DB 552(E) 8.75

Seed Drill

AMAZONE D 7-25/-30/-33/-40/-50

Standard / Super

Instruction Manual

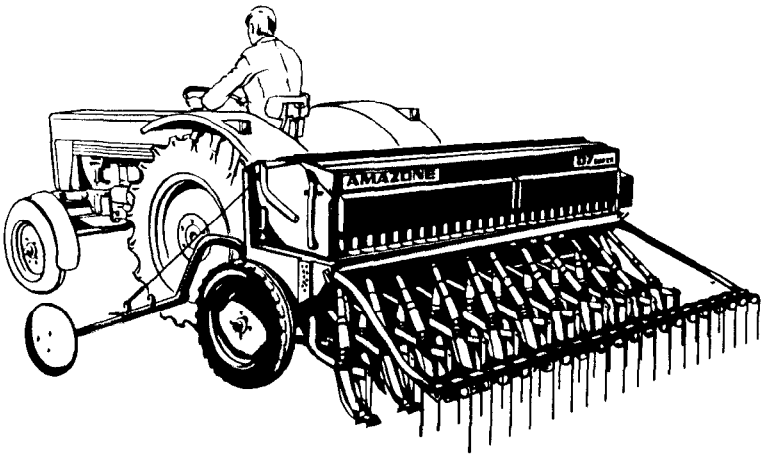

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Fig. 1

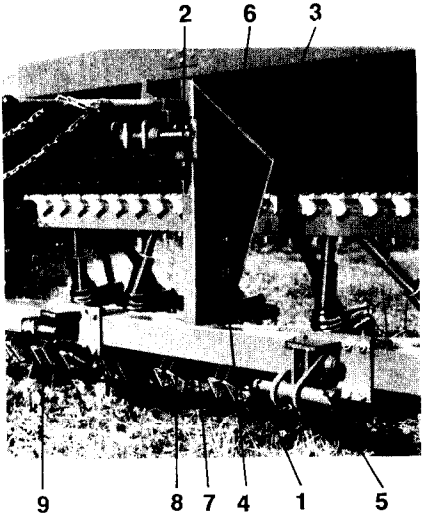


Fig. 2

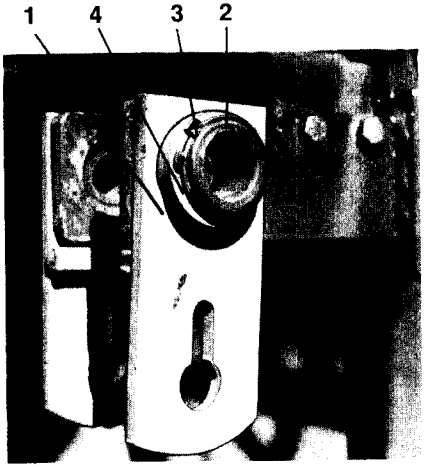


Fig. 3

A. Upon receiving the machine

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

Caution:

When the machine is moved the agitator shaft turns even when the gearbox is set at zero. And so do not place any parts in the seedbox. This could damage the agitator shaft.

Do not place your hands in the seedbox when the machine is moving because of the danger of injury from the rotating agitator.

Withdraw the coupling bolts (Fig. 1/1) on the nearside landwheel to facilitate moving the drill without the tractor.

B. Attachment to the tractor

1. **Attaching the drill to the three-point linkage of the tractor**

   Attach the drill to the three-point hydraulics of the tractor in the usual manner. There are bolts both for cat. I and for cat. II at the lower link points (Fig. 2/1); at the upper link point is arranged the plug bolt (Fig. 2/2) both for cat. I and cat. II. Set the lower linkage arms of the tractor to allow a slight lateral slackness so that the drill will always run in a central position behind the tractor and that it will not rattle backwards and forwards in the raised position when turning at the ends of fields. Set the upper link so that the drill is horizontal in its working position. This is done by pointing the arrow (Fig. 2/3) on the centre frame of the drill straight down on to the top of the triangular hole (Fig. 2/4).

2. **The AMAZONE quick-action coupling**
   (Standard equipment on the D 7 Super; special equipment on the D 7 Standard)

   a) **Subsequent attachment:**

   If the quick-action coupling is attached later, the retaining plates (Fig. 3/1) must first be inserted on to the bushings welded to the three-point linkage. Before fitting the Seeger rings (Fig. 3/3), insert the distance rings (Fig. 3/4) supplied on the bushings (Fig. 3/2). In addition, lock the left-hand, lower link point (pendulum compensation) (Fig. 2/5) by inserting and tightening the screw M 12×85 in the appropriate holes.

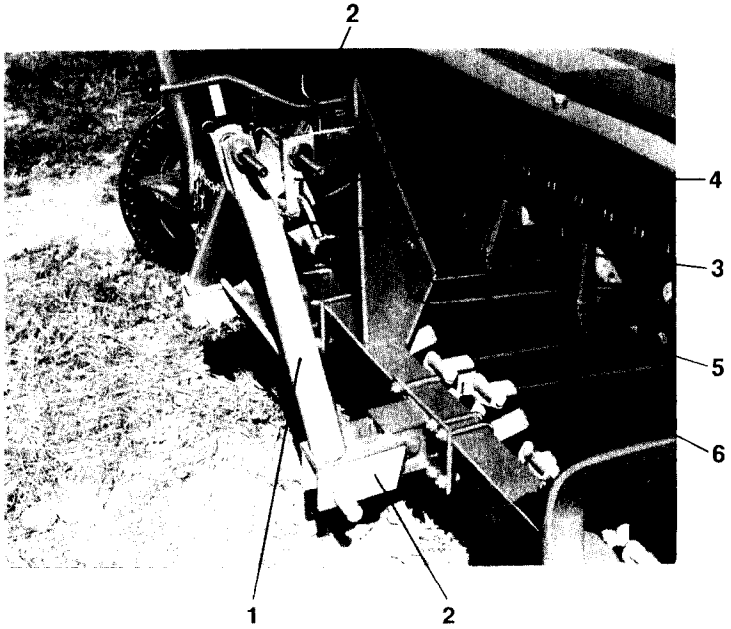


Fig. 4

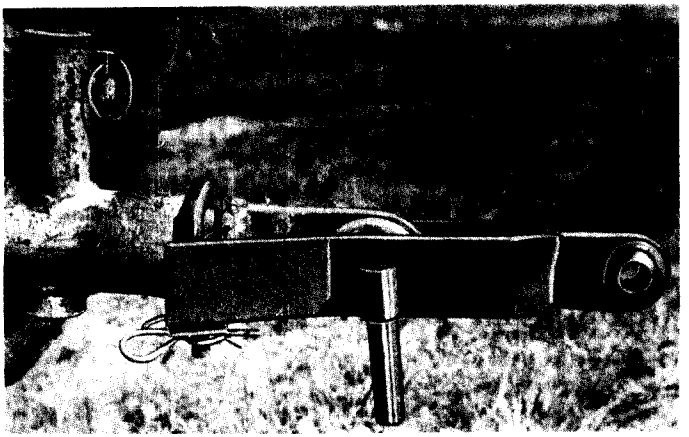


Fig. 5

b) **The coupling procedure**

Connecting the drill to the tractor by means of the quick-action coupling is carried out as follows: Attach the quick-action coupling frame (Fig. 4/1) to the three-point linkage of the tractor. With the tractor hydraulics lowered drive the tractor slowly backwards to the drill until the hitch pins (Fig. 4/2) of the quick-action coupling frame are immediately below the lower and upper three-point linkage of the drill. Now raise the hydraulics slowly until all three hitch pins of the quick-action coupling catch the three link bolts of the drill and lift the drill by further raising. Now lock the quick-action coupling by inserting the retaining bolts (Fig. 4/3) into the two retaining plates (Fig. 4/4). Ensure that the bolts can be inserted only with the bolt handle upwards so that the clamping sleeves driven into the bolts are pressed through the slot in the retaining plate.

Set the upper link of the tractor so that the drill is horizontal in the working position. This is achieved if the arrow (Fig. 4/5) on the centre frame of the drill is pointing straight down on to the top of the triangular hole (Fig. 4/6).

3. **Pendulum compensation**

The left-hand lower link bolt (Fig. 2/1) is fitted to the machine to make a pendulum motion, which allows the drill to be adjusted to any unevenness of the ground independently of the tractor. When using the quick-action coupling, the pendulum compensation is achieved by the quick-action coupling in the three hitch pins having sufficient slackness in relation to the three link bolts of the drill.

4. **Extension pieces for the lower linkage arms of the tractor**
(special extra)

If with some tractor types there is too little space between the drill and the tractor, then extension pieces (Fig. 5) for the lower linkage arms of the tractor can be supplied as special equipment; with these the distance between the tractor and the drill is increased by 19.5 cm. By using the quick-action coupling the distance between the tractor and the drill will be increased by 8.5 cm also.

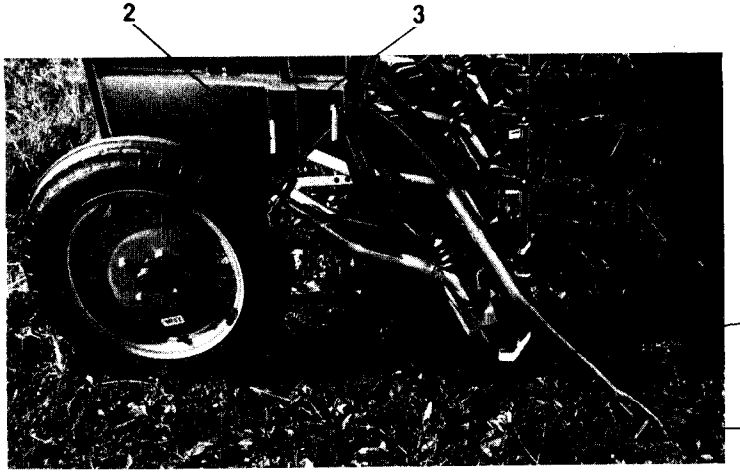


Fig. 6

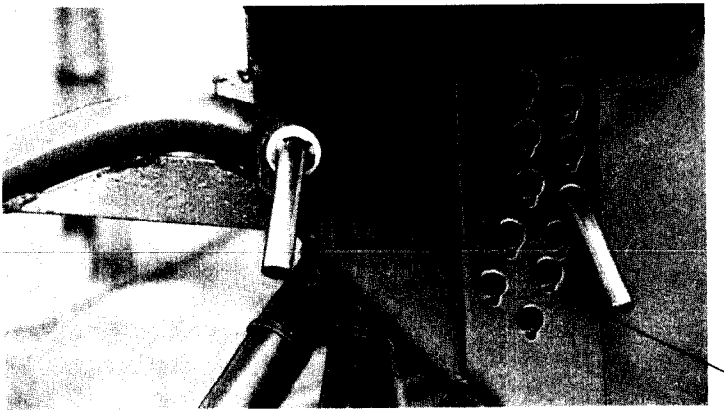


Fig. 7

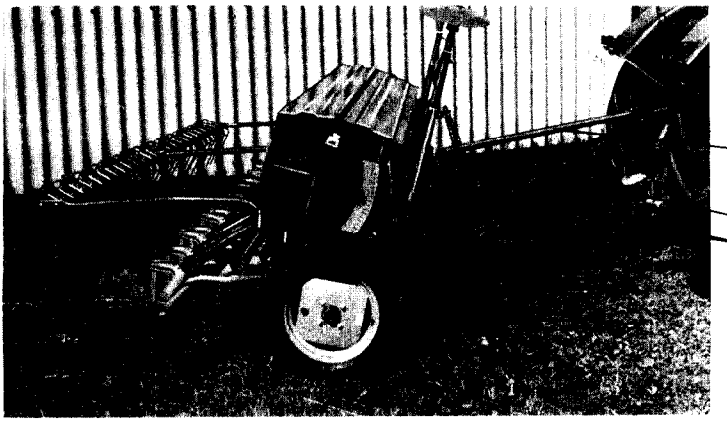


Fig. 8

5. **Parking supports**

The seed harrow brackets (Fig. 6/1) act as parking supports for the drill if a seed harrow is not provided on the machine. They are therefore supplied with the machine as standard equipment. To park the drill in these supports, insert a retaining bolt (Fig. 6/2) into the hole of the group of holes (Fig. 6/3) in each of the frame side sections which act as bearings for the seed harrow brackets. The clamping sleeves driven into the bolts have a locking effect. To remove the bolts from the holes, turn the bolts through 90° until the bolt handle is horizontal and the clamping sleeve is projecting through the recess in the hole (Fig. 7/1). An angle plate (Fig. 6/4) is bolted to the lower end of the seed harrow brackets/parking supports to enlarge the supporting area on the ground.

If a seed harrow is provided with the machine, the seed harrow itself will act as a support. In this case also, the retaining bolts (Fig. 6/2) are inserted into the appropriate holes in the group of holes (Fig. 6/3), as described above.

If a very high coulter spring pressure is set on the drill, then the machine, particularly if a seed harrow is not fitted, tends to tilt forwards. In this case the coulter spring pressure must be reduced by means of the central spring pressure adjustment (if supplied) or at least at a few coulters before the machine is parked. It is also possible to raise a few coulters by means of the raised supports (see section E. 6.), whereby the overall coulter spring pressure will be reduced and the danger of tilting removed.

6. **Transport drawbar** (special extra)

a) **For towing by the tractor:**

With this transport drawbar the drill can be attached to the tractor or to a trailer connected behind the tractor for driving to the field, for example.

Attaching the tractor transport drawbar:
After loosening the clevis pin withdraw the bolt (Fig. 8/1) from the upper link and insert the tube of the drawbar (Fig. 8/2). Now insert the bolt again and secure with the clevis pin. Insert the two stays (Fig. 8/3) on to the pins of the lower link bolts of the drill and secure with clevis pins. If the quick-action coupling is not provided, the left-hand lower link of the drill, which is arranged for pendulum compensation, must be fastened by inserting a screw into the holes provided (Fig. 2/5).

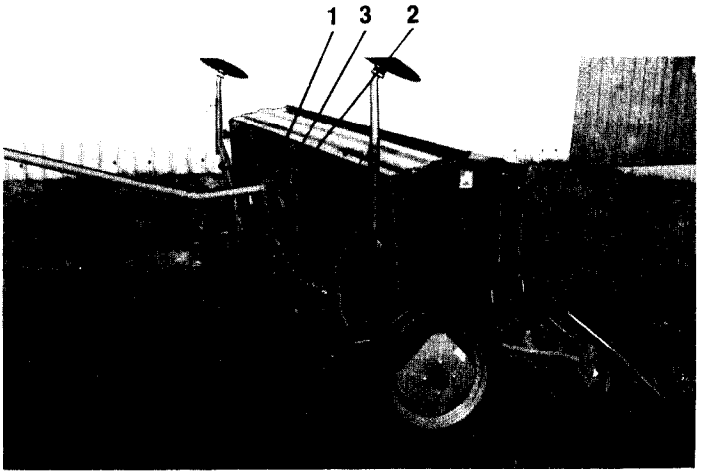


Fig. 9

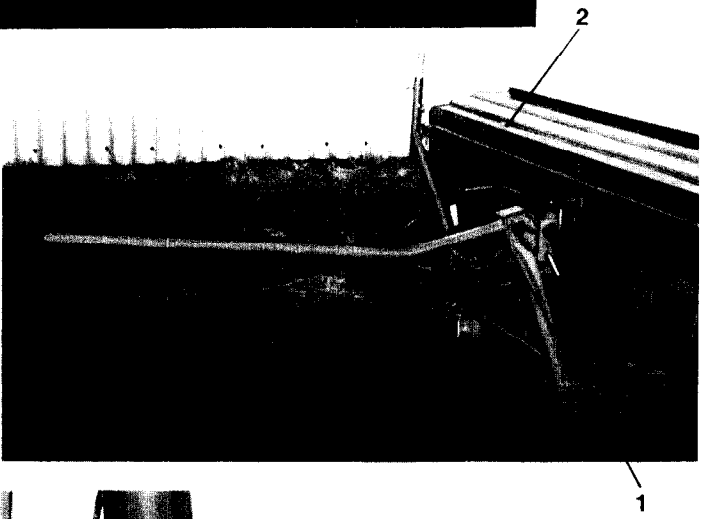


Fig. 10

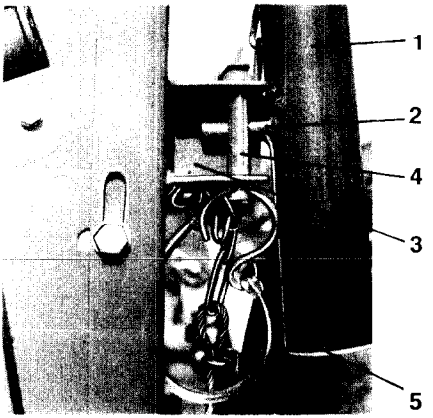


Fig. 11

b) **Manual transport drawbar:**

On drills without a quick-action coupling (Fig. 9), withdraw the bolt from the upper link after loosening the clevis pin. Then insert the transport drawbar so that the contact surface (Fig. 9/1) is close to the plates (Fig. 9/2) of the upper link from above. Finally, insert the bolt of the upper link (Fig. 9/3) again and secure with the clevis pin. On drills with quick-action couplings (Fig. 10), insert the drawbar with the contact surface close to the plates of the upper link point (Fig. 10/1) from the front.

7. Travelling on public highways

The road transport licensing order in Germany and some other countries allows agricultural machinery to be driven on public highways only if it is not wider than 3 m. In some other countries the maximum width is 2.50 m. The AMAZONE drills D 7–30 and D 7–25 are so designed that with a working width for corn of 3 m and 2.50 m they have a transportation width of 3 m and 2.50 m.

a) **Transporting position of the drill:**

To achieve the transport width mentioned, the marker tubes have only to be swivelled up into the vertical position so that the pin (Fig. 11/2) welded to the marker tube lower end (Fig. 11/1) is in the bracket (Fig. 11/3) welded to the seedbox. Then fasten the marker tubes in this vertical position by means of the retaining bolts (Fig. 11/4) and clevis pins (Fig. 11/5).

Also ensure that the land wheels of the drill are fitted with the crank inwards.

In order for the drill to have sufficient ground clearance, it is recommended that the track eradicators (see section H) be raised in their holder or be inserted into the holder with the coulter points upwards. The seed harrow (see section G) can also be raised. The sowing coulters (see section G), too can be raised by the coulter raised supports (see section E. 6.) to obtain greater ground clearance.

b) **Long transporting gear for D 7–33/–40/–50**
(special extra):

Since on the drills types D 7–33/–40/–50 the transporting width is greater than 3 m, a long transporting gear is necessary for these types.

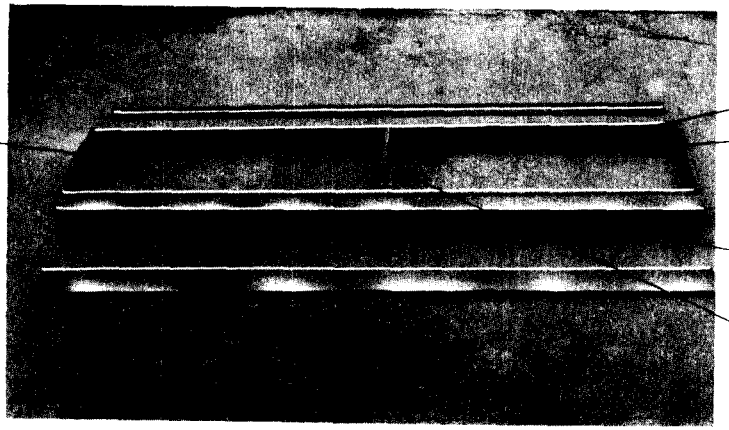


Fig. 14

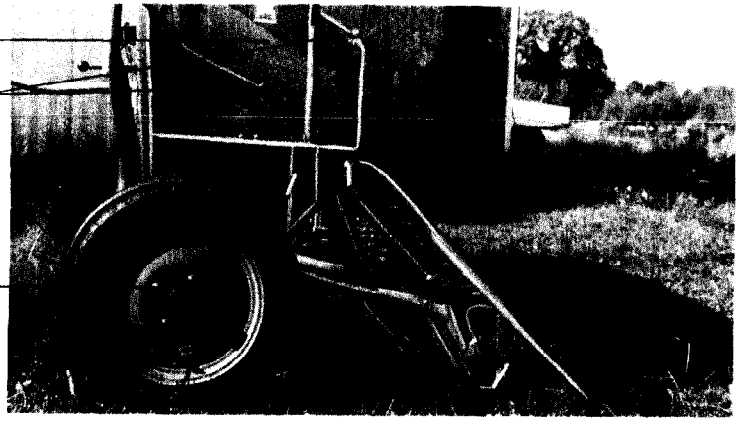


Fig. 15

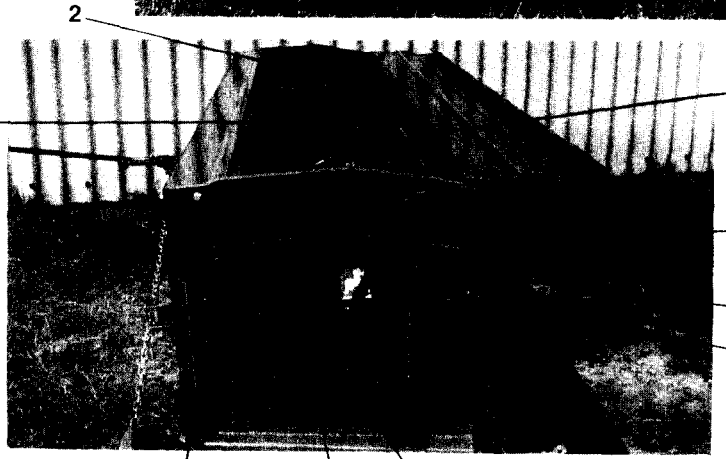


Fig. 16

C. The seedbox

1. Seedbox capacity

The seedbox has the following capacity and in the case of corn with a specific weight of 0.74 kg per litre contains the following quantities:

D 7-25	280 litres - 210 kg corn (Am. = grain)
D 7-30	345 litres - 230 kg corn (Am. = grain)
D 7-33	395 litres - 290 kg corn (Am. = grain)
D 7-40	485 litres - 360 kg corn (Am. = grain)
D 7-50	640 litres - 475 kg corn (Am. = grain)

2. **The seedbox extension** (special extra)

By using a seedbox extension (Fig. 16) the seedbox capacity can be increased by about 50%. The seedbox with extension has the tollowing capacity and in the case of corn with a specific weight of 0.74 kg per litre contains the following quantities:

D 7-45	415 litres - 305 kg corn (Am. = grain)
D 7-30	515 litres - 380 kg corn (Am. = grain)
D 7-33	580 litres - 430 kg corn (Am. = grain)
D 7-40	720 litres - 530 kg corn (Am. = grain)

Fig. 17

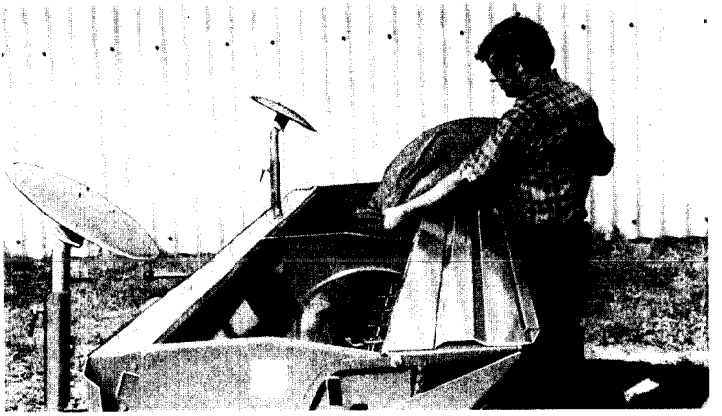


Fig. 18

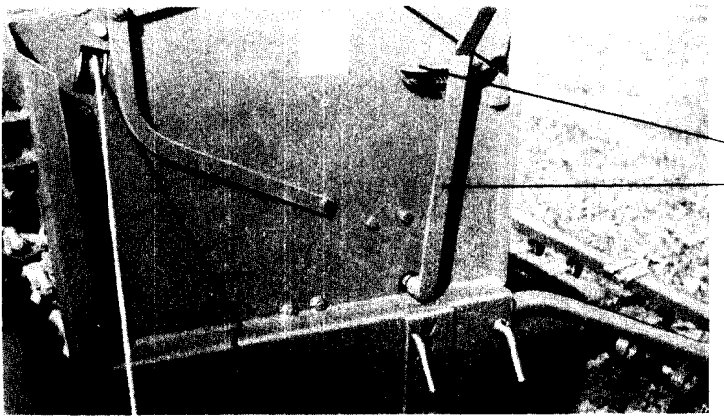


Fig. 19

Subsequent attachment of the seedbox extension:

The individual parts of the seedbox extension are despatched all together in one package. First assemble the seedbox extension by screwing together the two end panels (Fig. 14/1), the rear panel (Fig. 14/2) and the front panel (Fig. 14/4) with a total of 8 screws M 8 × 15. Now screw on the centre piece (Fig. 14/3) with two M 8 × 15 screws. Now remove the cover of the existing seedbox by loosening the two fillister-head screws (Fig. 15/1) on each side of the seedbox. 12 cm above the hole now revealed at each front end of the seedbox there is another hole which is blocked by a plastic plug (Fig. 15/2). Remove this plastic plug and insert it into the hole (Fig. 16/1) 12 cm below. Now place the assembled seedbox extension on the seedbox and secure it to each front end of the drill with four M 8 × 15 screws (Fig. 16/2). The appropriate holes are already provided in the seedbox. Insert a sealing strip (Fig. 16/3) at the two front ends between the seedbox extension and the seedbox. Now srew on the front plate (Fig. 16/5) and the rear plate (Fig. 16/4) with several M 8 × 15 screws. The cover can now be mounted on the seedbox again by fixing two fillister-head screws (Fig. 16/6) at each front end of the seedbox.

To hold the folding cover in the openend position, the cover stop bar (Fig. 16/7) must now be screwed on; the vacant hole (Fig. 16/8) in the seedbox is used for this.

3. **The folding cover**

The seedbox cover is a folding cover and is opened by pulling the rail (Fig. 17) on the cover backwards. You should do this standing at the centre of the seedbox. In the opened position the cover can be used as a practical sack rest (Fig. 18) which will facilitate the filling of the seedbox.

4. **Emptying the seedbox**

Once The trays (Fig. 27) have been positioned under the seedbox (see section D 7) and all seedbox slides have been opened, move the bottom flap control lever (Fig. 19/1) on the left-hand side of the drill right back through the range of the quadrant; the seeds will now flow over the bottom flaps into the calibration trays.

It is strongly recommended that the seedbox be emptied completely once the sowing has been finished, especially at the end of the sowing season, in order that rats or mice cannot try to get at the seed and perhaps eat the plastic parts, such as metering wheels, casing and shut-off valves.

For this same reason it is strongly recommended that all shut-off slides and the seedbox cover be closed at the end of the sowing season.

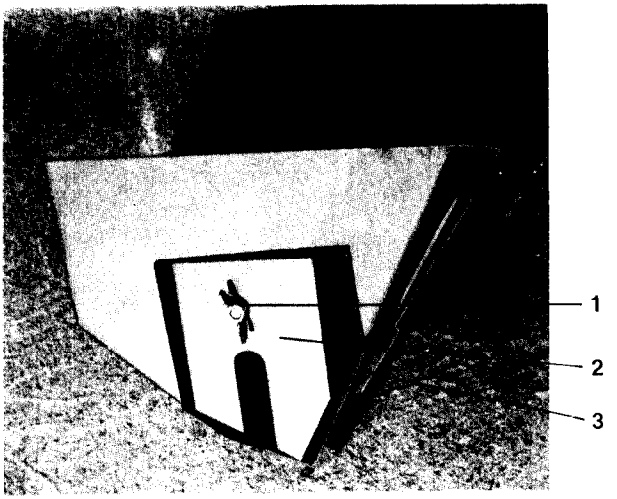


Fig. 20

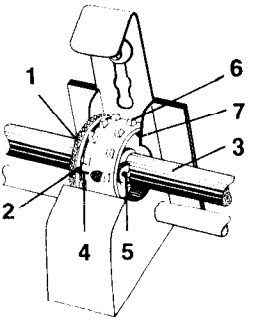


Fig. 21

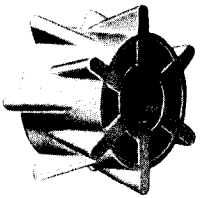


Fig. 22

5. **Insert hoppers** (special extra)

If it is necessary to sow small quantities of seed in relatively wide rows, then the use of insert hoppers is recommended. These will prevent the relatively small quantity of seed which is required to be sown being distributed along the whole length of the seedbox.

The insert hoppers are installed as follows:
Determine first where the insert hoppers should be fitted, i.e. which coulters should be fed with seed (see also section E. 11 working widths and row width adjustments). It must be ensured that no insert hoppers are fitted at the two outer seedbox outlets. If necessary, rehang the outer telescopic tube on the second to outside seedbox outlet. Now loosen the wing nuts (Fig. 20/1) on both sides ot the seedbox and remove the cover plates (Fig. 20/2) and the rubber plates (Fig. 20/3). Insert the rubber plates on each side of the agitator pin from below with the slotted side over the agitator shaft so that the tips of these rubber plates are resting on the bottom of the seedbox. Then insert the insert hopper itself, place the cover plates at each side of the insert hopper against the rubber plates and firmly tighten the wing nuts again (Fig. 20/1). Press the insert hopper firmly downwards when tightening the wing nuts.

D. The sowing mechanism

1. **The AMAZONE "Elite" metering wheel**

The "Elite" metering wheel is a combination of a standard metering wheel (Fig. 21/6) and a fine metering wheel (Fig. 21/1). The fine metering wheel is connected to the metering shaft by a cam which is meshed into the groove of the shaft; it cannot be disconnected therefore and always rotates with the shaft. The standard metering wheel (Fig. 21/6) is connected to the fine metering wheel by a coupling pin. If it is necessary to sow only with the fine metering wheel (Fig. 21/1), disconnect the standard wheel by pushing the pin away from the fine wheel so that it protrudes through the standard wheel and catches into the hook. The standard metering wheel is thus disconnected from the fine metering wheel and no longer rotates once the coupling pin has been pushed against the nose of the casing (Fig. 21/7) at the side of the standard metering wheel (Fig. 21/6). The standard metering wheel will then remain stationary on the rotating shaft and only the fine metering wheel will revolve.

If it is necessary to sow with the standard metering wheel again, raise the drill by the hydraulics and turn offside land wheel, which drives the metering shaft, until the marking (Fig. 21/4) on the fine metering wheel becomes visible.

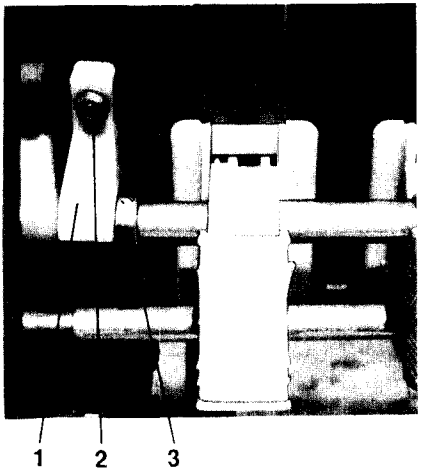


Fig. 23

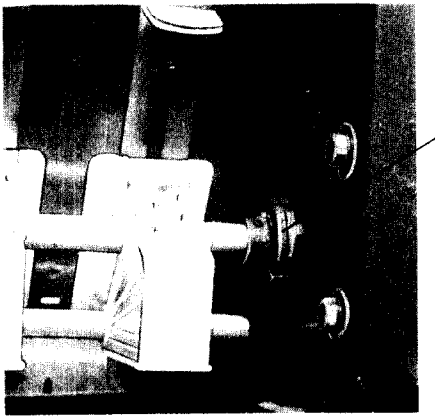


Fig. 24

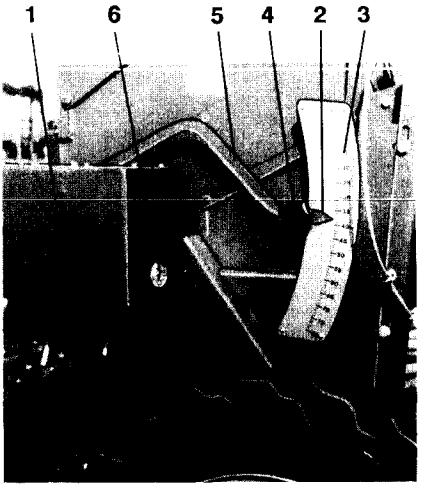


Fig. 25

Then turn each standard metering wheel by hand until its marking coincides with that on the fine metering wheel (Fig. 21/2). Now push the coupling pin (Fig. 21/5) lightly with one finger for the standard metering wheel to be coupled to the fine metering wheel again.

The seed rate chart indicates for each type of seed whether the fine metering wheel should be used.

Caution
The "Elite" metering wheels consist of a plastic which can be eaten by rats and mice if these vermin sense that there is food behind these parts. It must be ensured, therefore, that at the end of the sowing season the seedbox is emptied completely and the shut-off slides and the seedbox cover are closed.

2. **Bean metering wheels** (special extra)

The special-purpose bean metering wheels (Fig. 22) are highly recommended for sowing particularly large beans ("horse beans", "fodder beans"). To simplify the changing of the shaft with "Elite" metering wheels for bean metering wheels, it is advisable to buy a second metering shaft fitted with bean metering wheels. The shafts are changed as follows: Remove the pillow blocks (Fig. 23/1) by loosening the screws (Fig. 23/2). Now push the shaft in the metering wheels slightly to the left for the claw coupling (Fig. 24/1) to disengage. The shaft and all the metering wheels can then be easily withdrawn upwards out of the casing. Now insert the new shaft in the reverse sequence. Push the shaft slightly to the tight again for the claw coupling (Fig. 24/1) to be correctly engaged. After attaching the pillow blocks (Fig. 23/1) ensure that the ring (Fig. 23/3) at the left-hand end of the shaft is adjusted so that it is pressing against the pillow block and will prevent the shaft from moving to the left.

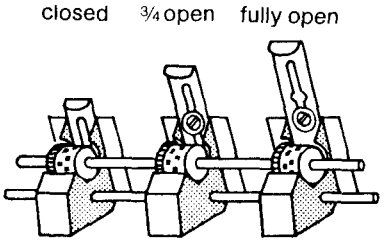
3. **The AMAZONE gearbox**

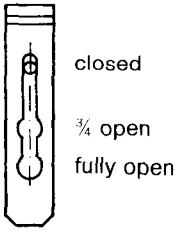
The AMAZONE gearbox is an infinitely variable oil-bath gearbox which works with freewheels. This produces an intermittent drive of the shaft. The intermitting rotation of the shaft results in a uniform discharge of the seed grains through the metering wheels.

The speed of the shaft, and thus the quantity of seed, can be infinitely adjusted by the AMAZONE gearbox. To do this, loosen the clamp of the preselecting lever (Fig. 25/2) at the scale (Fig. 25/3) by loosening the star handle (Fig. 25/4) by about two turns. The lever (Fig. 25/5) can then be pointed to any required position on the scale (Fig. 25/3). Ensure after each adjustment that the star handle (Fig. 25/4) is tightened again so that the lever is secure and cannot be moved accidentaly.

Since the AMAZONE gearbox is an oil-bath type it does not require maintenance. It is only necessary to check in the oil-level sight glass (Fig. 25/6) whether the oil level is high enough. If required, top up with hydraulic oil 2.5 E/50° C.

Shut-off slide settings





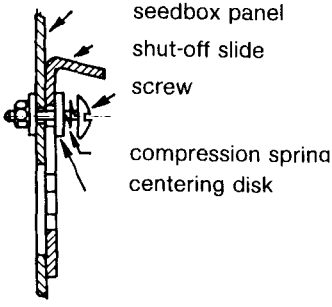


Fig. 26

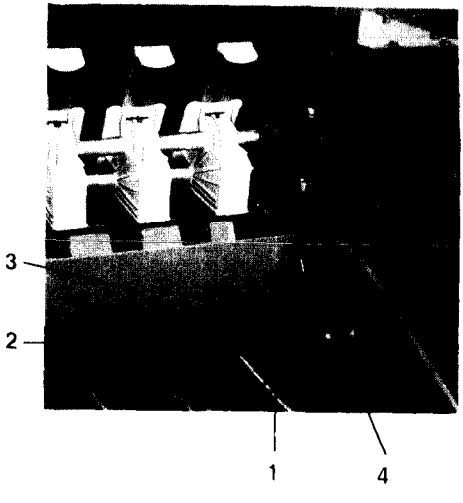


Fig. 27

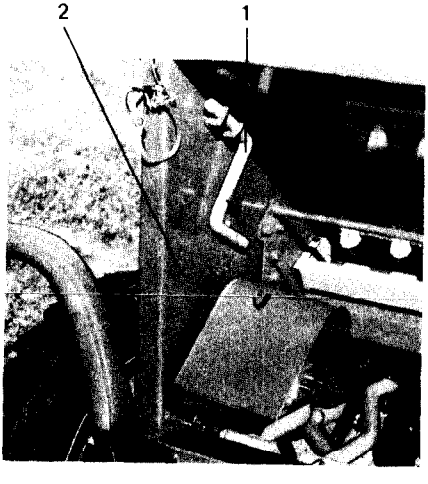


Fig. 28

4. **The double-wheel drive**

The nearside land wheel can be connected to the drive axle by a coupling pin (Fig. 1/1) for both land wheels to drive the sowing mechanism. This guarantees a more reliable drive of the sowing mechanism even on difficult soil conditions and with a very high coulter spring pressure.

To facilitate moving the drill around the farm by hand, the nearside land wheel can be disconnected again by with-drawing the coupling pin (Fig. 1/1). The coupling pin (Fig. 1/1) is made so that in both positions a spring-loaded ball falls into a groove, which is noticed when actuating the coupling pin. If the metering wheels will not turn when moving the drill by hand or when the drill is pulled with the tractor drawbar, adjust the gearbox setting to "0" with the gearbox preselecting lever (Fig. 25/5). But the agitator shaft will still keep turning in the "0" position, and so it must be ensured that there are no parts in the seedbox which might damage the agitator shaft.

5. **The land wheels**

The standard tyres are 4.00–16. For the larger D 7–40 and D 7–50 machines, the larger 5.00–16 or 5.50–16 tyres or a similar size tyres are used. Even with the other types, the 5.00–16 and 5.50–16 tyres can be supplied as special extras.

The dimensions of these tyres are as follows:

Tyre designation	**Outer dia.**	**Width**	**Air pressure**
4.00 – 16 AM	630 mm	115 mm	2.0 kg/cm^2 = 29,1 p.s.i.
5.00 – 16 ASF	679 mm	137 mm	2.0 – 2.5 kg/cm^2 = 29,1 ~ 36,4 p.s.i.
5.50 – 16 AW	687 mm	152 mm	2.0 – 2.75 kg/cm^3 = 29,1 ~ 40 p.s.i.

The air pressure of the tyres should be checked from time to time in order for the sowing accuracy not to be affected. If the tyre air pressure is too low, a smaller wheel diameter results which will bring about a higher speed of the shaft and thus a greater quantity of seed sown.

The tyre rims are cranked by 40 mm and so by turning the wheels round the drill track can be altered by 16 cm. The drills are normally supplied with the crank inwards; in this way the transporting width of 3 m on the D 7–30 and 2.50 m on the D 7–25 will not be exceeded. The wheel track is 234 cm on the D 7–25 with the rims cranked inwards, 284 cm on the D 7–30, 384 cm on the D 7–40 and 484 cm on the D 7–50. By turning the two wheels round, i.e. crank outwards, track widths of 250, 300, 400 and 500 cm will be obtained. The track width of the machine corresponds here to the working width of the machine for corn, i.e. on each trip the drill wheel runs along the track of the preceding trip. The number of drill tracks on the field will therefore be reduced by half in this way. Furthermore, seed will not fall into the drill track with this setting. When driving on public highways it is necessary under certain circumstance turn the wheels round again for the transporting widths of 3 m or 2.50 m not to be exceeded.

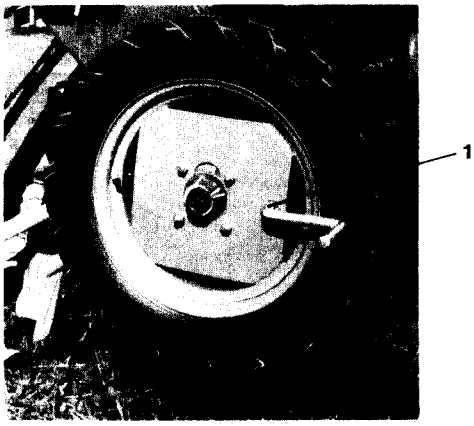


Fig. 29

6. **Setting the quantity of seed**

a) **Gearbox setting:**

The gearbox is infinitely adjustable (see section D. 3.). Use the seed rate chart to find the correct gearbox setting: If it is necessary, for example, to spread 230 kg of corn per hectare in 19 rows 15.8 cm in width with a drill of 3 m working width, then the seed rate chart, page 2, will show gearbox setting no. 53. The preselecting lever on the scale (Fig. 25/3) must therefore be set at No. 53.

b) **Shut-off slide settings**

The shut-off slide can be set in three different positions (Fig. 26): "fully open", "¾ open" and "closed". The required setting of the shut-off slides can be taken from the seed rate chart according to the type of seed. In the example quoted above (corn), the shut-off slide must be set in the positon "¾ open". Do not forcibly pull at the slides. If the shut-off slides do not move properly, slightly loosen the plastic disc and screw (Fig. 26).

c) **Bottom flap setting:**

Set the bottom flaps with the bottom flap control lever (Fig. 19/1) and the slotted plate (Fig. 19/2). Refer to the seed rate chart for the setting of the bottom flaps. In the example quoted above, the bottom flap lever should be brought to setting no. 2 according to the seed rate chart.

7. Calibration test

The settings and quantities indicated in the seed rate chart can only be reference values since seeds are often very different from each other in specific weight, grain size, grain shape, moisture content, etx. It is highly advisable, therefore, to make the calibration test every time there is a change of seed. This is carried out as follows:

Withdraw the two spring-loaded locking bolts (Fig. 27/1) on the left and right of the hopper beam (Fig. 27/2) and lower the hopper beam to the stop. Remove the two calibration trays (Fig. 27/3) frm their bracket on the seedbox and position them on the hopper beam as per Fig. 27. Ensure that the long holes (Fig. 27/4) in the tray end pieces are moved above the bracket at the frame side section.

Raise the drill slightly by the tractor hydraulics so that the land wheels can be turned. Insert the calibration crank (Fig. 28/1), which is kept on the inside of the right-hand frame side section (Fig. 28/2), into the hub (Fig. 29/1), which is welded to the rim of the offside land wheel. Now turn the land wheel, and thus the metering wheels, a few times in the clockwise direction until the seed flows uniformly from all the metering wheels. Then pour back the seed grain in the calibration trays into the seedbox again and place the emptied calibration trays under the casing again, as described above. Now keep turning the calibration crank and the wheel in accordance with the "calibration test" chart on the reverse of the seed rate. chart. The wheel rotation and hand crank rotation data on the seed rated chart refer to an area of 1/40 hectares or to 0,162 acre. For example, 41.8 turns of the wheel must be made for a working width of 3 m and tyres of 4.00–16. Ensure that you do not make a mistake by opening more seedbox slides than the number of actual coulters used. For a required sowing quantity of 230 kg per hectare there should be 230 : 40 = 5.75 kg corn in the calibration trays.

If the weighing (deducting, of course, the weight of the calibration trays) reveals, for example, 4.8 kg instead of 5.75 kg, move the gearbox setting from position 53 to setting no. 58 and repeat the calibration test if necessary.

If it is necessary to make a calibration test and a tractor is not available at that moment, jack up the drill at the offside so that the offside land wheel has a small clearance above the ground. Withdraw the coupling pin (Fig. 1/1) on the nearside land wheel (see section D. 4) so that the nearside wheel does not move. The calibration test can now be carried out as described above.

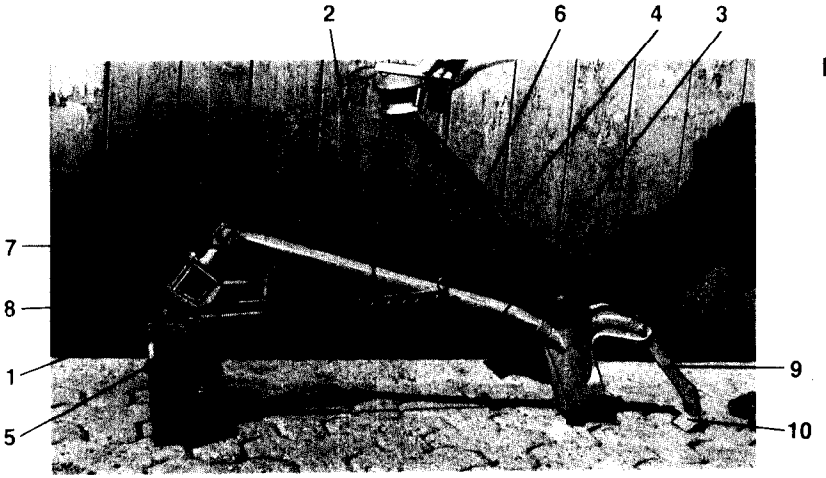


Fig. 30

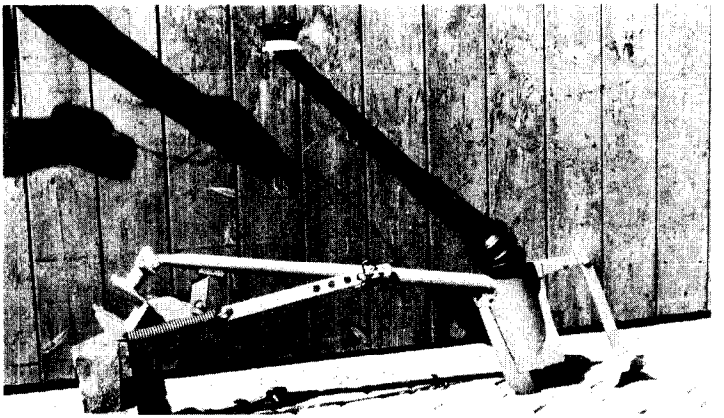


Fig. 31

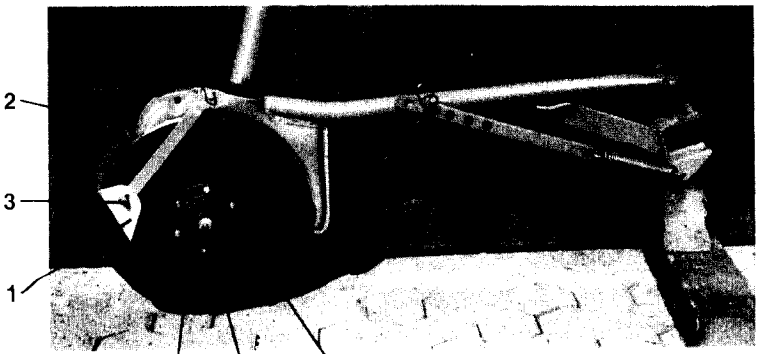


Fig. 32

E. The sowing coulters

1. **The standard coulter**

   All AMAZONE drills are supplied with the standard coulter. The standard coulter (Fig. 30) performs satisfactorily in almost all soil conditions.

2. **The large boot coulter** (special extra)

   For particularly difficult soil conditions, i.e. very heavy, clay soil, the large boot coulters (Fig. 31) are recommended in place of the standard coulters. With these large boot coulters the ground clearance below the coulter holding tubes is particularly large, which is an advantage for avoiding clogging.

3. **The double-disc coulter** (special extra)

   The double-disc coulter (Fig. 32) is recommended for extremely difficult soil conditions, e.g. hard soil, stoney soil or soil mixed with straw and parts of roots. When working with double-disc coulters it must be ensured that the side scrapers (Fig. 32/1) and the centre scraper (Fig. 32/2) are close to the discs and will efficiently scrape off any adhering soil. If necessary, these can be readjusted by means of the long holes (Fig. 32/3). If due to heavy work the discs should become smaller in diameter through wear so that in the forward area (Fig. 32/4) the space between them is too wide, the discs can be readjusted in the following manner:

   First remove the screw plug (Fig. 32/5). Then take an 8 mm hexagonal spanner and remove the hexagonal socket-head bolt (Fig. 33/1) and the washer (Fig. 33/2) from the disc coulter stilt (Fig. 33/3). Determine that there are one or two shims between the bearing (Fig. 33/4) and the threaded piece (Fig. 33/5). Remove one of these and in the reverse sequence bolt the disc on to the coulter stilt again.

   It is important for satisfactory working of the double-disc coulters that the bright points of the discs are oiled or greased after each working so that they do not rust.

   It is also advisable to grease the discs through the lubricating nipple (Fig. 32/6) with a grease gun every 30 hours of operation.

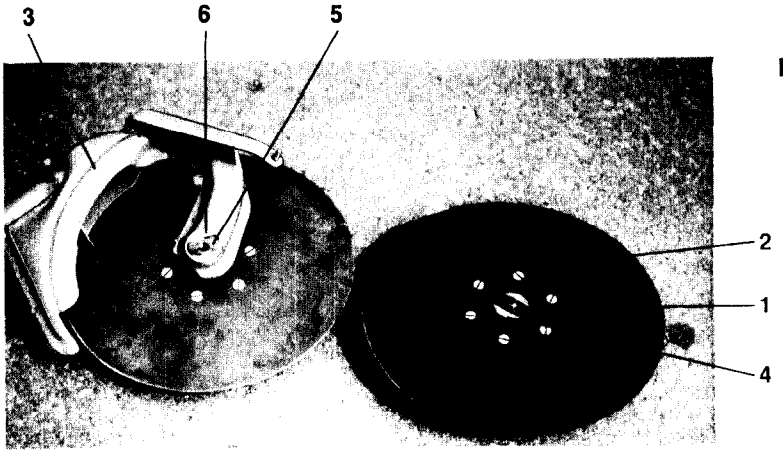


Fig. 33

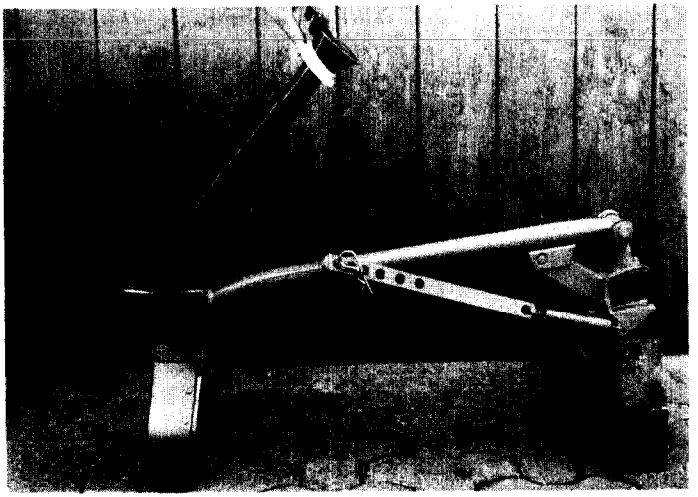


Fig. 34

4. **The flax (linseed) coulter** (special extra)

Special flax coulters (Fig. 34) are available for sowing flax. With these flax coulters the seed fed through the seed duct is distributed to two outlets and sown in the soil in two rows. The distance between the two rows is 170 mm. By staggering the long ans short flax coulters a row width of 85 mm will therefore be obtained.

5. **The coulter supports**

The coulter support have the function of preventing the coulters from becoming clogged when the machine is lowered on the field. This takes place by the coulter supports coming into contact with the soil and then supporting the coulters on it. When the drill moves forward the coulters then slide in the soil, while the coulter supports drag behind the coulters and on light soil act as track eradicators at the same time.

The coulter supports can also be used as single seed harrows (see section G. 3.).

The double-disc coulters do not have coulter supports since these are not necessary.

6. **The coulter raised supports**

If with different types of seeds (e.g. rape-seed or turnip rape) not all coulters are needed for sowing, the unrequired coulters can be raised means of the raised supports (Fig. 30/1). The raised supports can also be used to raise the coulters for better transportation and for parking the machine in the yard.

7. **Setting the coulter spring pressure**

The pressure of the coulters on the soil can be adjusted for each individual coulter according to the condition of the soil. This is done by tensioning the coulter spring (Fig. 30/5) to a greater or lesser extent by hanging the apertured spring bracket (Fig. 30/2) on the pin (Fig. 30/4) welded to the coulter holding tube (Fig. 30/3). Any required coulter pressure can be set in this way. Ensure that the spring bracket (Fig. 30/2) is secured with a clevis pin (Fig. 30/6) after adjusting the coulter spring pressure. If a spring pressure should not be sufficient, then it is possible to fit a second one whereby the coulter spring pressure can be considerably increased.

It could be pointed out here that the pressure of the coulters on the soil is practically independent of the height of the coulters, i.e. that the coulters penetrate the soil with equal depth whether the coulters move over a rise or drop in the soil.

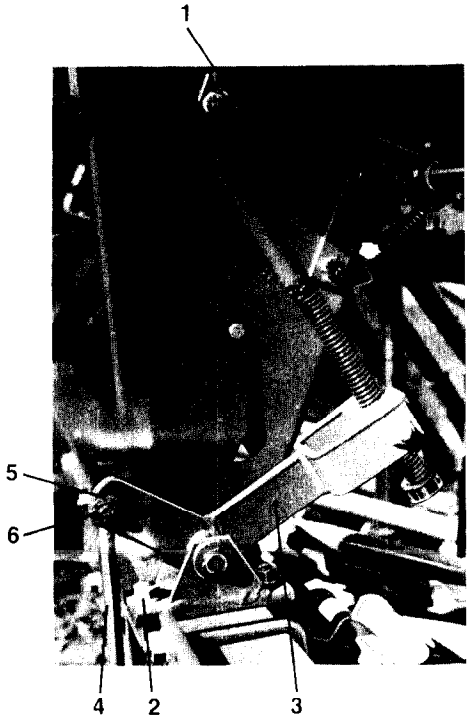


Fig. 35

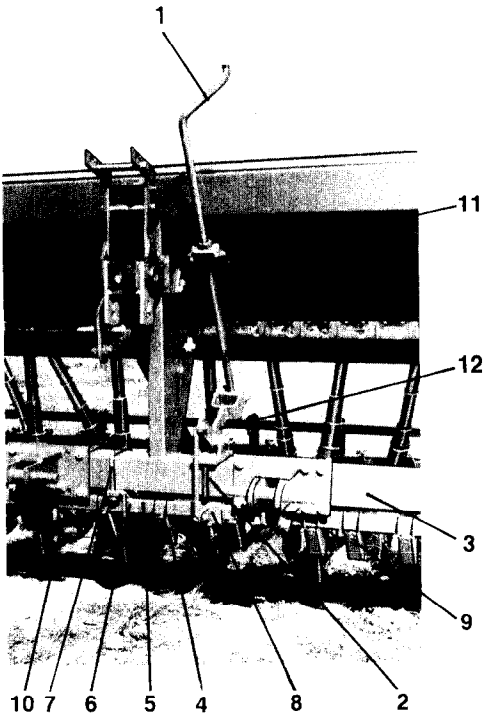


Fig. 36

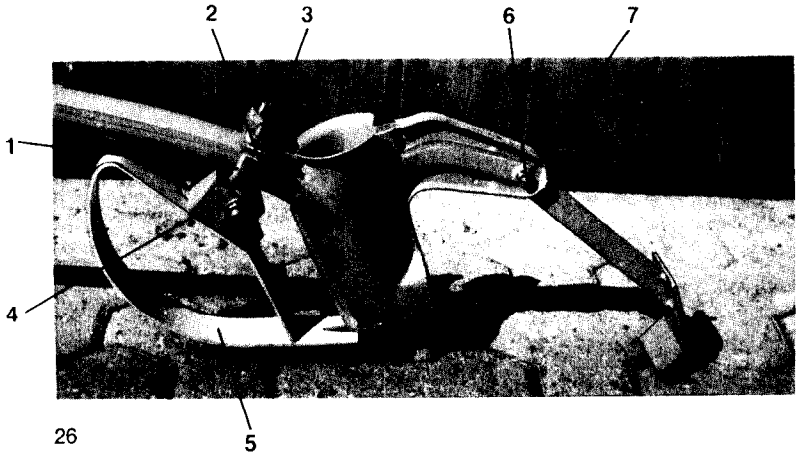


Fig. 37

This avoids the seed being planted too deeply in the rises in the soil and too shallow in drops in the soil. Technically this is achieved, for example, the coulter springs being extended when a coulter is raised and their tensile force thus being increased while at the same time the distance of these coulter springs from the pivot (coulter bracket) (Fig. 30/7) is reduced.

8. **The central coulter spring pressure adjustment** (special extra)

The central coulter spring pressure adjustment enables the spring pressure of all coulters to be infinitely adjusted by means of a hand crank (Fig. 36/1). This saves time in adjusting each coulter pressure spring on each coulter. If the central coulter spring pressure adjustment is used, there is of course still the facility for the coulter spring pressure to be adjusted individually at each coulter also, i.e. to select a higher coulter spring pressure in the tractor track, for example.

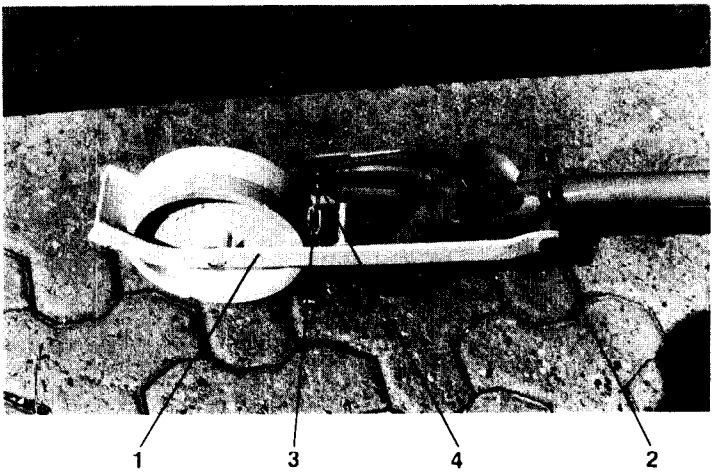
Subsequent attachment:
First secure the hand crank (Fig. 36/1) at the frame centre plate of the drill where the corresponding holes (Fig. 2/6) for the flange (Fig. 35/1) are located. Then secure the retaining plate (Fig. 35/2) for the angled lever (Fig. 35/3) with a U-bolt (Fig. 36/2) on the square tubular beam (Fig. 36/3) of the frame. After inserting the spring bracket (Fig. 36/4) on the adjustable tube (Fig. 36/5), secure the adjustable tube to the square tubular beam with three bearing plates (Fig. 36/6) and U-bolts (Fig. 36/7) Now insert the clip (Fig. 36/8) over the adjustable tube (Fig. 36/5) and secure it with two M 8 srews. Then fit the connecting rod (Fig. 35/4) and secure with a washer (Fig. 35/5) and a cotter pin (Fig. 35/6). After inserting the spring brackerts (Fig. 36/4) in accordance with the position of the coulters on the adjustable tube (Fig. 36/5), firmly tighten the threaded studs (Fig. 36/9) in the spring brackets. Now unhook the coulter springs (tension springs) (Fig. 36/10) still on the machine from the existing holders of the coulter clip (Fig. 30/8) and insert them again in the holes provided in the spring brackets (Fig. 36/4).

Make sure that the spindle is always well greased to prevent it from rusting. It is also advisable occasionally to oil or grease the bearing (Fig. 36/11) and the holder of the angled lever (Fig. 36/12).

9. **Depth control brackets** (special extra)

On particularly light and loose soils it is possible that the coulters will penetrate too deeply in the soil despite the coulter spring pressure not being controlled. But to prevent the seed being sown too deeply in the soil, the penetration of the coulters can be controlled by fitting depth control brackets (Fig. 37).

Fig. 38



Subsequent attachment:

1. Insert the U-bolt (Fig. 37/1) from below over the coulter holding tube and secure with the clamping plate (Fig. 37/2). The tube (Fig. 37/3) welded on at the side of the U-bolt must be fitted pointing back towards the coulter.
2. Secure the attachment (Fig. 37/4) to the U-bolt with the M 12 × 70 hexagon-head bolt.
3. Fit the bow (Fig. 37/5) with two round-head bolts. In doing so set the penetration of the coulters.

10. **Root pressure wheels**

It is particularly advisable when sowing roots to press the seed grains into the furrow by rolling immediately behind the coulter. When attaching the root pressure wheel fit the U-bolt in the same way as for the depth control bracket (point 1). The coulter supports must first be dismantled. To do this, remove the circlips (Fig. 37/6) and the bolts (Fig. 37/7) on the coulter. Secure the root pressure wheel (Fig. 38/2). Tighten the safety nut only so far that the root pressure wheel can still move up and down easily. Secure the tension chain (Fig. 38/3) to the coulter stilt with the M 10 × 35 bolt (Fig. 38/4). Also ensure that you do not tighten the safety nuts too much otherwise the coulter will become bent at this point.

11. **Working widths and row width adjustments for the sowing coulters**

The working widths and row width adjustments given in the appendix show how roots or similar types of seeds can be sown with large row widths without the sowing coulters, which for corn, for example, have to be set for narrow row widths, having to be adjusted. When buying the machine, therefore working width and row width adjustment should be selected which can be used for sowing roots or similar sorts of seeds. But if it is still necessary to adjust the sowing coulters, then this is done as follows: Draw lines as straight as possible in the required coulter width on a flat concrete surface and move the drill over them so that the coulter fitted in the centre of the drill is exactely over one of the chalk lines.

Fig. 39

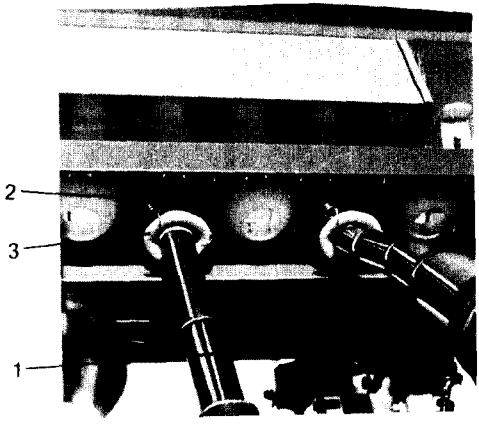
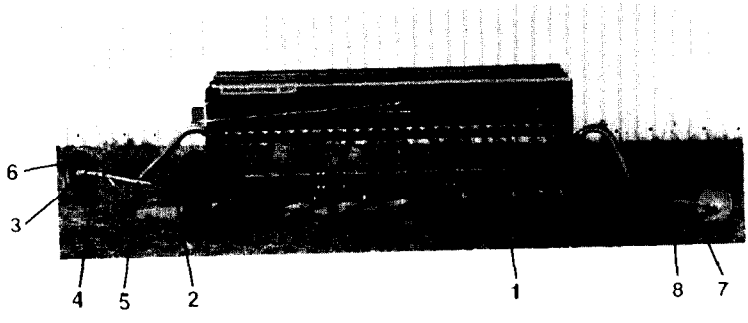


Fig. 40



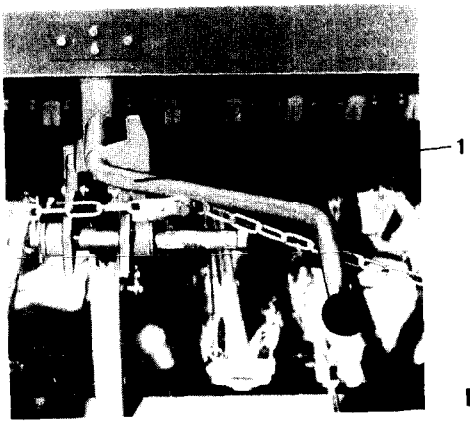


Fig. 41

Then loosen the two fastening screws (Fig. 2/8) of the coulter holding clip (Fig. 2/9) on the coulter holding beam (Fig. 2/7) and slide the coulter on the beam to the required distance. Then firmly tighten the screws again. The seed ducts (Fig. 39/1) should hang down as vertically as possible. If it is necessary to reposition a seed duct, unhook the two tension springs (Fig. 39/2) above on the hopper and hang them from another seedbox outlet. The springs (Fig. 39/2) would have to be inserted in different holes in the ring (Fig. 39/3) on the seed duct (Fig. 39/1) so that the hopper edge of the seed duct is parallel to the hopper beam in the coulter working position.

F. The marker tubes

1. Setting the marker tubes

When transporting the drill the maker tubes must be raised into the vertical position and secured in the bracket (Fig. 11/3) provided on the seedbox with the bolt (Fig. 11/4) and the clevis pin (Fig. 11/4). When beginning the sowing work in the field loosen the marker tubes from this bracket and swivel them downwards so that the marker discs rest on the soil. Now insert marker tube chain (Fig. 40/1) at the marker tube deflection lever (Fig. 41/1) and at the marker tube lower end (Fig. 40/2) into the chain hooks so that these slightly sag if the deflection lever (Fig. 41/1) is tilted to the side of the marker tube (working position). By swivelling the marker tube deflection lever (Fig. 41/1) the opposite marker tube will be raised sufficiently. If the unrequired marker tube is not raised sufficiently, then the marker tube chain is too loose and must be made more tight by one or more links.

The axle of the marker tube disc (Fig. 40/3) is welded on at an angle. By turning the disc shaft (Fig. 40/4) in its holding tube (Fig. 40/5) the marker tube disc (Fig. 40/6) can be set at an angle in relation to the forward direction according to the condition of the soil so that a clear mark will be made on the soil. The thumb screws (Fig. 40/8) must always be kept tight in order that the marker tube upper end (Fig. 40/7) cannot be moved in the holding tube (Fig. 40/5).

There will be different marker tube distance depending on the tractor track, working width and number of rows of the drill, i.e. distance of the marker disc from the outside coulter. To save time in making involded calculations regarding the marker tube distance these measurements for the tractor tracks an machine settings have been listed in the appendix (page 59) under "Working widths and row width adjustments".

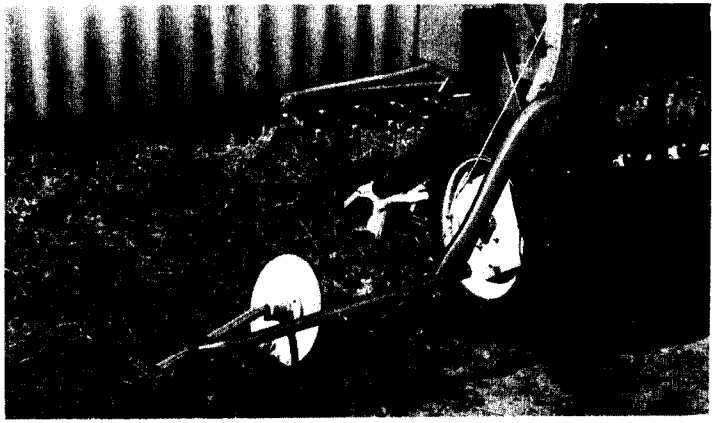


Fig. 42

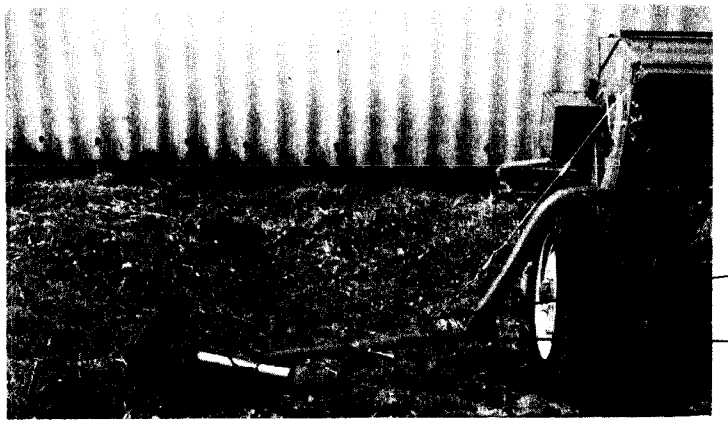


Fig. 43

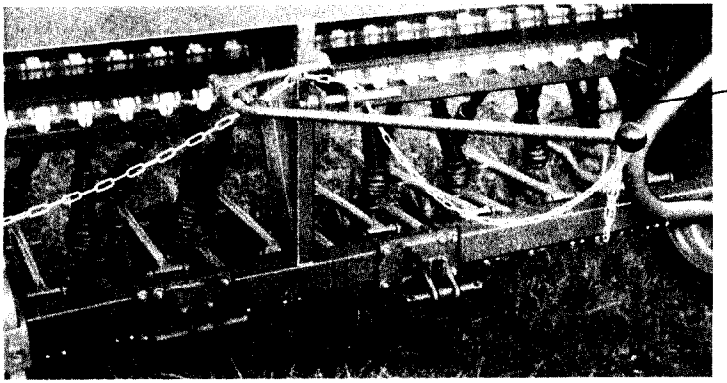


Fig. 44

For machine settings and tractor tracks which are not listed, the formula below can be used to calculate the correct marker tube measurements (distance of marker disc from the outside coulters):

Distance between

$$\text{the outside coulters} - \frac{\text{tractor track}}{2} + 1 \times \text{row width} = \text{marker tube}$$

e.g. working width: 3 m, number of rows: 21,
tractor track: 136 cm.

Result: row width = 300 : 21 = 14.3 cm
Distance between the outside coulters = 300 – 14.3 = 285.7 cm.

The result from the formula above is thus:

$$\text{marker tube measurement} = \frac{285.7 \text{ cm} - 136 \text{ cm}}{2} + 14.3 \text{ cm} = 89.3 \text{ cm}$$

The marker disc should thus be set at a distance of 89.3 cm from the outside coulter according to this example.

2. **Short and long marker tubes** (special extra)

With a small number of working widths and row width adjustments (see appendix) the required marker tube distances cannot be set with the standard marker tube. In these cases additional parts can be supplied for the marker tubes with which the marker tubes can be lengthened or shortened (Fig. 42 and 43).

3. **Deflection lever extension** (special extra)

If the deflection lever (Fig. 41/1) cannot be comfortably reached from the tractor seat, an extension can be supplied which is simply inserted on to the deflection lever and secured with a bolt. A specially long deflection lever is available for the combination harrow/seed drill.

4. **Automatic changeover for marker tubes** (special extra)

The automatic changeover for marker tubes automatically changes over the marker tube at each end of the field. The deflection lever for marker tubes (Fig. 41/1) which has to be operated at each field end will not therefore be required. When raising the drill by means of the tractor hydraulics the automatic changeover is operated by the upper link of the tractor which makes an angular movement when the drill is raised.

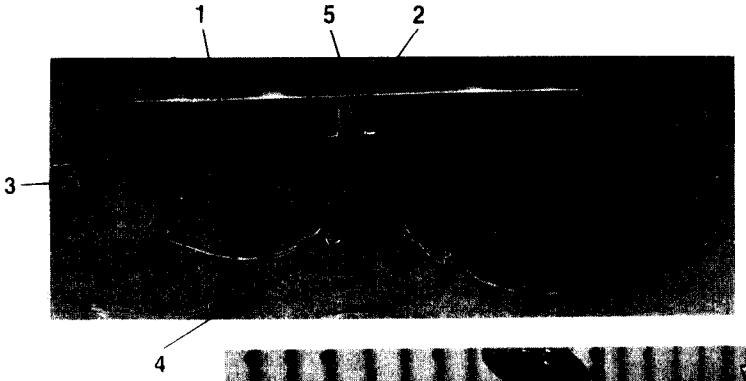


Fig. 45

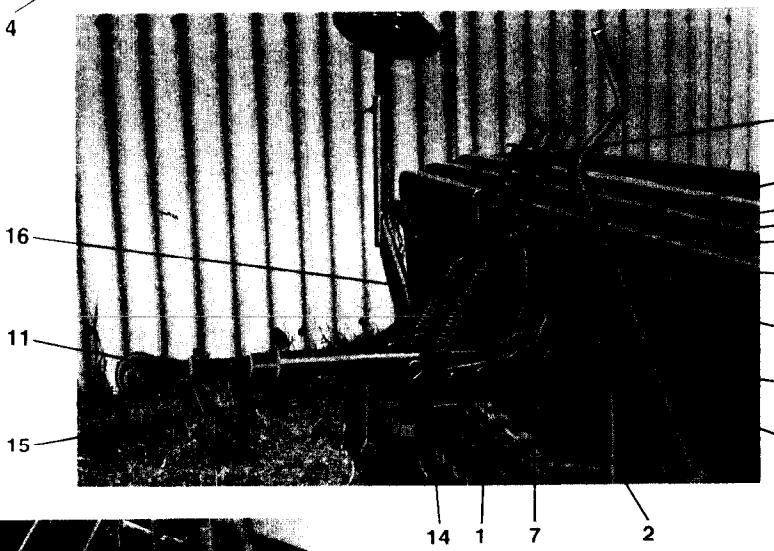


Fig. 46

Fig. 47

When the drill is in the raised position both marker tubes are in the lifted position, while with the drill lowered one of the marker tubes is in the working position and the other one is in the lifted position.

The automatic changeover is of course also operated when the drill is lifted and lowered again in the middle of the field or when filling at the end of the field. It must be ensured that this lifting of the drill is compensated for by a second lifting so that the correct marker tube is in the working position.

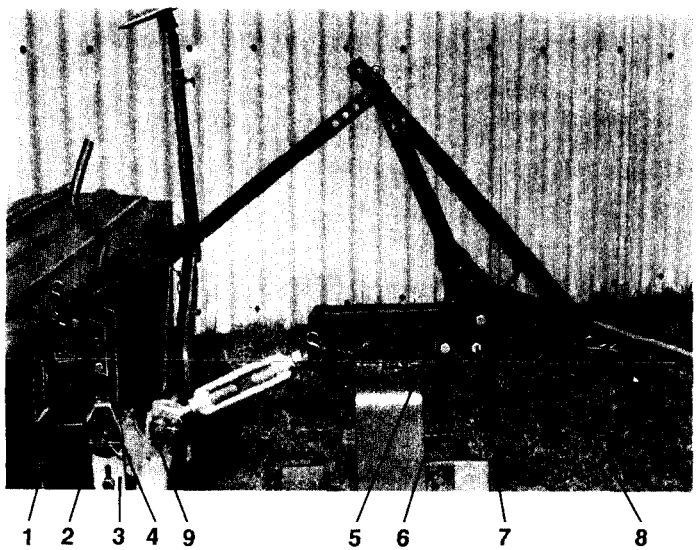
a) **Subsequent attachment without quick-action coupling:**

When fitting the automatic changeover for marker tubes subsequently, proceed as follows: Remove the wear plates (Fig. 16/9) on both front of the seedbox and on the front panel of the seedbox. Then install the automatic changeover (Fig. 45/1) in the seedbox and secure with two M 10 × 20 bolts (Fig. 20/2). Ensure that the chain (Fig. 45/2) is inserted through the recess in the front panel of the seedbox. Mount the defelction rollers (Fig. 45/3) at the front ends of the seedbox. Now insert the chain ends (Fig. 45/4) into the chain hooks (Fig. 43/1) which are welded to the guide tube (Fig. 43/2) of the marker tube lower end. Adjust the marker tubes as described in section F. 1. Now fit the control gear as shown in Fig. 46: First insert the front U-bolt (Fig. 46/1) and then the upper U-bolt (Fig. 46/2) on to the bushings (Fig. 3/2) welded to the upper three-point linkage and secure with a washer (Fig. 46/3) and circlip (Fig. 46/4). In addition, ensure that the roller cage (Fig. 46/6) can be swivelled without difficulty after fastening the bolts (Fig. 46/5) on the upper U-bolt. If necessary, place a washer between the distance sleeve (Fig. 46/7) and the upper U-bolt (Fig. 46/2). To connect the chain (Fig. 45/2) to the control gear, the roller (Fig. 46/8) must be removed fromt the roller cage (Fig. 46/6) by withdrawing the bolts (Fig. 45/5). After fitting the roller (Fig. 46/8) and the chain (Fig. 45/2) into the roller cage again with the bolts (Fig. 45/5), the bolts must be secured by driving in a clamping sleeve (Fig. 46/9) The supplied dust plate (Fig. 46/10) must now be secured between the two chain ends on the front panel of the seedbox with two self-tapping screws 4.8 × 9.5.

b) **Subsequent attachment with quick-action coupling:**

Fit the automatic changeover as described under a). Now fit the control gear as shown in Fig. 47. To do this, remove the distance sleeves (Fig. 47/1) from the bushings (Fig. 47/2) welded to the upper three-point linkage and insert them on to the bushings (Fig. 47/3) welded to the upper three-point linkage of the quick-action coupling.

Fig. 48



Then secure all four welded bushings (Fig. 47/2 + 47/3) again with washers and circlips. Now resting on the bushings (Fig. 47/2), which are welded to the upper three-point linkage of the drill, are 1. the retaining plates (Fig. 47/4) and 2. the upper U-bolt. Now resting on the bushings (Fig. 47/3), which are welded to the upper three-point linkage of the quick-action coupling, are 1. the front U-bolt (Fig. 47/6) and 2. the distance sleeves (Fig. 47/1).

c) **Subsequent attachment with the combination AMAZONE power harrow and AMAZONE seed drill D 7:**

Fit the automatic changeover as described under a). Now fit the control gear, as shown in Fig. 48, to the power harrow and to the drill. Ensure that the angle piece (Fig. 48/1) is fitted pointing to the rear. After the assembly has been completed, resting on the bushings (Fig. 48/2), which are welded to the upper three-point linkage of the drill, should be 1. the retaining plates (Fig. 48/3) for the quick-action coupling and 2. the upper U-bolt (Fig. 48/4). While on the bushings (Fig. 48/5), which are secured to the upper three-point linkage of the power harrow by fastening plates (Fig. 48/6) and six screws M 10 × 35 (Fig. 48/7), is mounted the front U-bolt (Fig. 48/8). The bushings (Fig. 48/9) welded to the upper three-point linkage of the quick-action coupling remain free. It is thus possible to use the automatic changeover for marker tubes with the combination drill/power harrow even without the quick-action coupling.

d) **Setting the automatic changeover:**

After coupling the drill or the combination power harrow/drill to the tractor, swivel the front U-bolt (Fig. 46/1) from below against the upper link (Fig. 46/11) of the tractor and hook up the apertured bracket (Fig. 46/12) on the angle piece (Fig. 46/13) so that the U-bolt (Fig. 46/1) is as close as possible to the upper link of the tractor. The drill should be in the working position on the soil at this setting. In order to make the setting as fine as possible, there are two holes (Fig. 46/15) in the short apertured bracket (Fig. 46/15). By using the most appropritate of these two holes, it is possible to set the U-bolt (Fig. 46/1) as tightly as possible against the upper link of the tractor. Do not in any event tension the tension spring (Fig. 46/16) at this setting. The upper U-bolt (Fig. 46/2), to which the roller cage is secured, must also not be pulled forwards against the spring force at this setting. To check the operation, slowly raise the drill, whereby both the marker tubes will be swivelled into the raised position. With the drill fully raised, the two tension springs (Fig. 46/16) should be drawn apart by about 1–2 cm. When the drill is lowered, one marker tube should remain in the raised position, while the other is lowered to the ground.
When the raising and lowering of the drill is repeated, the marker tube on the opposite side must remain in the lifted position. Set the correct lifting height and the correct penetration of the marker tubes by checking again the setting of the chains (Fig. 45/4) (see section F. 1.).

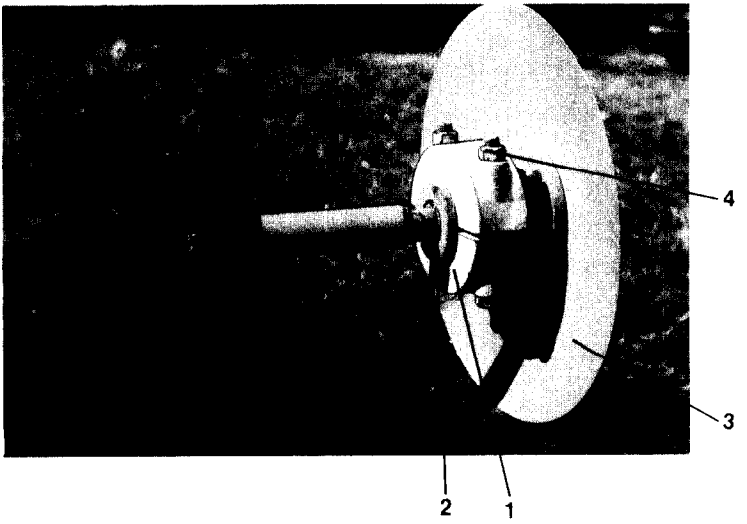


Fig. 51

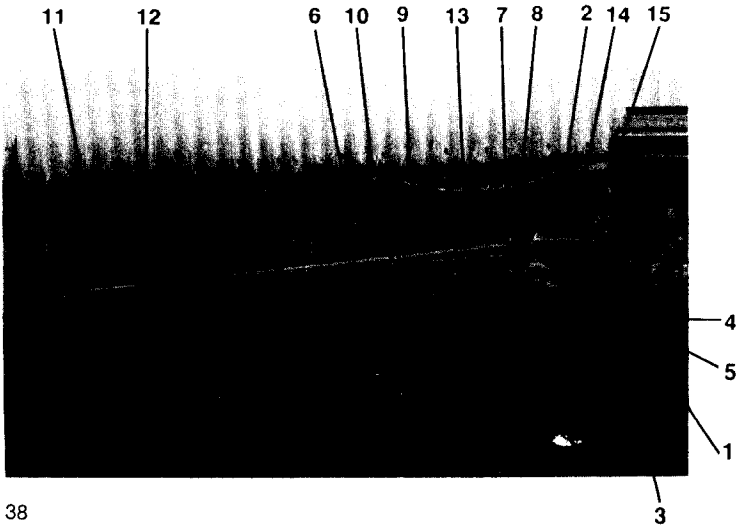


Fig. 52

5. **Marker tubes with adjustable spring pressure** (special extra)

6. **Load weights for marker tubes** (special extra)

   It can happen on particularly heavy soil that by tilting the marker disc (see section F. 1.) the weight of the marker tube is not sufficient to mark a clear track. A remedy can be provided in these cases simply by bolting load weights (Fig. 51/1) on to the hub (Fig. 51/2) of the marker tube disc (Fig. 51/3) with two bolts (Fig. 51/4).

7. **Marker tube extension for Unimog** (special extra)

   For the driver of the Unimog, who sits on the left-hand side of the vehicle, to be able to drive with the nearside front wheel always in the track marked by the marker tube, a marker tube lower end is available which is longer than the track width of the Unimog. The subsequent attachment is carried out as follows:

   Remove the offside marker tube lower end (Fig. 40/2). To do this, tap the clamping sleeve 8 × 50 out of the pin (Fig. 52/1). Then fit the marker tube extension in accordance with Fig. 52. Secure the square tube (Fig. 52/2) to the plate (Fig. 52/5) with a U-bolt (Fig. 52/3) and two M 10 × 120 bolts (Fig. 52/4). Hold the guide tube (Fig. 52/6) from the front (Fig. 52/7) against the flat U-piece welded to the square tube (Fig. 52/2) and pin with the bolt (Fig. 52/8). Secure the bolt with a clevis pin.

   Secure the automatic changeover chain for the marker tubes (Fig. 52/9) to the hooks (Fig. 52/10). Insert the marker tube upper end (Fig. 52/11) into the guide tube (Fig. 52/6) and fasten with the thumb screw (Fig. 52/12).

   For transporting raise the guide piece (Fig. 52/6) into the vertical position and pin the flat bar (Fig. 52/13) with the bolt (Fig. 52/14) and the clevis pin (Fig. 52/15).

Fig. 53

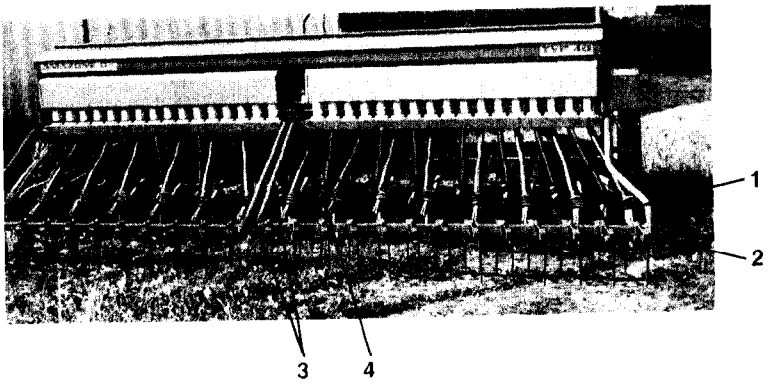


Fig. 54

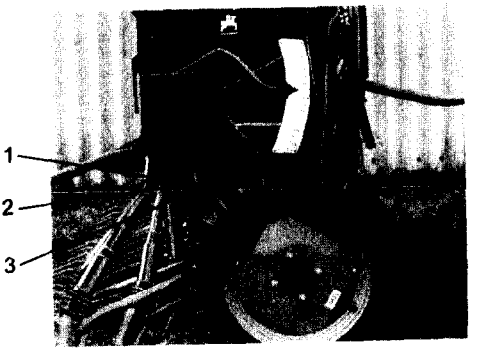
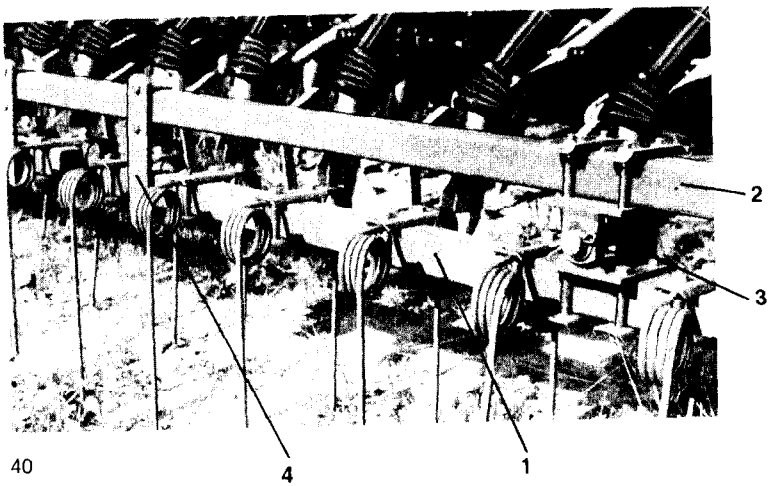


Fig. 55



G. The seed harrow (special extra)

1. The standard seed harrow

Attachment to the drill is carried out as follows: The seed harrow brackets (Fig. 53/1) are provided with the drill as standard equipment since these are also used as parking supports for the drill (see section B. 5.). Secure the harrow between the two tube brackets (Fig. 53/1) with four bolts (Fig. 53/2), whereby the angle plates (Fig. 6/4) can be removed. Since the seed harrow brackets (Fig. 53/1) also act as parking supports (Fig. 6.) for drills without seed harrows, it is possible that the nearside and offside seed harrow brackets are istalled the wrong way round in the holders (Fig. 54/1) at the frame side section, i.e. with the cranks pointing inwards. If necessary, these seed harrow brackets must therefore be rearranged before the attachment. In order for there to be sufficient ground clearance below the seed harrow for transportation and when turning at the ends of fields, the required ground clearance can be adjusted by inserting a bolt (Fig. 54/2) into a hole in the group of holes (Fig. 54/3) in the frame side sections. The bolts (Fig. 54/2) have a clamping sleeve driven into them which has a locking effect. To remove the bolt from the hole, the bolt must be turned through 90° so that the bolt handle is horizontal and the clamping sleeve is projecting through the recess (Fig. 7/1) in the hole.

The seed harrow for the D 7–40 and D 7–50 is divided in the centre. There are therefore two additional seed harrow brackets (Fig. 53/3) in the centre of the seedbox which are connected to the seed harrow by bolts in the same way as the outside seed harrow brackets. There are also seed harrow fastening plates in the seedbox centre which have groups of holes (Fig. 53/4) where the height of the seed harrow can be adjusted by means of retaining bolts and clevis pins.

2. The divided seed harrow

The divided seed harrow (Fig. 55/1) is recommended for particularly uneven soil because it can adapted better to the unevenness in the soil. As can be seen in Fig. 55, two seed harrow square tubular beams of half length, to which the seed harrow tines are fastened, are pendulously secured to the standard seed harrow square tubular beam (Fig. 55/2) which is secured to the drill by means of the seed harrow bracket (Fig. 53/1). Swivel bearings (Fig. 55/3) and a slide block (Fig. 55/4) are used to secure each of these half-length seed harrows to the main square tubular beam of the seed harrow, as is shown in Fig. 55. Since on the D 7–40 and D 7–50 the standard seed harrow consists of two parts, the divided seed harrow is thus separated into four part sections.

Fig. 56

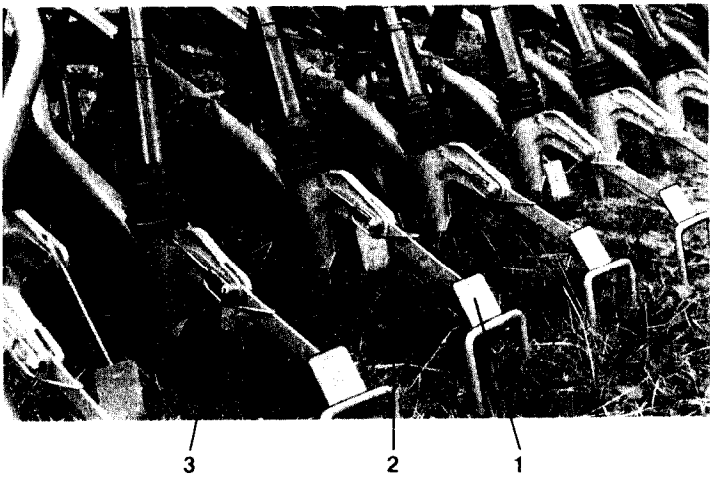
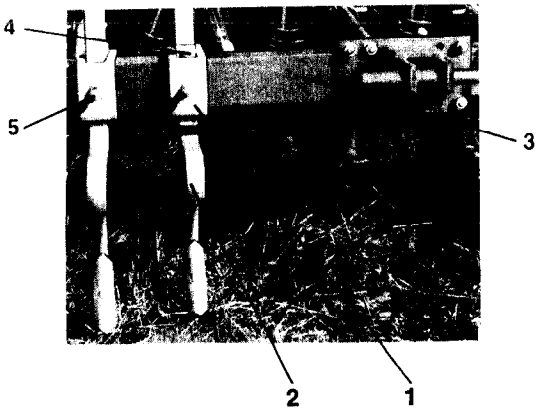


Fig. 57



3. **The single seed harrow**

The single seed harrow can also be used instead of the standard seed harrow or the divided seed harrow; it is simpler but still does very good work. The single seed harrow is distinguished in that with the long coulters instead of the standard coulter supports (Fig. 30/9) single seed harrow tines (Fig. 56/1) are used which work as eradicators behind the individual coulters. The leg springs (Fig. 56/2) do not have the function of applying a spring force on the seed harrow tines in order to increase the pressure of the tines on the soil but rather to prevent the single seed harrow tines from jumping on the soil when the drill is moving.

Remove the standard coulter supports (Fig. 30/9) from the long coulters of the drill by loosening the circlips (Fig. 37/6) and withdrawing the bolts (Fig. 37/7). Then fit the single seed harrow tines (Fig. 56/1) and the leg springs (Fig. 56/2) to the long coulters again with the screws (Fig. 56/3). Ensure that the springs, as Fig. 56 shows, are fitted with the tip pointing upwards at an angle.

H. **The wheel track eradicator** (special extra)

Highly recommended for loosening the tractor wheel track are track eradicators which are fitted to the drill in accordance with the track of the tractor, as is shown in Fig. 57. The track eradicator clips (Fig. 57/1), by which the track eradicator tines (Fig. 57/2) are secured to the square tubular beam (Fig. 57/3) of the drill frame, are so designed that the track eradicator tines (Fig. 57/2) or one track eradicator tine can be arranged in front of or behind the beam. To do this, insert the flat iron pad (Fig. 57/4) into the track eradicator clip (Fig. 57/1) either in front of or behind the beam. The staggered arrangement of two track eradicator tines working next to each other reduces the risk of clogging. The eyebolt (Fig. 57/5) of the track eradicator clamp must always be kept firmly tightened. The track eradicators can be moved slightly upwards after loosening the eyebolt (Fig. 57/5) for the transportation of the drill. If the ground clearance is not sufficient, insert the track eradicator tines (Fig. 57/1) with the lower ends upwards into the track eradicator clamps (Fig. 57/1) and secure with the eyebolt (Fig. 57/5).

Fig. 5ª

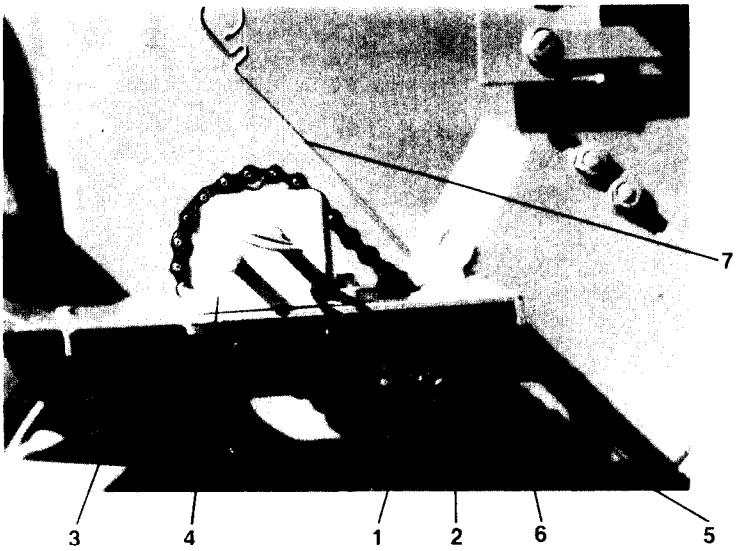
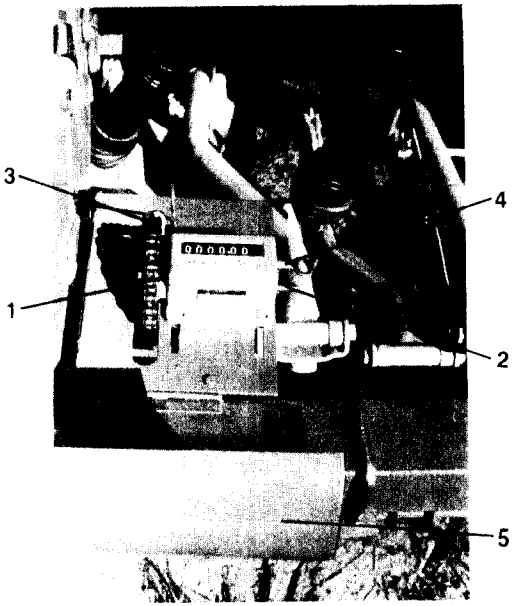


Fig. 59



I. The area meter (special extra)

Subsequent attachment

Insert the sprocket wheel (Fig. 58/1) on to the projecting shaft (Fig. 58/2). Then insert the bracket (Fig. 58/3) with the mounted meter (Fig. 58/4) on to the long fastening screws (Fig. 58/5) of the intermediate gear and secure with two M 10 nuts and a washer. Slide the sprocket wheel (Fig. 59/1) on to the shaft of the meter (Fig. 59/2) but do not yet tighten with the grub screw. Now put on the roller chain and align by sliding the sprocket wheel (Fig. 59/1) on the meter shaft. Then firmly tighten the grub screw of the sprocket wheel (Fig. 59/1) on the meter shaft. Tension the roller chain (Fig. 59/3) by slightly loosening the two nuts (Fig. 58/6) and pulling the bracket forwards in its long holes. Then firmly tighten the hexagon nuts again.

When beginning the sowing work it is advisable to set the meter (Fig. 58/4) to "0" by the meter key (Fig. 59/4). To prevent the meter from becoming dirty, raise the guard (Fig. 59/5) where it will be held by the click-in spring (Fig. 58/7).

Before fitting the area meter ensure that the supplied sprocket wheels have the correct number of teeth – this depends on the working width of the drill and the tyres of the drill. The following table, which is also affixed as a panel on the guard (Fig. 59/5) of the area meter, shows the required number of teeth of the sprocket wheels.

working width	tyres 4.00–16		tyres 5.00–16		tyres 5.50–16	
	shaft	meter	shaft	meter	shaft	meter
8,2 ft (2.50 m)	14	23	15	22	15	21
9,8 ft (3.00 m)	14	19	15	18	15	18
10,83 ft (3.33 m)	14	17	15	16	15	16
13,12 ft (4.00 m)	14	14	15	14	15	13
16,4 ft (5.00 m)	14	11	15	11	15	11

K. The trace drilling system (special extra)

For the subsequent operations of spraying or fertilizer distribution, it is an advantage to make tracks (traces) when drilling in the sections required for the subsequent operations. It is of course only possible to make these traces at intervals, which shows the versatility of the working width of the drill, by closing the appropriate shut-off slide of the seedbox so that no corn can be sown in these predetermined rows. These traces guarantee that spraying and fertilizer spreading will be carried out at the correct intervals and that, therefore, the tractor wheels will not press in any corn which would lead to mutilated wheat stems.

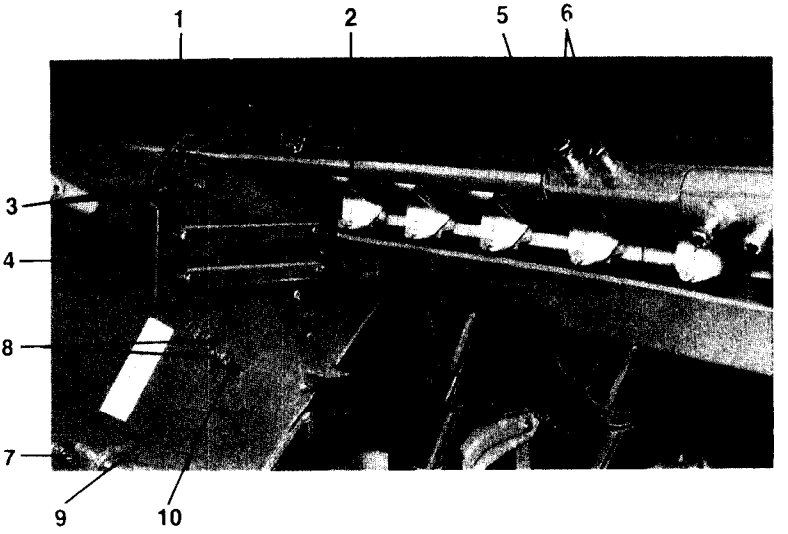


Fig. 60

Fig. 61

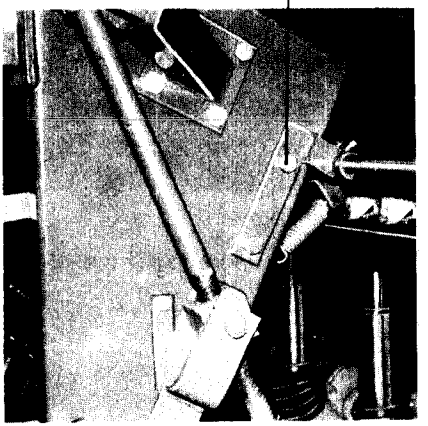
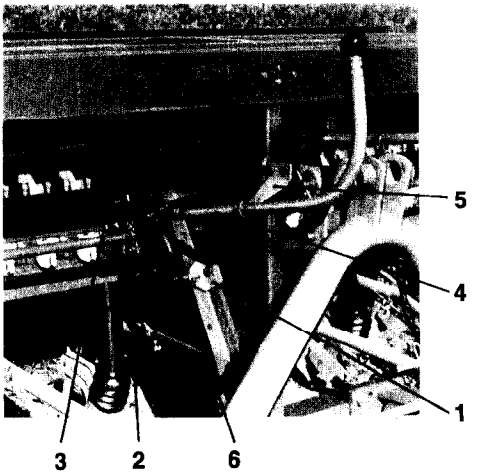


Fig. 62



1. **The manually operated trace drilling system**

Subsequent assembly:

Secure the brackets (Fig. 60/1) for the adjustable tube (Fig. 60/2) to the side sections of the drill frame. To do this, loosen the screws (Fig. 60/3) and fasten these brackets additionally to the bearing plates (Fig. 60/4) for the hinges as per Fig. 60. Now secure the bearing plate in the centre of the machine as per Fig. 61/1 together with the spring bracket (Fig. 62/1) on the frame centre plate. The adjustable tubes (Fig. 60/2) are extendable and so can be adapted for all drill widths. After the closing lever (Fig. 63/1) has been inserted on to the adjustable tubes (Fig. 60/5), do not yet tighten the locking screws (Fig. 60/6), insert the adjustable tubes with their thin ends (Fig. 60/2) into the outer bracket (Fig. 60/1) and fix together in the machine centre with the U-bolt (Fig. 62/2). The locking screws (Fig. 62/3) must be firmly tightened on each side of the U-bolt. Secure the control lever (Fig. 62/4) attached to the U-bolt to the bracket (Fig. 62/5) on the machine as per Fig. 62. Now insert the tension spring (Fig. 62/6).

Ascertain according to the tractor which coulters should not sow for making the traces and which shut-off slides should be closed for these. Loosen the screws (Fig. 64/1) on these shut-off slides and remove the pressure springs (Fig. 64/1) and the centring discs (Fig. 64/1). Now place the top of guide (Fig. 64/2) with the leg on the shut-off slide and secure to the seedbox together with the shut-off slide by means of the shut-off slide screw (Fig. 64.1). Now fit the guide angle bracket (Fig. 63/1) for the drawbar (fig. 63/4) as per Fig. 63. Now insert the drawbar (Fig. 63/4) from below through the guide angle bracket (Fig. 63/3) and the guide tube (Fig. 64/3) and insert the angled end through the long hole in the closing lever (Fig. 63/5). Then secure the drawbar (Fig. 63/4) with a washer and a cotter pin. Insert the adjustable bar (Fig. 64/4) over the drawbar (Fig. 63/4) and secure with the clamp (Fig. 64/5) on the shut-off slide (Fig. 64/6). If two shut-off slides should be closed on each side of the drill, then the slide screw (Fig. 64/1) on the second slide must also be loosened, the pressure springs (Fig. 64/1) loosened and the centring disc (Fig. 64/1) turned, i.e. curved side upwards.

Then tighten the slide screw (Fig. 64/1) again. Now secure the adjustable bar (Fig. 64/4) to the drawbar (Fig. 63/4) so that both shut-off slides can be secured with the clamps (Fig. 64/5).

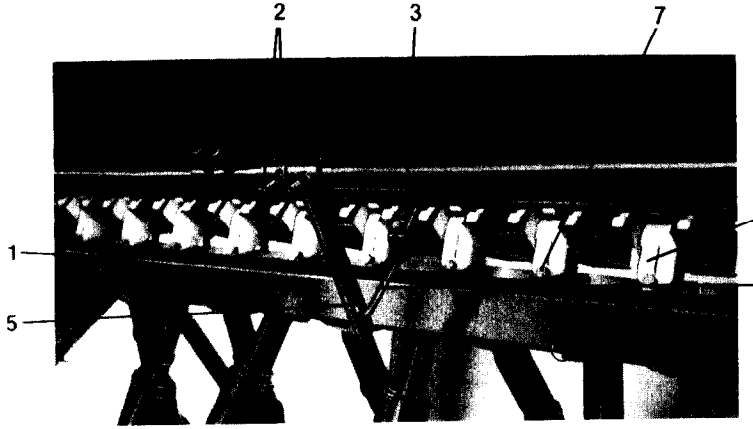


Fig. 63

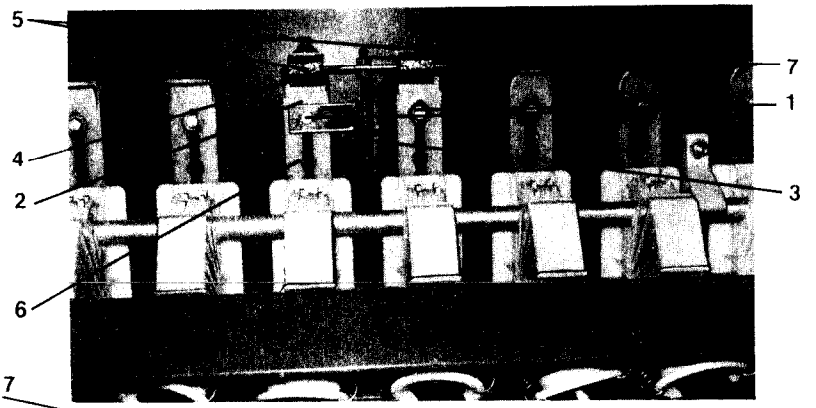


Fig. 64

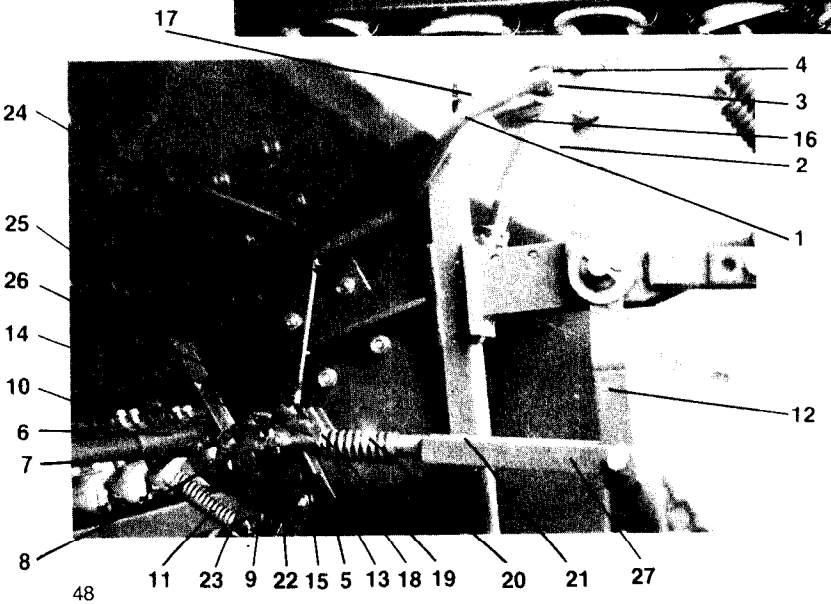


Fig. 65

Now open the shut-off slides connected to the trace drilling system and turn the adjustable tubes (Fig. 60/5) until the distance "a" (Fig. 62) is about 27 cm. The control stick lever (Fig. 62/4) must be set in the forward position (looking in the direction of travel). By drawing back the control lever (Fig. 62/4) the shut-off slides then become closed. If there is corn in the seedbox and below the shut-off slides, the shut off slides will not immediately close when the control lever (Fig. 62/4) is pulled back. But when working on the field the corn grains below the shut-off slides be removed very quickly by the metering wheels so that the shut-off slides will then be closed very quickly by the pressure springs (Fig. 62/6).

Depending on the working width of the drill and the required distance of the traces, the shut-off slides must be closed, for example, on every third or fourth trip. Therefore it must always be remembered when turning at the end of the field how many trips have been made with the shut-off slides opened, in order to close the shut-off slides for making the traces by means of the manual control lever (Fig. 62/4) at the right time. Since this procedure makes considerable demands on the memory, it is recommended that a chalk mark be made on a board or a pencil mark on a piece of paper at each field end. Every third and fourth mark will then be made accordingly and errors with regard to operating the trace drilling system at the right time will be avoided.

2. **The automatic trace drilling system**

The automatic trace drilling system is operated when the drill is raised by the tractor hydraulics at each field end. The automatic system contains a ratchet wheel which practically works like a meter, i.e. it counts the number of times the drill is raised and depending on the ratchet wheel fitted actuates the opening or closing of the shut-off slides every third or fourth time the drill is raised. The automatic trace drilling system thus eliminates both the manual opening and closing of the shut-off slides and the recording of the number of trips, as described in section K. 1. It should be noted that raising the drill by the tractor hydraulics in the middle of the field or at the end of the field to fill the seedbox is not counted by the automatic system.

To prevent the automatic system counting such "abnormal raisings" of the drill, the automatic trace drilling system has a disengaging device (Fig. 65/1). If the drill is raised "abnormally" in the middle of the middle of the field or at the end of the field for filling, the rope (Fig. 65/2) must be drawn beforehand and by means of a knot (Fig. 65/3) inserted in the slot (Fig. 65/4) of the rope guide tube (Fig. 65/1). After this "abnormal" raising of the drill the rope (Fig. 65/2) must be taken out again.

Subsequent attachment:

Secure the outer brackets (Fig. 60/1) for the adjustable tube (Fig. 60/2) inside the side sections of the frame. To do this, loosen the screws (Fig. 60/3) and fasten the brackets (Fig. 60/1) to the bearing plates (Fig. 60/4) for the joints with these two screws. Secure the bearing plate (Fig. 61/1) in the machine centre (Fig. 61) together with the base plate (Fig. 65/5), on which the ratchet mechanism is fully mounted, to the frame centre plate of the machine with two M 10 × 35 screws. After inserting the closing lever (Fig. 63/1) on to the adjustable tube (Fig. 60/5) (do not yet tighten the screws), insert the adjustable tubes into the outer brackets and fix together in the centre with the elbow (Fig. 65/6). Then firmly tighten the locking screws (Fig. 60/6) of the adjustable tubes. The elbow (Fig. 65/6) must be set so that the flat bar (Fig. 65/7) is resting on the collar (Fig. 65/8) of the ratchet wheel (Fig. 65/9) so that it can swivel in when turning the ratchet wheel into the recesses of the collar. Then firmly tighten the locking screws (Fig. 65/10) of the elbow (Fig. 65/6). The tension springs (Fig. 65/11) can then be inserted.

After ascertaining which coulters and which shut-off slides should be closed to make the traces, loosen the slide screws (Fig. 64/1) of the relevant shut-off slides and remove the pressure springs (Fig. 64/1) and the centring discs (Fig. 64/1). Now place the top of the guide (Fig. 64/2) with its leg on the shut-off slide, as shown in Fig. 64, and secure to the seedbox together with the shut-off slides (Fig. 64/6) by means of the slide screws (Fig. 64/1). Then fit the guide angle bracket (Fig. 63/3)

for the drawbar (Fig. 63/4) as per Fig. 63. Now insert the drawbar (Fig. 63/4) from below through the guide angle bracket (Fig. 63/3) and through the guide tube (Fig. 64/3) and insert the angled end of the drawbar through the long hole (Fig. 63/5) in the closing lever (Fig 63/1) and secure with a washer a cotter pin. Then insert the adjustable bar (Fig. 64/4) over the drawbar (Fig. 63/4) and secure with the clamp (Fig. 64/5) on the shut-off slide. (Fig. 64/6). if two adjacent shut-off slides should be closed, then firstly loosen the screw of the second slide, remove the pressure spring (Fig. 64/1) and turn the centring disc and then tighten the slide screw (Fig. 64/1) again.

Now fasten the adjustable (Fig. 64/4) on the drawbar (Fig. 63/4) with the two nuts (Fig. 64/7) so that both slides can be secured with the clamp (Fig. 64/5). After opening the shut-off slide and turning the ratchet wheel (Fig. 65/9) so that the flat bar (Fig. 65/7) rests on the collar (Fig. 65/8) of the ratchet wheel, firmly tighten the screws (Fig. 65/10) of the closing lever (Fig. 65/6).

Now attach the operating lever (Fig. 65/12) by removing the existing operating lever for the automatic changeovers for marker tubes and fitting instead the operating lever as per Fig. 65. Then fit the spring connecting rod (Fig. 65/13). To adjust the spring connecting rod (Fig. 65/13), the ratchet holder (Fig. 65/14) must be withdrawn to the stop (Fig. 65/15) and the operating lever (Fig.65/12) must be in the rest position, i.e. the roller cage (Fig. 65/16) must be drawn in the forward direction until the roller chain (Fig. 65/17) is not sagging. In this position the cotter pin (Fig. 65/18) and the washer (Fig. 65/19) must be inserted into the forcing lever (Fig. 65/27) so that there is as little clearance as possible between pressure spring (Fig. 65/20) and cotter pin and washer. The other cotter pin (Fig. 65/21) also must be fitted in the same position.

To test the operation attach the drill to the tractor and adjust the automatic changeover for marker tubes as per section F. 4. When raising the drill by the tractor hydraulics, the ratchet wheel (Fig. 65/9) of the automatic trace drilling system must be turned until the ball (Fig. 65/22) engages into the next hole (Fig. 65/23) of the ratchet wheel. When lowering the drill, the ratchet holder (Fig. 65/14) must swivel back again to the stop (Fig. 65/15). With repeated raising and lowering of the drill, the flat bar (Fig. 65/7) must engage into the recesses of the ratchet wheel after every third or fourth raising, depending on the ratchet wheel fitted, whereby the shut-off slides will be closed. Now attach the disengaging device. Secure the rope guide tube (Fig. 65/1) with two M 12 × 30 screws (Fig. 65/24) as shown in Fig. 65. Insert the rope (Fig. 65/2) through the rope guide tube (Fig. 65/1) and tie it to the eyelet (Fig. 65/25) of the ratchet (Fig. 65/26) so that the ratchet (Fig. 65/26) cannot engage into the ratchet wheel (Fig. 65/9) if the rope is pulled forwards out of the rope guide tube (Fig. 65/1) and the rope knot (Fig. 65/3) is inerted in the slot (Fig. 65/4) at the front of the rope guide tube.

L. **The clover sower** (special extra)

It is of course possible to sow clover with the standard drill through coulters in rows or by broadcasting, by raising the coulters by means of the raised supports (see section E. 6.) so that the clover seed falls on to the coulter supports after being discharged from the coulter shoe, whereby the protective plate (Fig. 30/10) of the coulter supports acts as a baffle plate after turning the coulter supports (Fig. 30/9).

But if it is necessary to sow corn (am. grain) and clover seed at the same time, it is not recommended that corn (am. grain) and clover seed be mixed together and sown simultaneously because this require premixing in the seedbox and the clover seed would therefore not be sown uniformly. In this case, if corn (am. grain) and clover seed have to be sown at the same time, then clover sower, which can be attached as a special extra (see Fig. 00/00) to the drill, is recommended.

Subsequent attachment of the clover sower is carried out as follows:

Setting the quantity of seed for the clover sower is carried out as follows:

M. Care and Mantenance

The AMAZONE drill D 7 does not require maintenance, it does not have lubricating nipples and so does not need to be greased with a greasing gun. Only the disc coulters (see section E. 3.) have lubricating nipples and must be greased after every 30 hours of operation. The AMAZONE gearbox (see section D. 3.) is of the oil-bath type, and it only needs to be ensured that the oil level is high enough, which can be determined by looking at the oil-level glass (Fig. 25/6). If it should be necessary to op up the oil, it is advisable to use hydraulic oil 2.5 E/50° C.

It is advisable after one or several years of operation to change the grease in the marker tube bearings. To do this, unscrew the marker disc (Fig. 40/6) and top up with lubricating grease. It is also advisable after one or several years of operation to regrease the nearside land wheel, which is rigidly connected to the axle by means of the coupling pin (Fig. 1/3) or which can rotate on the axle. To do this, remove the bolt (Fig. 15/3) after tapping out the clamping sleeve 12 × 55. The wheel can then be removed and the hollow chamber (grease chamber) in the wheel hub (Fig. 1/2) can be filled with grease. Then mount the wheel again and fasten with the bolt (Fig. 15/3) and the clamping sleeve.

Other bearing points, e.g. on the control gear of the automatic changeover for the marker tube (see section F. 4.) or on the trace drilling system (see section K) or on the central spring pressure adjustment (see section E. 8.), should be oiled or greased occasionally if rust has appeared through rain-water getting in. With the central spring pressure adjustment (see section E. 8.) ensure that the spindle (Fig. 36/1) and the upper bearing (Fig. 36/11) are always well greased. The roller chain (Fig. 45/2) of the automatic changeover must be protected from rust by greasing or oiling.

In no case must the telesopic tubes, the metering wheels and the bottom flaps be oiled or greased. Occasional oiling of the shut-off slide screws (Fig. 64/1) and the centring discs (Fig. 64/1) will keep the shut-off slides working smoothly.

The roller chains for driving the AMAZONE gearbox (Fig. 25/1) and the sowing mechanism must be retensioned for the first time after 20 hours of operation and subsequently at longer intervals. To do this, slightly loosen the two screws (Fig. 60/7) and insert the shaft (Fig. 58/2) and bearing (Fig. 60/9) of the intermediate gear upwards as far as possible into the long holes. Then firmly tighten the two screws (Fig. 60/7) again.

Now slightly loosen the two screws (Fig. 60/8) of the chain tensioning block and slide the chain tensioning block in the long holes (Fig. 60/10) until the chain is tensioned. Then firmly tighten the two screws again.

Once the sowing work has finished, especially after the sowing season, the seedbox must be completely emptied of seeds and the seedbox slides closed. If this is not done, it can happen that mice or rats will try to get at this food and thus eat the plastic parts, such as metering wheels, shut-off slides ot casing.

The tyre pressures should be checked occasionally (see section D. 5.) in order to maintain sowing accuracy for the tyres not to deteriorate.

To guarantee sowing accuracy, i.e. uniform quantities of seed for each coulter, it is advisable to check the position of the bottom flaps from time to time and to readjust if necessary:

To do this, move the bottom flap lever (Fig. 19/1) to position No. 1. At this position the bottom flaps should not be resting on the metering wheels. To determine whether this is the case, it is best to turn the land wheel and thus the metering wheel. If the bottom flaps are moved by the metering wheel cams, which also produce a discernible noise, then turn the set screws (Fig. 63/7) of the bottom flaps in the clockwise direction until this noise stops.

N. Notes: