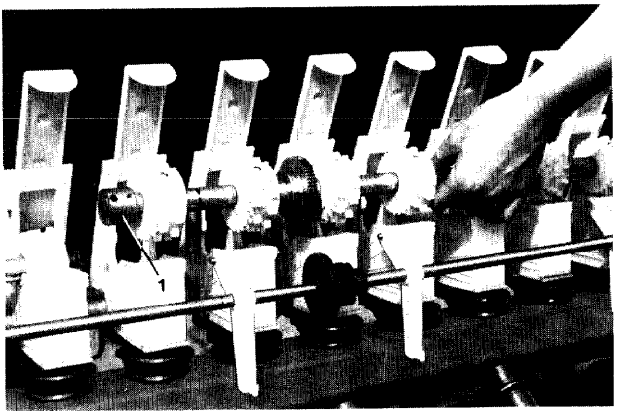


Fig. 115

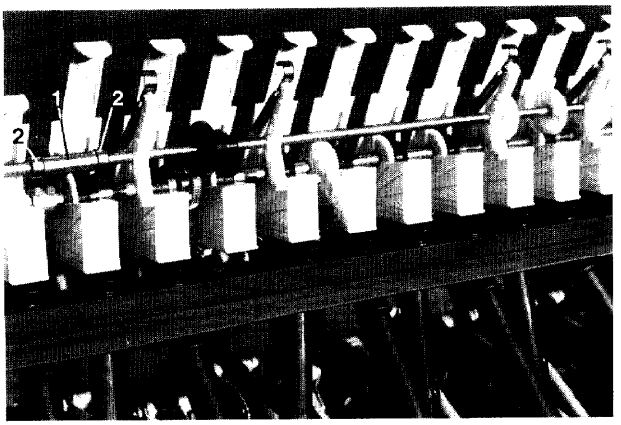


Fig. 116

28.2 Fitting of the bean metering wheel shaft (option)

The bean metering wheels can be piece by piece exchanged for the normal seed metering wheels of the metering shaft. However, it is of advantage if the bean metering wheels are fitted to a second metering shaft. Due to the centrally split metering shaft a quick exchange has become possible:

- The counter shaft of the metering wheel tramlining control (if existent) is after removal of the locking springs (Fig. 114/1) folded downwards with the swivel bearings.

  A bracket (Fig. 116/1) which axially secures the counter shaft catches into a gap at the metering wheel housing. This bracket is pulled out of the gap when folding the counter shaft downwards and can easily be retrofitted after terminating the exchange. The bracket (Fig. 166/1) is secured axially by set rings (Fig. 116/2) on the counter shaft.

- Remove after slackening the tensioning springs the pressure bearing (Fig. 114/2).

  After slackening the hexagon bolts slide the connecting bushes (Fig. 115/1) on the metering shaft sideways and lift off the metering shaft complete with metering wheels to the rear and exchange for the pre-assembled bean metering wheel shaft.

The fitting of the bean metering wheel shaft is conducted in vice versa order. Fig. 116 shows the bean metering shaft fitted.

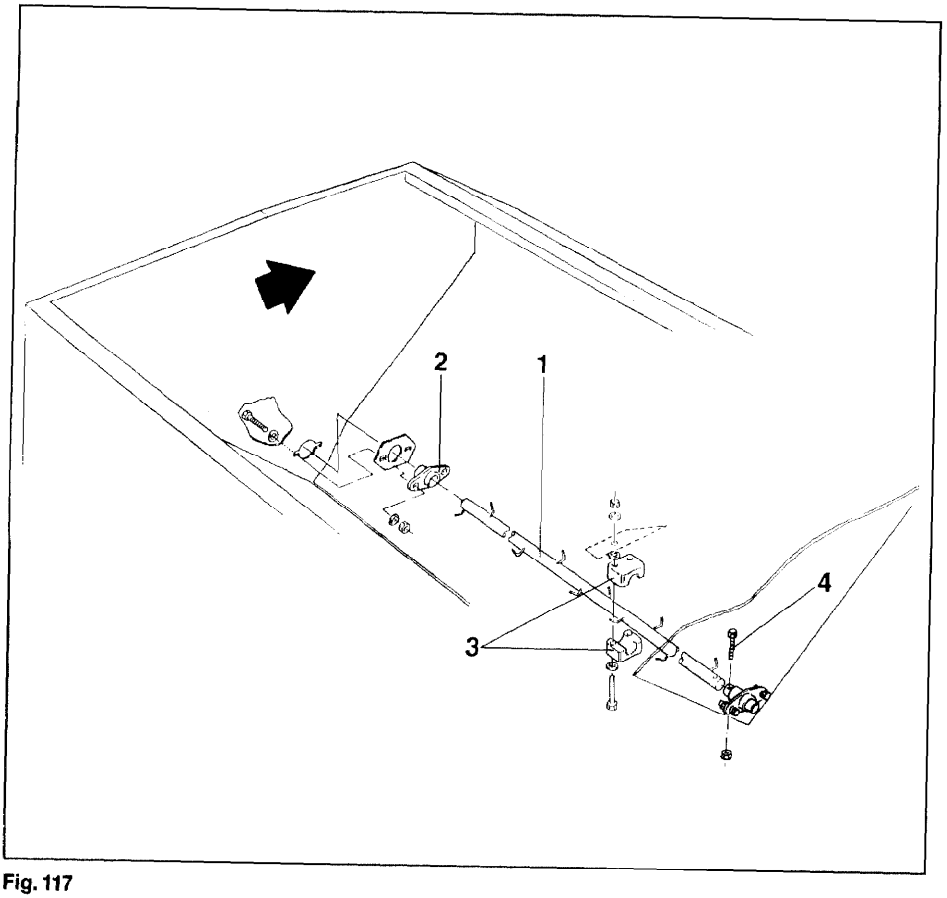


Fig. 117

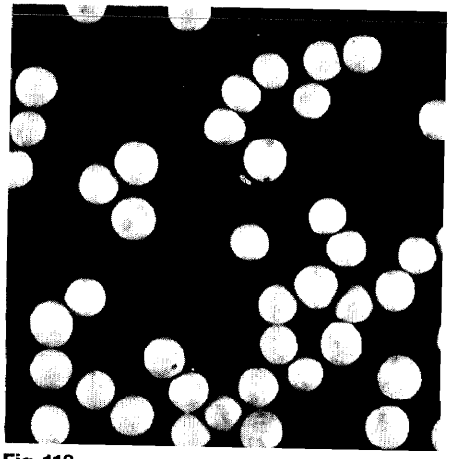


Fig. 118

Fig. 119

28.3 Fitting the bean agitator shaft (option)

For fitting the bean agitator shaft (Fig. 112) the standard supplied agitator shaft (Fig. 117/1) should first be detached. For this remove the agitator shaft bearing (Fig. 117/2) at the left hand seed box wall and the agitator shaft bearing (Fig. 117/3) at the seed box centre. The agitator shaft is connected to the drive by a bushing at the right hand side of the machine. Remove hexagon bolt (fig. 117/4) and pull the agitator shaft through the left hand side wall of the seed drill. The fitting of the bean agitator shaft is conducted in vice versa order.
The use of the bean agitator shaft for sowing grain has no disadvantages so that the bean metering shaft may be used for all kinds of seed.

32.0 When sowing peas

Peas having the shape and size as illustrated in Fig. 118 and Fig. 119 can be sown without any problems with all AMAZONE seed drills in the desired seed rates by the normal seed metering wheel.

Advice:
To avoid even the smallest damage to the seed it is recommended to stop the agitator shaft drive. However, sowing with a running agitator shaft is possible.

Peas in the shape and size as shown in Fig. 119 tend to clamp in betweer the metering wheel and bottom flap and also tend to cause 'bridging' inside the seed box.

AMAZONE seed drills have gearboxes with stronger free clutched which will stand even the additional strain caused by sowing these special types of peas.

As the 'square' peas (Fig. 119) do not flow easily it is necessary to
sow with a running agitator shaft.

By fitting the special bean agitator shaft (Fig. 112) equipped with elastic agitator fingers even the slightest damage of the pea seed is avoided. The special bean agitator shaft can lateron also be used for sowing grain and thus does not require a continuous change of the shafts (see also para. 28.3).

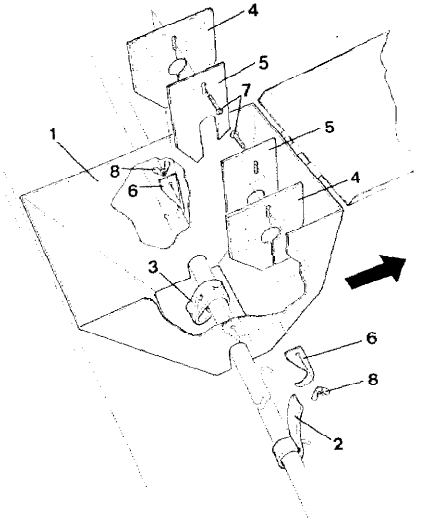


Fig. 120

30.0 Hopper insert boxes

The hopper insert boxes (Fig. 120/1) are designed to save costly seed in those cases where a smaller seed rate should be brought out at larger row spacings. Hereby also the remaining amount of seed which is left over after sowing can be reduced to a minimum.

Fitting
The hopper insert boxes are always installed in front of those metering wheel housings which are used for sowing fine seeds (mark metering wheel housing).

Hint
As it is impossible to fit the hopper insert boxes to the two extreme outer metering wheel housings, it is recommended to connect the seed tubes of the outer coulter to the second inner metering wheel housings. This requires to dismantle the telescopic tubes from the mounting rail. This can be eased when the upper bellows are heated up by either hot water or hot air (i. e. a hair dryer).

- When sowing badly flowing seed it is necessary before fitting the hopper insert boxes to fit an agitator rubber according to Fig. 120/2 or 240/3 so that also the last remainders of seed are sown out of the hopper insert boxes.

- Position the hopper insert boxes (Fig. 120/1) equally inside the seed box.

- Fix the rubber covering tongue (Fig. 120/4) to the cover plate (Fig. 120/5) within the fixing plate (Fig. 120/6) outside of the hopper insert boxes by flat head bolts M6 (Fig. 120/7) and wing nuts (Fig. 120/8). The fixing plate hooks with its pregnant hooks under the agitator shaft.

Fig. 121

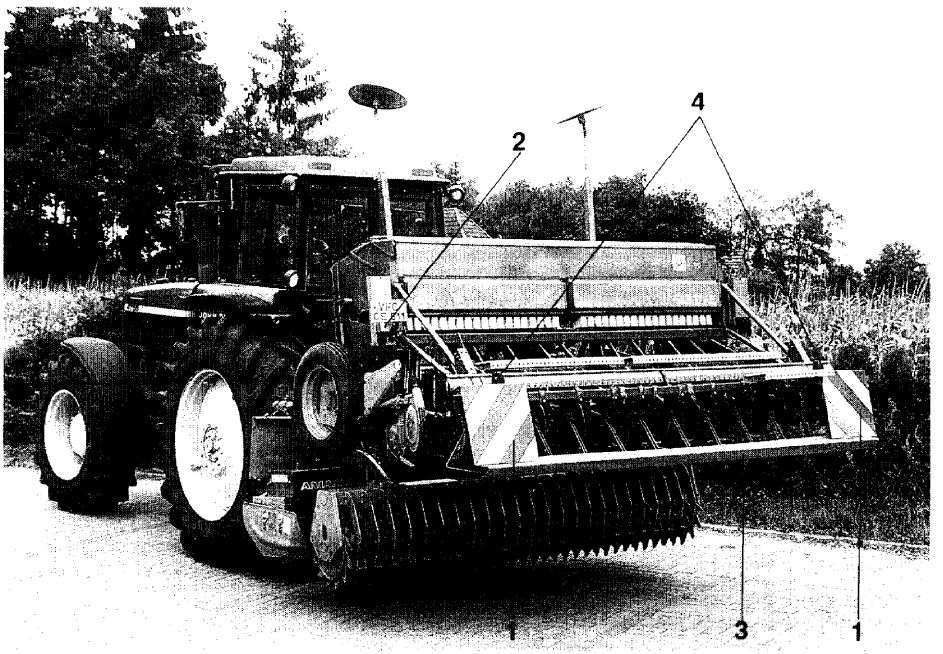


Fig. 122

31.0 En route to the field (Transport on public roads)

If public highways are used en route to the field ensure that the tractor and drill conform to the traffic regulations. In particular this means

- The maximum transport width of 3 m must not be exceeded.
- Lift swivelable drive arm and arrest with lever (fig. 55/1). Push star wheel completely into the drive bush of the swivelable drive arm and secure by lynch pin (Fig. 54/2).
- The markers should be brought into transporting position according to Fig. 67.
- Take off the marker discs of the pre-emergence marker after removal of the pin (Fig. 99/3) together with the marker arms (Fig. 89/1). Attach warning plates in front (fig. 121/1) and rear (Fig. 122/1) up to 10 cm max. distance towards the machine's outer edge in a maximum height of 150 cm.
- Place the legally permissible traffic lights on the light carriers which are mounted to the sides of the seed drill in such a way that the upper mounting is used for the front facing lights and the lower mounting for the lights facing to the rear. The Fig. 122 shows the firmly installed lights (Fig. 122/2) (Order-No. 30690), which need not be removed even in the field.
- The backward facing tines of the Extra Coverage Harrow must be equipped with a traffic guard board (Fig. 122/3) (option). Prior to this the outer harrow elements of the Extra Coverage Harrow should be removed from the square tube (use the calibration crank for slackening the ring nuts [Fig. 61/2]). A second set of rear lights (Fig. 122/4) should be fixed to the square tube of the Extra Coverage Harrow.

Lift seed drill only to that extend that the following heights above the road are not been exceeded:

Rear light upper edge towards road	max. 1550 mm
Rear lights towards road	max. 900 mm

Do not forget to check that the lights are working correctly.

Please remember that also the soil tillage implement must meet with the traffic rules and regulations. Details you may please find in the corresponding instruction book of the soil tillage implement.

Furthermore note that the tractor's allowable rear axle load must not be exceeded. Never use the seed drill with a filled seed box if driven in combination with a soil tillage implement as in this case the maximum permissible axle loads are nearly always exceeded. Besides please mind the allowable total weight of the tractor.

Please pay attention to these hints especially when travelling on public highways. They will help to prevent accidents.

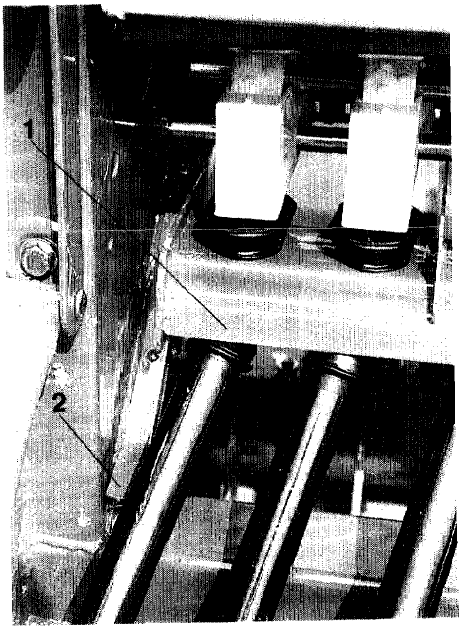


Fig. 123

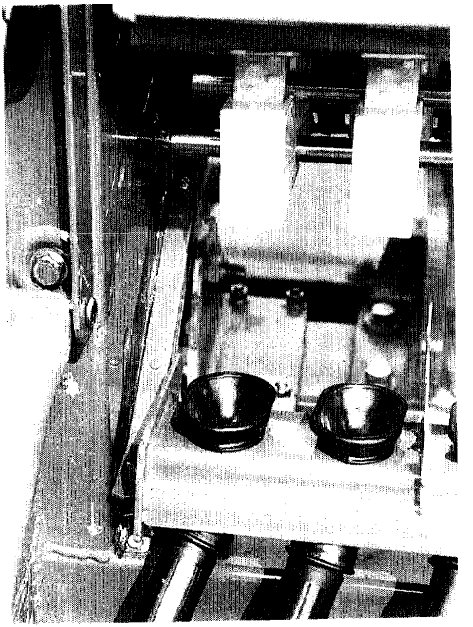


Fig. 124

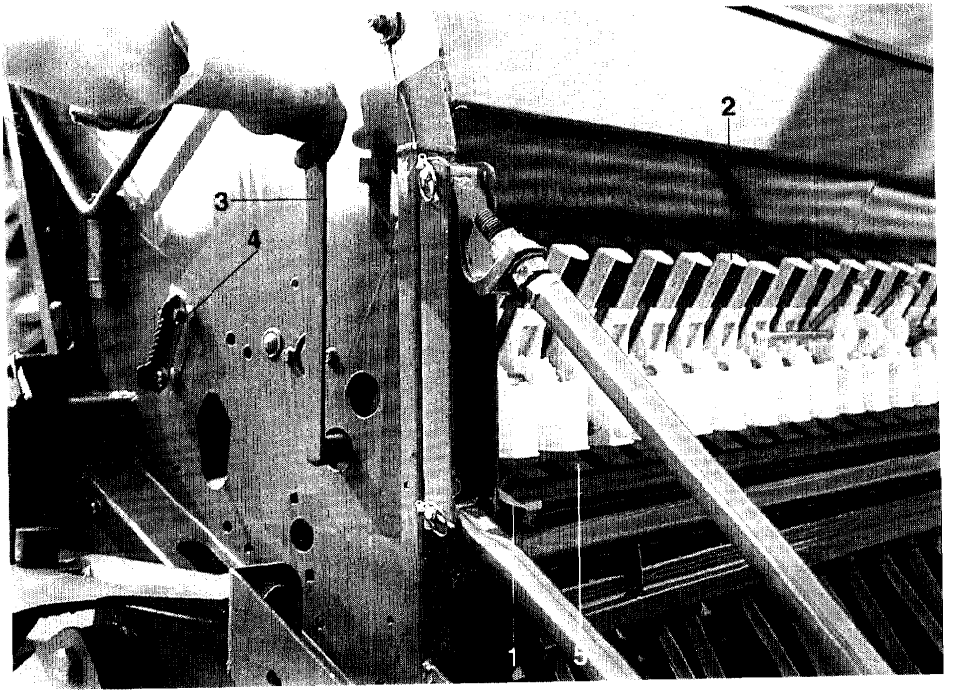


Fig. 125

32.0 After operation - Emptying the seed box

For emptying the seed box unlock the seed tube mounting rail (Fig. 123/1) and same as with the calibration test bring the upper edge into the mounting rail (Fig. 124). For this the locking trips (Fig. 123/2) should be raised briefly on both sides and the seed tube mounting rail be lowered. Place calibration trays (fig. 125/1) onto the seed tube mounting rail (Fig. 123/1).

Open all shutter slides (Fig. 125/2) and set the bottom flap setting lever (fig. 125/3) at the left hand side part of the seed drill beyond the rest plate (Fig. 125/4) to the rear. The remainder of the seed then freely flows into the calibration trays. If the calibration trays are filled, shut the bottom flaps (125/5) by the bottom flap lever (Fig. 125/3) again and empty the calibration trays. Repeat this procedure until the seed box is empty and cleaned.

Advice:

⚠ The machine may be cleaned by a water hose or by a high pressure cleaner. If you intend to clean the seed box by compressed air please bear in mind that the dust of the dressings is poisonous and should therefore never be inhaled.

Special hint

When parking the seed drill over winter **leave the bottom flaps (Fig. 125/5) fully opened**. With closed bottom flaps danger exists especially during the winter period that mice try to get inside the seed box, as also on empty seed box smells after grain. With closed bottom flaps it may be that the mice bite their way through the bottom flaps and damage the metering wheels.

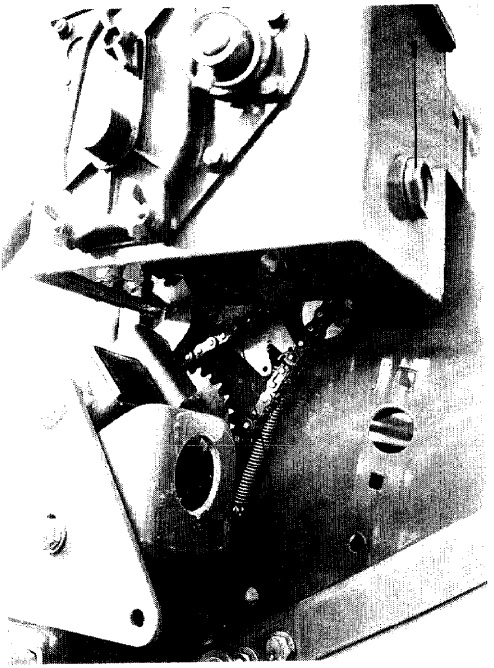


Fig. 126

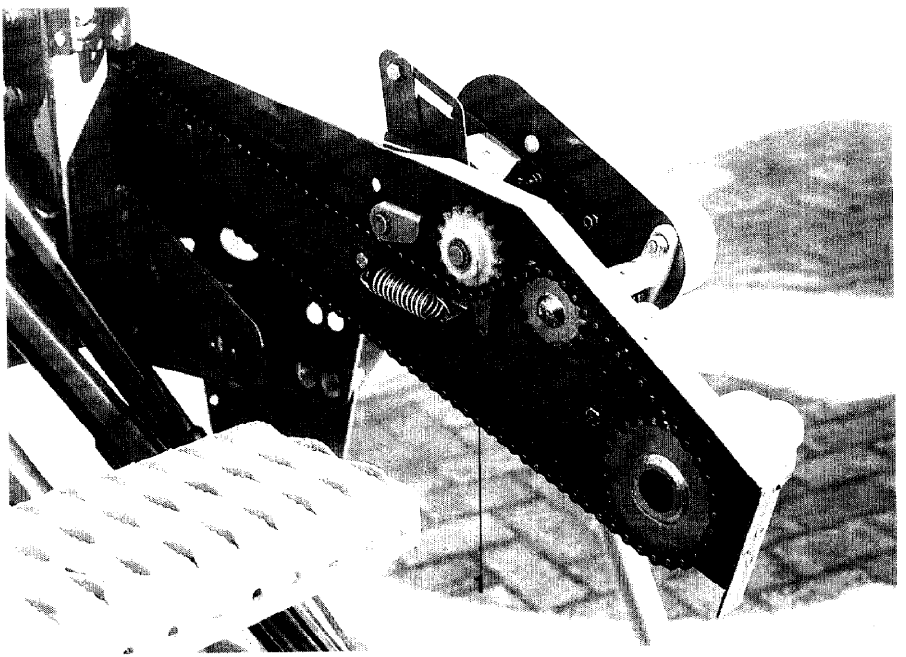


Fig. 127

⚠ General safety and accident preventive advice at maintenance and care operations

1. Repair-, maintenance- and cleaning operations as well as remedy of function faults should principally be conducted with a stopped drive and engine. Remove ignition key!
2. Check nuts and bolts for tightness and re tighten if necessary.
3. When conducting maintenance work on a lifted implement always place suitable supports underneath.
4. For replacing any tools with cutting edges always use suitable tools and gloves.
5. Dispose of old oils, grease and filters as prescribed by law.
6. Before working on the electric gear disconnect battery cables.
7. When conducting electrical welding operations on the tractor or on the mounted implement remove cable from the generator and the battery.
8. Any spare parts fitted must, in minimum, meet with the implement manufacturer's fixed technical standards. This is, for example, ensured by using original spare parts.

33.0 Maintenance and care advice

1. Bolting connections

All bolted connections of the machine should be checked after the first 30 hours of operation and be re tightened if found necessary.

2. Setting gearbox

The oil level in the setting gearbox may be checked at the oil gauge window (Fig. 100/1). Changing the gearbox oil is not necessary. For refilling the oil the cover of the setting gearbox is unbolted and hydraulic oil WTL 16.5 CST/50° or motor oil SAE 10W should be used. The total filling quantity is 1.8 litre.

3. Roller chains

The metering wheels of the seed drill are driven from the star wheel via two roller chains which are linked with one another by an intermediate drive. The roller chains are **automatically t**ensioned by two chain tensioners. One chain tensioner (Fig. 126/2) is fixed to the seed box outer wall behind the gearbox, the second chain tensioner (Fig. 127/1) is located in the swivelable drive arm.

Care for the roller chain is recommended after long periods of operation. Remove the chains and wash them in kerosene and afterwards dip them in heated grease or oil.

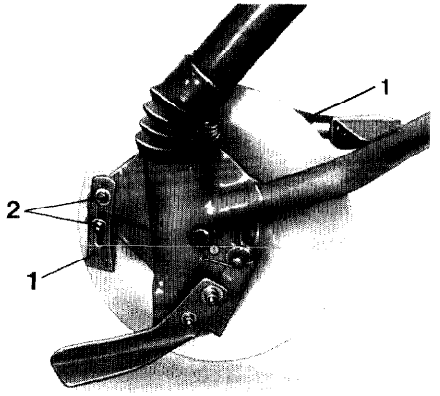


Fig. 128

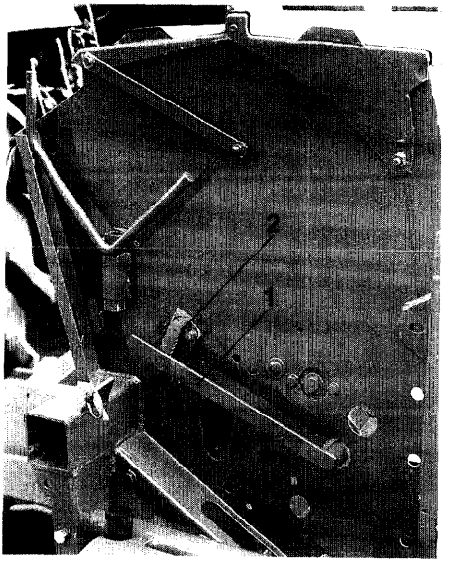


Fig. 129

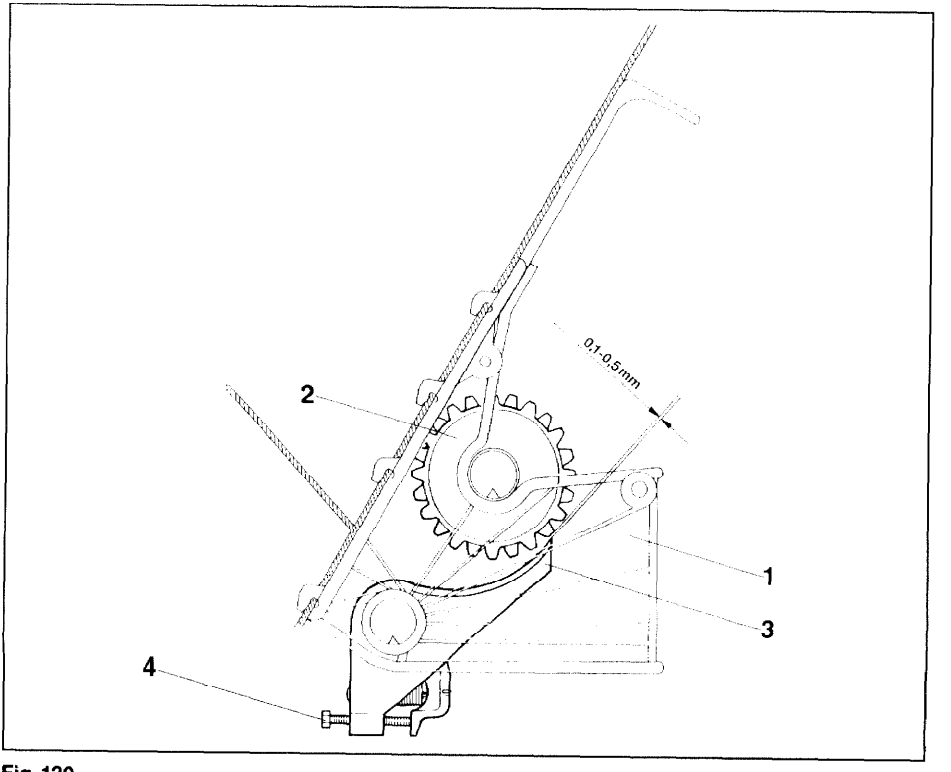


Fig. 130

4. Coulter bearings

All coulter bearings are maintenance-free.

5. Roll disc scrapers

The disc coulter is equipped with two scrapers (Fig. 128/1) to clean it from sticky soil. These scrapers have been set by the factory in such a way that they just slightly touch the disc without having a noticeable breaking effect. After longer use of the roll disc coulters a certain wear may be noticed at the scrapers. Now the scrapers should be set by bolts (Fig. 128/2) in such a way that again they just touch the disc as described above.

6. Bottom flaps

When the factor pre-set individual bottom flaps become incorrectly set it may lead to uncontrollable additional quantities of seed during sowing. **Therefore the basic setting of the bottom flap should be checked** prior to every sowing period at an empty seed box and metering housing as follows:

1) Bring bottom flap lever (Fig. 129/1) at the setting plate (Fig. 129/2) into position "1".
2) Check whether the prescribed spacing of 0.1 mm to 0.5 mm (see Fig. 130) between the bottom flap (Fig. 130/3) and metering wheel (Fig. 130/2) of each metering wheel housing is maintained. For this the metering wheel to be checked should be turned by hand on the metering shaft.
3) In case of deviations set the prescribed spacing at the spring tensioning screw (Fig. 130/4).

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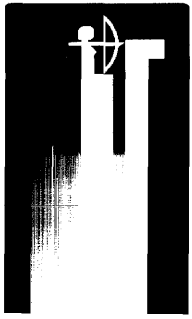

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H. DREYER GmbH & Co. KG