

Instruction Manual

Extra Coverage Seed Drill

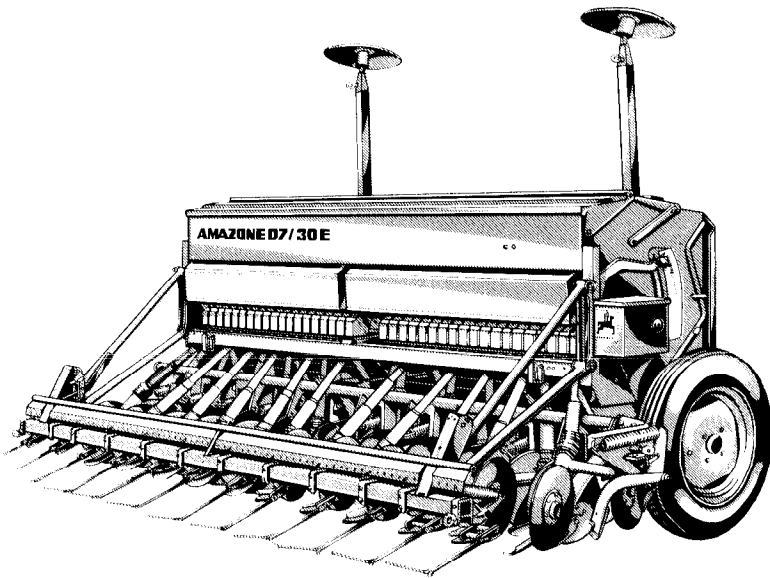
AMAZONE

D7/30-EC-R

D7/40-EC-R

D7/30-EC-N

D7/40-EC-N



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Factories for: Fertilizer-spreaders, -storage halls, -handling systems. Seed drills. Soil cultivation machines. Field sprayers. Potato-graders, -sorters.

The AMAZONE Extra-Coverage Seed Drill is one machine from the AMAZONE-farm-machinery range.

The engineering technology in connection with the correct operation ensures optimum use and longevity.

To ensure that you will get the best possible results from your "AMAZONE" we would ask you to read and observe these instructions carefully. 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.

Please enter the serial number of your seed drill here. You will find this number on the front left hand side of the seed box and on the right hand side on the square tubular main frame.

Please always quote the serial number when ordering spares or making complaints:

<p>Seed Drill D 7/.....-E-.....</p> <p>Serial-No.</p>

CAUTION!

When the machine is moved, the agitator shaft turns even if the gearbox is set at "0". Therefore do not place any parts inside the seed box. This could damage the agitatorshaft. Never place hands inside the weed box while machine is in use due to injury by the rotating agitator shaft.

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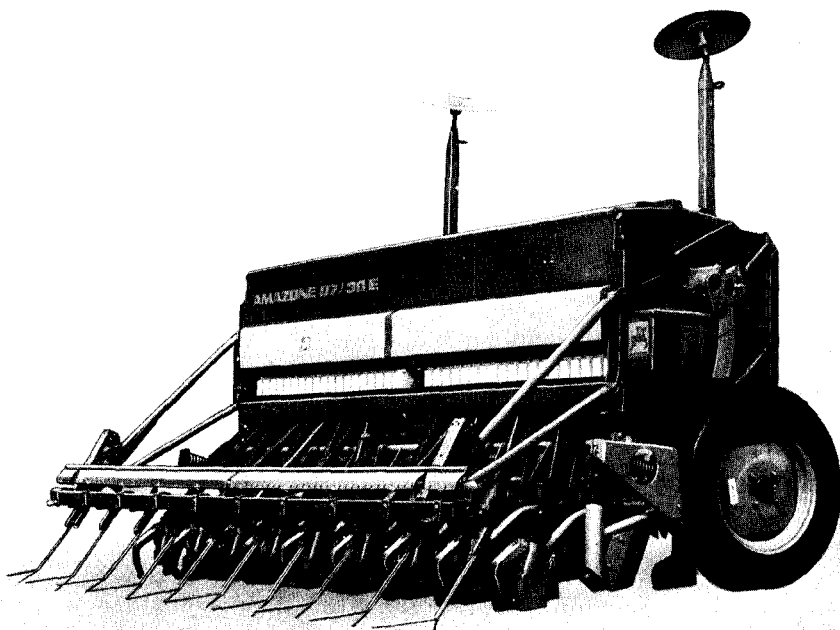


Fig. 1

D 7/30-EC-N

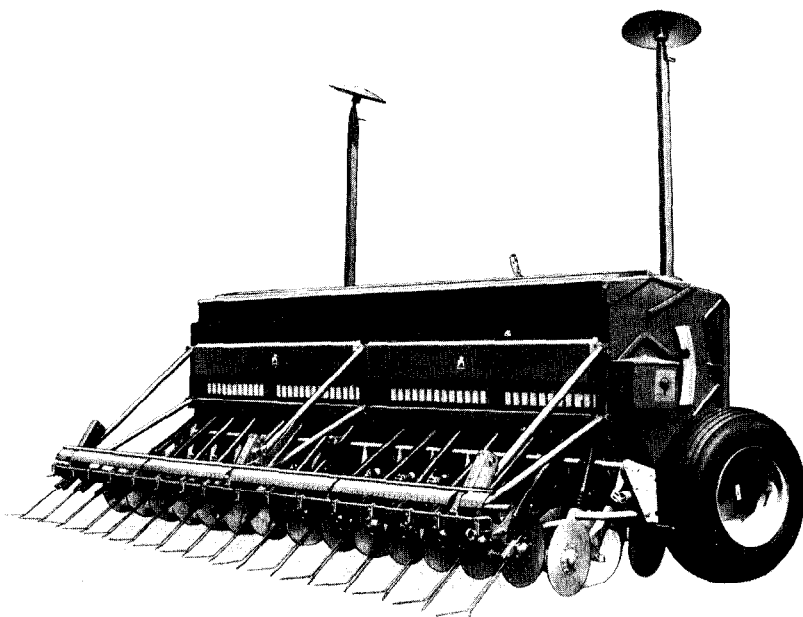


Fig. 2

D 7/40-EC-R

1 Details about the machine

1.1 Manufacturer

AMAZONEN-WERKE H. Dreyer GmbH & Co. KG, P. O. Box 51, D-4507 Hasbergen-Gaste, F. R. Germany.

1.2 Technical Data

Types	D7/30 ECN		D7/30 ECR	D7/40 ECN		D7/40 ECR
Working width	3 m		3 m	4 m		4 m
Coulter spacing	8,1 cm	10,8 cm	9,6 cm	8,1 cm	11,2 cm	9,3 cm
Roll-disc coulters			31			43
'K'-coulters (Suffolk	33	25		45	33	
Drill wheel mark erradicator coulters	2	2		2	2	
Net weight (without seed and options)	580 kg	550 kg	640 kg	790 kg	745 kg	885 kg
Seed box contents	600 l			840 l		
Tyres	6.00–16 Ø 730 mm, 180 mm wide			10.0/75-15 Ø 760 mm, 280 mm wide		
Inwards cranked rims Transport width	3,00 m			—		
Track width	2,84 m			—		
Outwards cranked rims Transport width	3,16 m			4,36 m		
Track width	3,00 m			4,06 m		
Total height	1,32 m			1,32 m		

2 On receipt of machine

Immediately check for damage during transport or 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.

NOTE! When moving the machine, the agitator rotates even when the gearbox is set to "0". Do not leave anything in the seed-hopper – it can lead to the agitator being damaged. Do not place your hands in the seed-box as there is a danger of injury from the rotating agitator.

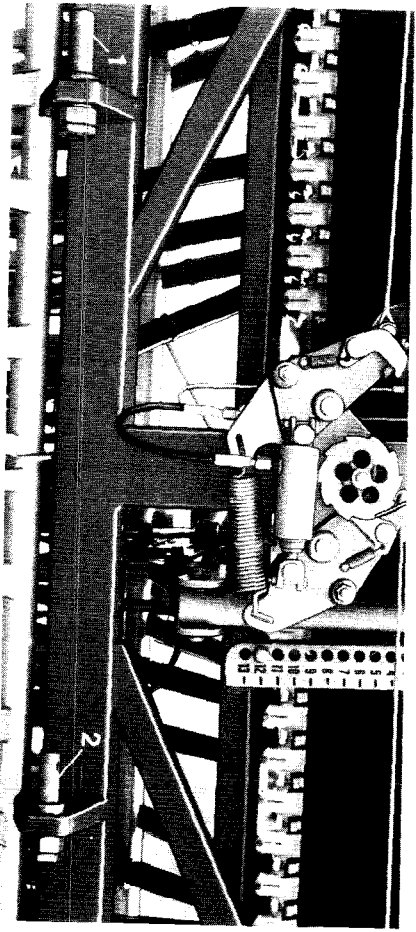


Fig. 3

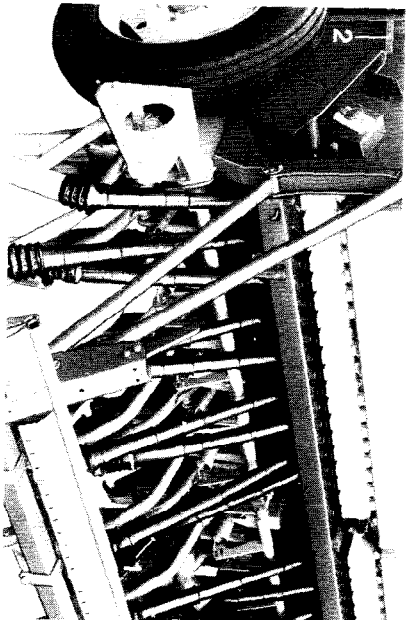


Fig. 4

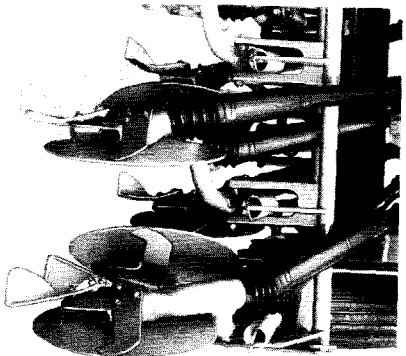


Fig. 5

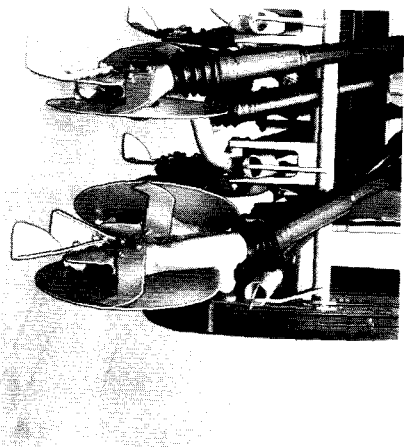


Fig. 6

3 Before operating

3.1 Mounting to tractor

The tractor lower link arms are pushed on to the lower connecting rod spigots and secured with clip pins. The machine is standard equipped with link-pins cat. II (Fig. 3/1). Cat. I connecting rod spigots can be supplied upon special request (Fig. 3/2). The tractor lower link arms are adjusted so that in the raised position, they have only slight lateral play, in order that the drill always travels centrally behind the tractor and does not move to and fro in the raised position, when turning at the end of the field.

Next, the top connecting link is mounted. The top link pin on the drill is both for Cat. I and II. After the top link has been secured, it is set in respect to length so that the drill's rearwall is vertical to the ground.

After raising the drill with the tractor hydraulics, it is necessary to withdraw the parking support (Fig. 4/1) downwards. When not required, this can be inserted in the place provided (Fig. 4/2) on the lefthand side of the machine, above the road wheel.

3.2 Positioning the wheels

The machine is supplied so that for a 3 metre working-width, it does not exceed a 3 metre transport width. In this case, 2 double-coulters operate in the machine wheel-tracks. When operating in the next bout, the machine wheel-tracks are directly adjacent to one of the prior bout.

Where the drill is not transported along a public highway, it is practical to attach the wheels so that the offset on the rim-plate is outwards (Fig. 6). The AMAZONE D7/30-EC then has a width of 3.16 metres. Particularly on heavy and sticky soils, this method of mounting the wheels is practical because the distance between tyres and side of drill is the greater and this will ease the problem of soil accumulating.

When operating with the wheels mounted outwards, only one coulter operates in the machine wheel track. When operating on the field, the machine wheels run twice in the same track. Therefore there are only half as many seed-drill wheel tracks on the field.

When changing the wheels, the wheel scrapers (Fig. 7/1) must be changed together with them. The distance between scraper and tyre must be greater from the inside (approx. 1 cm) outwards (approx. 2 cm).

AMAZONE seed drills D7/40-EC are always supplied with tyres 10.0/75-15 (overall width 4.36 metres), since the permissible width for transport on public highways is exceeded in any case, and the use of a transport-trailer is then necessary.

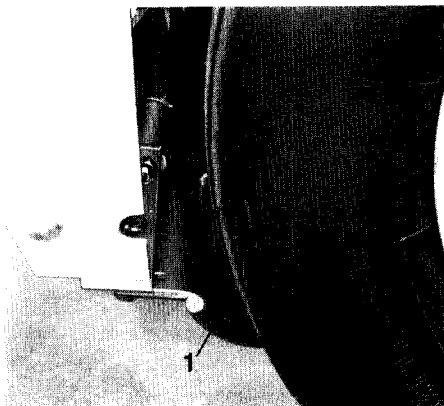


Fig. 7

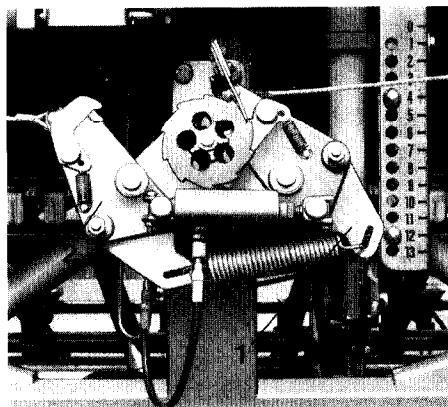


Fig. 8

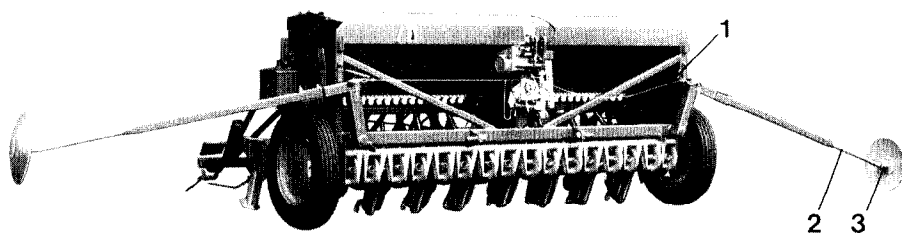


Fig. 9

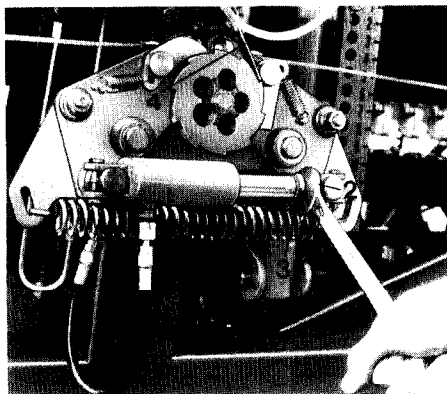


Fig. 10

3.3 Track marker

3.3.1 Setting the track marker

Drills D7/30-EC and D7/40-EC are fitted with long track markers for leaving a track marked in the tractor centre. During transport, the track markers are vertical and are retained in the transport position by means of a securing rod (Fig. 12/1). Before commencing work, the track markers are folded down. The securing rod is then fastened to the side of the drill by means of a lynch pin.

Now, on the track marker automatic changeover (Fig. 6), one selector plate (Fig. 8/1) is folded in and one is folded out (Fig. 8/2). The chain-end (Fig. 7/1) on the cable of the folded-out plate is now placed on the track marker in such a way that the cable slightly sags, when the marker discs lay on the same level as the drill's wheels and on the other hand, the marker disc working depth is limited to 60–80 mm. If the marker discs are set too deeply in a rough seed-bed, the shear bolt may shear too often.

The distance of the disc measured from the marker contact point on the ground is for the D7/30-EC:

with inwards turned wheels:	till the outer edge of the tyre	1.50 metre
with outwards turned wheels:	till the tyres' centre	1.50 metre
for the D7/40-EC:	till the outer edge of the tyre	1.82 metre

On light soils the track marker discs are adjusted by rotating their disc shaft (Fig. 9/2) so that the track marker disc runs approximately parallel to the drill wheel. On heavy soils, the track markers are set so that they operate more aggressively to leave a clearly perceptible track.

3.3.2 Track marker changeover

Operation of the track marker takes place by means of the hydraulically operated automatic changeover. For this, the quick-release coupling on the hydraulic hose for the track marker which is connected to the automatic marker changeover, must be connected to a one-way control valve on the tractor. To change over the track marker at the end of the field, the control valve is set to "raise". Both track markers are then lifted up. After turning, the control valve is set to "lower" in order that the correct track marker disc is automatically lowered.

3.3.3 Resetting the automatic track marker changeover

The automatic changeover is set up at the factory to operate correctly. After running-in a new machine, it may however be necessary to make slight adjustments to the selector where this is not operating correctly. To do this, apply pressure to the hydraulic cylinder (Fig. 10/1), slacken the lock-nut (Fig. 10/2) on the eye-bolt of the selector cylinder, and rotate the hydraulic piston (Fig. 10/3) with an open-ended spanner until the leaf-spring (Fig. 10/4) is heard to engage into the cam-wheel and until a gap of 1 to 2 mm between leaf-spring and peg is set. Carry out a trial to see whether the selector is correctly set-up. Retighten the lock-nut on the hydraulic cylinder eye-bolt.

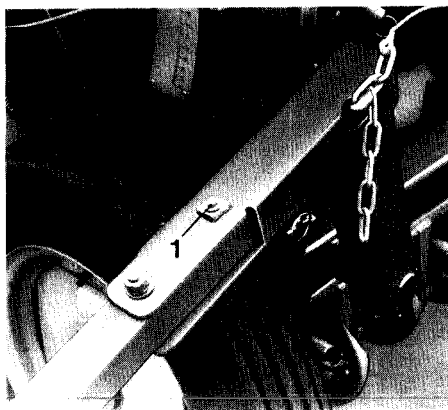


Fig. 11

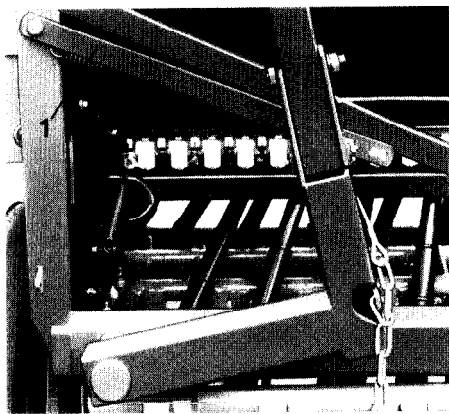


Fig. 12



Fig. 13

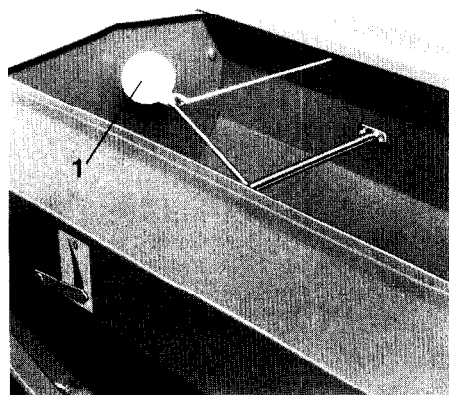


Fig. 14

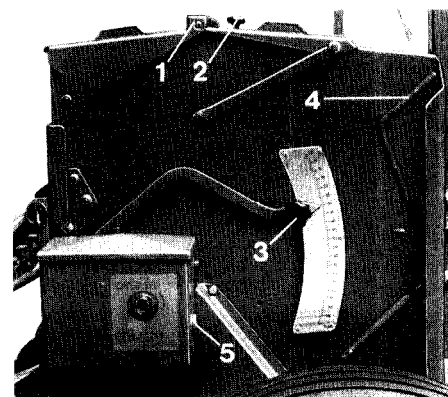


Fig. 15

3.3.4 Track marker shear-bolts

If, during operation, the track markers come into contact with an obstacle, a shear bolt (Fig. 11/1) is sheared and the track markers fold to the rear. In such a case it is necessary to replace the shear-bolt M 6x90, DIN 931.8.8. It is then locked with a self-locking M 6 nut and 2 washers.

3.3.5 Track marker transport position

For the transport of the machine the track markers are placed in a vertical position. For this the securing rods (Fig. 12/1) are pushed over a pin at the lower section of the marker and are secured with a spring pin.

If now the seed drill is raised in the tractor's hydraulic, danger exists that the track marker discs may damage the rear window of the tractor's cab if it is opened. If this is the case, it is possible by using another hole of the securing bracket, to fix the markers at another angle as shown in Fig. 12 and 13 in a slightly outwards position, so that the discs cannot harm the tractor cab's rear window.

ATTENTION:

The sideways angling of the markers is only allowable on private roads. For driving on public roads, the marker discs have to be in a vertical position according to Fig. 1 (see para. 3.8).

3.4 Filling the seed box

Before filling, grasp the lid centrally by the pulling edge (Fig. 15/1) with both hands and draw back. The folding lid is robust enough to be able to support heavy sacks. When the lid is opened, the level indicator (Fig. 14/1) is automatically raised. When filling the machine, ensure that no sacks are laid on the indicator float.

When the pointer (Fig. 14/2) on the front wall of the seed-box nears the "0", it is necessary to replenish the drill. The seed box should never be driven till empty because otherwise varying seed rates may result from uneven distribution of seed inside the seed box.

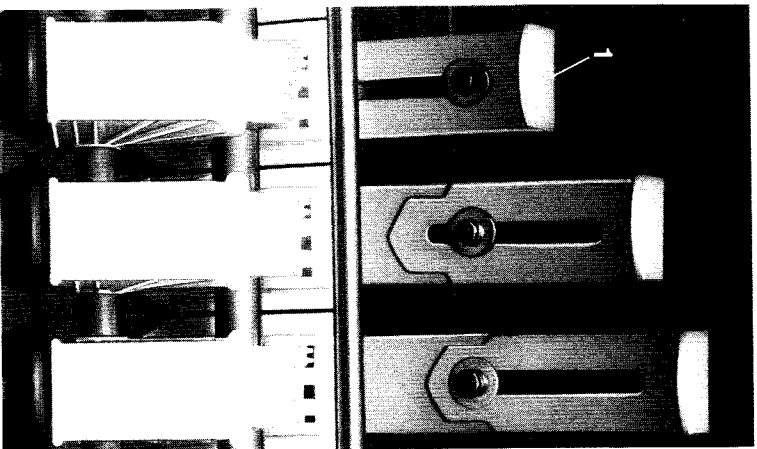


Fig. 16

geschlossen		open
closed		open
fermée		ouvert
	3/4	

3.5 Setting the seed rate

Three different values are given in the seed table for each type of seed and the desired sowing quantity. These are:

- a) Gearbox setting
- b) Shut-off slide valve setting
- c) Bottom flap position.

The setting chart is in the end of this manual and may also be found inside the seed box.

3.5.1 Setting the gearbox

For setting the gearbox, the locking knob (Fig. 15/3) is slackened by turning anticlockwise and placed in the position according to the seed table. Then the knob is retightened.

NOTE! The figures in the seed table are only reference values. Considerable variations from these can occur due to grain size and form, bulk density and dressing agent. It is therefore necessary in all cases to carry out a calibration trial (see para. 3.6).

3.5.2 Setting the shutter slides

The shut-off slides (Fig. 16/1) on the seed housing can be engaged in three different positions: "open", "3/4 open", "closed".

Shutting of the shut-off slides should be done by pushing them as close as possible to the seed box wall from the top downwards to avoid any deformation of the shut-off slides. If the seed box is already filled with corn, the shut-off slides may be closed by slight hammer-blows. It is also important to hit the handle of the shut-off slide as close as possible to the seed box.

3.5.3 Setting the bottom flaps

The lever (Fig. 19/1) for setting the bottom flaps is located on the lefthand side (in direction of travel) of the machine. By means of the notched plate (Fig. 19/2) the lever can be placed in 8 different positions. The seed rate table gives the required position for each type of seed.

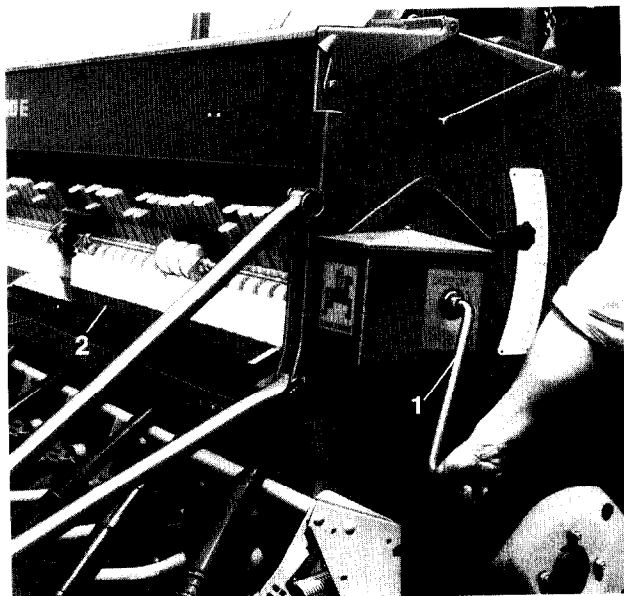


Fig. 17

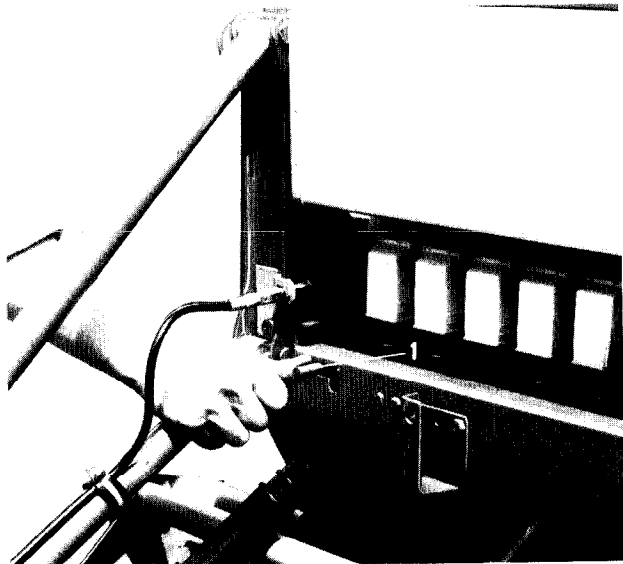


Fig. 18

3.6 Self calibration test

This should be performed with the seed box approximately half-full. It is then much easier to turn the crank than with a full seed box.

By means of the tractor-hydraulics, the drill is raised until the wheels can turn freely.

The crank handle (Fig. 15/4) is housed on the righthand side of the machine, behind the setting scale. Now, place the crank handle (Fig. 17/1) in the hole in the side of the gear-box housing, and turn until the dog at the end of the crank handle engages with the projecting shaft-end.

Unlock the seed tube rail (Fig. 18/1) and pull to the rear (in direction of travel). The seed tube rail will now drop down. This is only possible when the hydr. pressure is taken off the coulters. Also never apply pressure to the coulters when the seed tube rail is lowered. Now, trays (Fig. 17/2) can be placed on the seed tube rail.

Assuming the seed-box to be half-filled with seed, turn the crank a few revolutions until seed falls from all open metering wheel housings. Now all the metering wheel housings are full of seed. Empty the trays into the seed-box and commence with the actual calibration test:

Turn the crank 63.3 times for the D7/30-EC
or respectively 47.6 times for the D7/40-EC.

This number of turns corresponds to the sowing of 250 m² or $\frac{1}{40}$ hectares. The quantity of seed in the trays in kg x 40 gives the sowing quantity in kg/ha.

If an increased sowing quantity is desired, a higher number must be selected on the gearbox setting scale and vice versa. The calibration trial is repeated until such time as the exact required quantity is attained.

3.6.1 Variations between calibration test and seed rate

During the calibration test, turning the crank represents driving on the field. Since the drill's wheel turns less frequently on the field ready for seeding than on a made-up road surface, the assumption is made when determining the number of crank rotations. That on the field, the drill's wheel has 7% slip. This value of 7% has been arrived at from experience; it is correct in the majority of cases. On very light and loose soils however, the slip can be even higher and firm, on cloddy soils the slip can be less than 7%.

If therefore very large variations occur between calibration test and sowing quantity, it is necessary to re-establish the number of crank turns for the test.

For this purpose, measure on the very field an area of 250 m². With a machine having a working width of 3 m, this area corresponds to an 83,3 m run. With a machine having a 4 m working width, it corresponds to a 62.5 m run.

The crank handle is placed into the gearbox and the number of turns is counted when traversing the measured run. In future, this number is used for cranking trials. By this means, all differences arising from the seed-bed are taken into account.

The AMAZONE drills D7/30-EC and D7/40-EC have the largest tyres which are at present fitted to such tractor-mounted-seed drill sizes. For this reason, the influence of the soil condition on the number of crank rotations is extremely small. The variations described above only occur in especially unfavourable cases.

In the same way as the slip, build-up of dressing agent on the drill's bottom flaps and in front of the outlets of the metering wheel housings also exert a considerable influence on the seed rates. Where such deposits occur, the calibration trial should be repeated, so as to check the seed rate after 2-3 seed boxes have been sown. A state of equilibrium has then become established, and notwithstanding the existing deposits of dressing agent, the seed rate will drop no further.

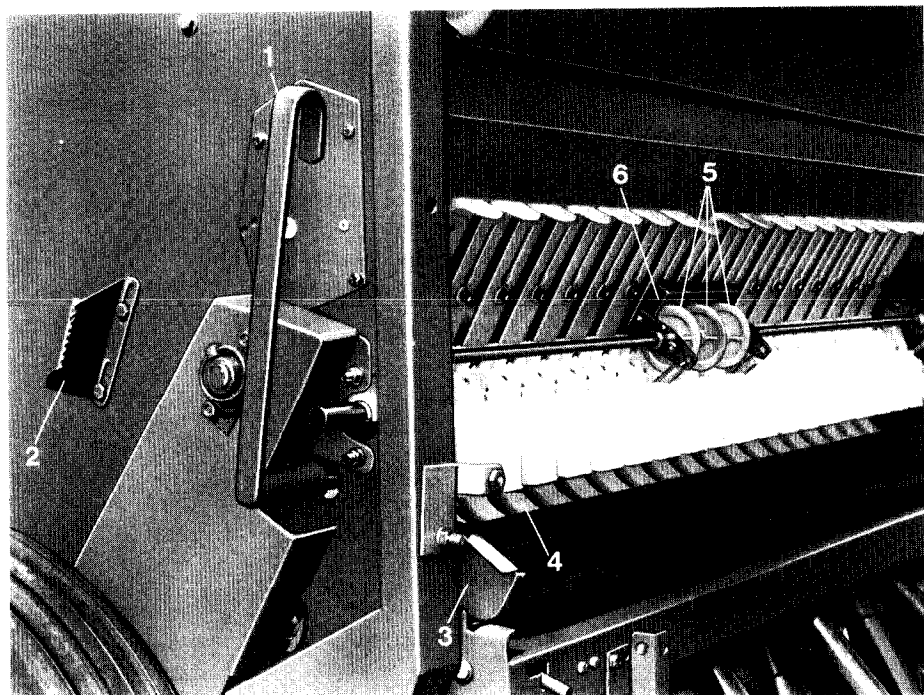


Fig. 19

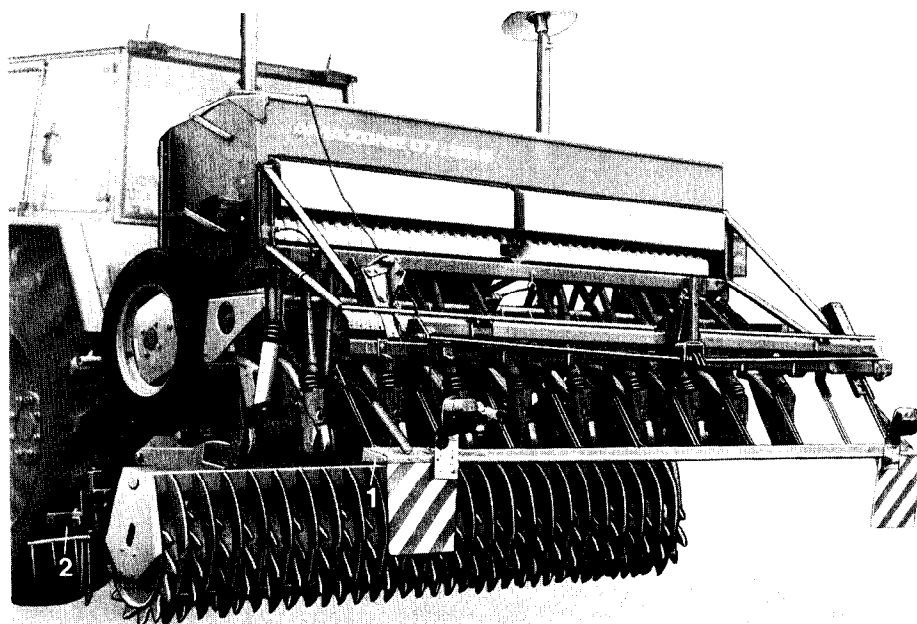


Fig. 19a

3.7 Emptying the seed-box

To empty the seed-box, the trays (Fig. 19/3) used for the calibration test are placed beneath the metering wheel housings. The bottom flap setting lever (Fig. 19/1) on the left-hand side of the drill is then moved back, past the notched plate (Fig. 19/2). The remaining seed then falls into the calibration trays.

When the trays are full, close the bottom flaps (Fig. 19/4) with the lever. Repeat procedure until the machine is empty and clean.

The machine may be cleaned with a water hose or with a high-pressure cleaner. If you intend to clean the seed box with compressed air please be reminded that any dressing dust is poisonous and inhaling it is harmful to humans and animals.

3.8 En route to the field (transport on public roads)

If public roads are used en route to the field, ensure the tractor and drill conform to the traffic regulation. In particular this means: The maximum transport width of 3 metres may never be exceeded. Herefor it may necessary to turn the wheels of the D7/30-EC in such a way that the rim cranks are facing inwards. The outer harrow elements of the Extra Coverage following harrow must be pushed inwards on the square tube after having loosened the ring nut on the key bolt which holds these harrow-elements to the harrow boom. The calibration crank may be used for this.

If the seed drill is operated in combination with an AMAZONE power harrow, the side dam levellers (Fig. 19a/2) of the power harrow must be turned inwards in transport position (see instruction book of the power harrow RE).

The track markers must be placed in transport position, i. e. the marker carriers must stand vertically (Fig. 1). Also the legally required lighting is provided as option for the drill; at the rear, on the seed tube rail and on the side of the machine. Do not forget to connect the lighting to the tractor and check that it functions correctly.

The pre-emergence marker discs together with the disc carriers have to be removed after removing the pin (Fig. 50/5).

The backwards facing tynes of the Extra Covering following harrow have to be protected with the traffic guard (Fig. 19a/1), available as an option. This traffic guard is provided with light carriers to which the traffic lights may be attached.

If the seed drill transported in combination with a power harrow and lifted with the AMAZONE "Liftpack"-System, the rear lights, if being fixed to the seed drill's light carriers, would be lifted above the maximum height allowed by the traffic regulations. Hence it becomes necessary to affix the rear lights to the light carriers of the traffic guard at the Extra Coverage following harrow. Please note that the maximum height above the road must not exceed 1.55 metre.

The front axle weight of the tractor during transport of a machinery combination or of a seed drill alone must be in minimum 20% of the tractor net weight. Otherwise the tractor cannot be steered with sufficient safety. If necessary, instal front weights or fill the tractor's front wheels with water.

Furthermore note that the tractors allowable rear axle load is not exceeded. By no means a seed drill, if it is operated in combination with a soil tilling implement, should be transported with a filled seed box, since then the maximum axle load allowable for public traffic will in nearly all cases be exceeded. Additionally, please mind the allowable total weight of the tractor.

Please adhere to these hints, especially in public traffic. They help to prevent accidents.

3.9 On the field

Once on the field, remove the ligths and lower the track markers. Move the track markers backwards and forwards a few times, checking to see whether the track marker chains have been fitted to the correct length. Ensure on the first run, that the marker operates on the correct side (see para. 3.3.1).

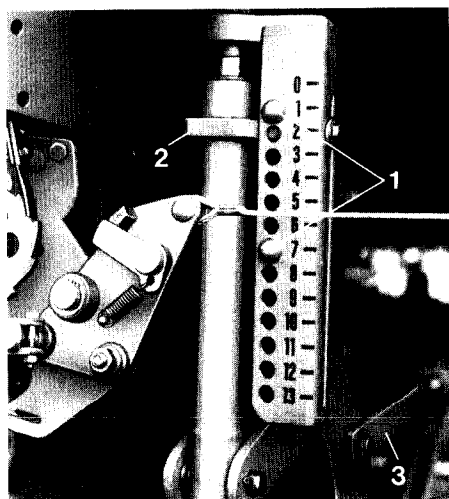


Fig. 20

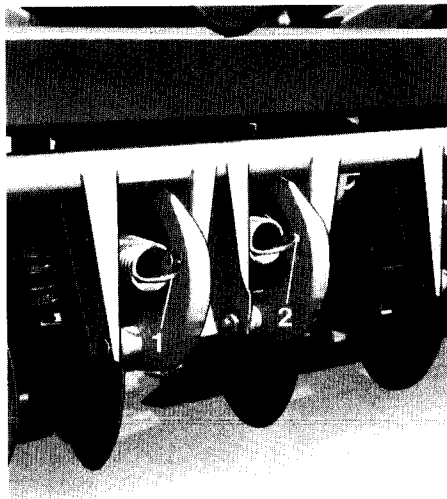


Fig. 21

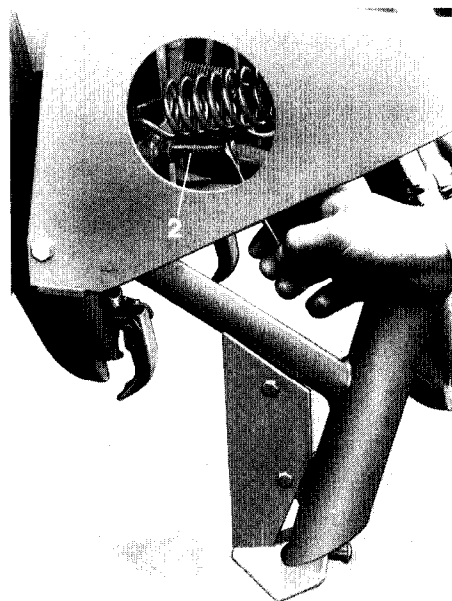


Fig. 22

4 Setting of coulter pressure

The coulter pressure determines the placement depth of the seed. The accurate maintaining of the required placement depth is one of the most important preconditions for a higher yield.

Drills D7/30-EC and D7/40-EC are equipped **as standard** with centralised hydraulically actuated coulter pressure adjustment. A one-way control valve is required on the tractor for operating the pressure adjustment.

By inserting two bolts (Fig. 26/1) next to the scale of the hydraulic pressure adjustment, it is possible to select a lower and upper coulter pressure.

Where the cylinder for the hydraulic pressure adjustment is not pressurised, the stop (Fig. 20/2) on the cylinder is up against the bolt in hole 1. If – via the hydraulic control valve – the cylinder is pressurised, then, as shown in the photograph, the stop on the hydraulic cylinder is up against the bolt in hole position “6”. Position “0”, i. e. the lowest coulter pressure, is reached by withdrawing the bolt in position “1”. If the sowing depth is still too deep (e. g. on light, loose soils), the roller type coulter should be fitted with depth limiters (see special options).

For checking of the depth placement of the seed it is necessary to run with the seed drill a few metres on the field at the same speed with which the seed drill will work; thereafter check the depth-placement. If the seed has been placed too deeply, the coulter pressure must be reduced or vice versa.

On very light soils already the coulters own weight may result in a too great a planting depth. In this case the K-coulters should be equipped under all circumstances with bandsowing shoes (see options). If the drill is equipped with roll coulters, the use of depth limiters (options) is recommended.

Depth limiters for roll coulters are especially recommended when the seed drill is operated on frequently varying soils. The required planting depth is maintained here by the depth limiters in connection with the hydraulic pressure control of the seed drill.

Where it is necessary for individual coulters – e. g. in the tractor wheel-tracks – to have a great pressure, it is possible to place the spring on the coulter-stop in the front position (Fig. 21/1). Then, the pressure of this coulter will be greater than that of the other coulters (Fig. 21/2).

4.1 Setting the wheelmark eradicating coulter of the D7/ECN

To be able to sow to the full width of the D7/ECN seed drill, i. e. behind the drill's wheels, AMAZONE has developed the wheelmarker eradicator coulter with its two functions. The seed coming from the two outermost metering wheel housing is guided to the wheelmark eradicator coulter which places it in a double width band.

The placement depth of the wheelmark eradicator coulter (Fig. 22/1) is set at the bolt (Fig. 22/2) in such a way that the coulter loosens the wheelmark at a depth of approx. 2 cm. This way, behind the drill's wheel, an approx. 12 cm wide seed band is placed at a depth of 2 cm. Additionally the Extra Coverage following harrow covers this seed band with soil.

If the drill's wheelmarks are extremely deep that wheelmark eradicator coulter places the seed on top of the wheelmark without loosening it. The Extra Coverage following harrow then covers the seed with soil afterwards.

Under no circumstances must the seed be placed too deeply only for the purpose of loosening the seed drill's wheelmarks with the wheelmark eradicator coulter.

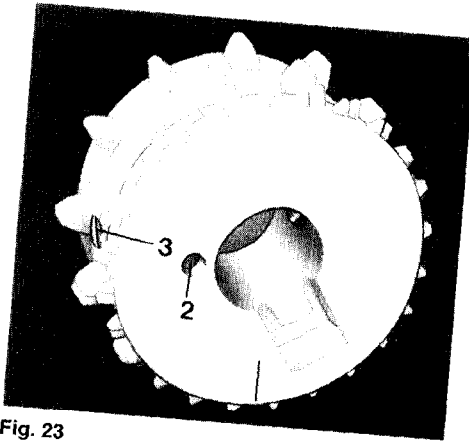


Fig. 23

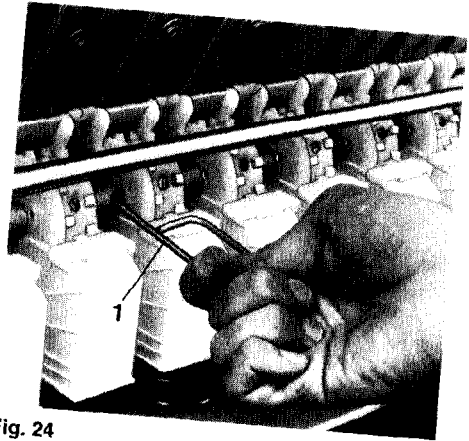


Fig. 24



Fig. 25

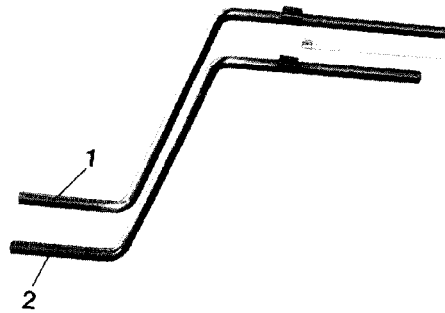


Fig. 26

5 Sowing fine seed varieties

For sowing fine seed varieties, each AMAZONE D7/EC drill is equipped as standard with the combined standard and fine-seed metering wheel (Elite seed-wheel) (Fig. 23/1). During grain sowing, standard and fine seed metering wheels are coupled and both rotate. By pushing out of a connecting pin with a switch-hook which is housed in the bag with the operating instructions, the standard metering wheel can be rendered in operative. The switch-hook is made from 5 mm wire and resembles a sort of picklock.

In order to convert the drill to fine seed, move the gearbox setting lever up and down a few times (Fig. 15/3) until the seed shaft is positioned such that the brass screws (Fig. 23/3) are visible on each metering wheel. When this position is reached, you will see – on the left of the metering wheel, at the same height as the brass screws – a pin-hole. Insert the switch-hook (Fig. 24/1) into this pin-hole and press the brass knob out of the standard metering-wheel so that the metering-wheel moves freely on the shaft. When this has been carried out on all metering-wheels (on the lefthand side switch-hook, on the righthand side pin out), the machine is converted to fine sowing. At the same time you should shut-off the slides which are not required for fine seed sowing. To engage the standard metering-wheels, first bring the shaft back to its correct position, so that the pin-holes (Fig. 21/2) on the fine seed-wheels are easily visible. Then turn the standard seed-wheels with the hand and press the brass pin back in. Also available for lining-up purposes on fine and standard metering-wheels are small notches; these must be adjacent to one another. It is then a simple matter to press the knob in. Do not slacken the brass screw! (Fig. 21/3).

5.1 Sowing of rape seed

The fine seed metering-wheel used in the AMAZONE Extra-Coverage Seed Drill is specially suited for sowing rape seed. Due to the intensive agitating action of the agitator shaft it may be that during the sowing operation the rape seed sticks (glues) together and hence may cause irregular sowing. To avoid this we recommend to disengage the drive of the agitator shaft for rape sowing. To achieve this remove the lynch pin (Fig. 25/2) on the left side of the machine which functions as a coupling (Fig. 25/1) between the chain sprocket and the agitator shaft. However, at the calibration test with the supplied crank (Fig. 26/1) the agitator shaft will still turn also after having pulled out the clip pin (Fig. 25/2).

Usually, it is without any influence on the calibrated quantity whether the calibration test was performed with a stopped or driven agitator shaft.

Deviations between the calibrated and the actually sown seed rate can occur then when residue of the dressing agent sticks to the bottom flaps and thus slows the flow of the rape seed. To take this possibility immediately into account, we recommend to proceed as follows: Before beginning with the actual calibration test, fill the calibration tray by turning the crank at a high gearbox setting (approx. 80). This will cause immediately the dressing agent to stick to the bottom flaps to its final amount. 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 performed under the same conditions as during sowing. Deviations between the calibrated and the actual sown seed rate will then no longer occur.

To avoid weighing errors, make the calibration test according to $\frac{1}{10}$ or $\frac{1}{20}$ ha. Please use a suitable weighing scale (no spring scale please).

5.2 Calibration test with stopped agitator shaft (i. e. for green peas)

If spheric easy flowing peas are to be sown the drive of the agitator-shaft has to be disconnected to avoid damage to the peas by the pins of the agitator-shaft. The shutters at the metering wheel housings are fully opened.

Only if very cube-like, poor flowing peas are to be sown the agitator-shaft must be kept running and the shutter slide position must be on “ $\frac{3}{4}$ opened”.

If it is intended to sow with a stopped agitator-shaft the calibration test should also be done with a stopped agitator-shaft. For this the short calibration crank (Fig. 26/2 order-no. 30 985) has to be used which is available through the spareparts-service.

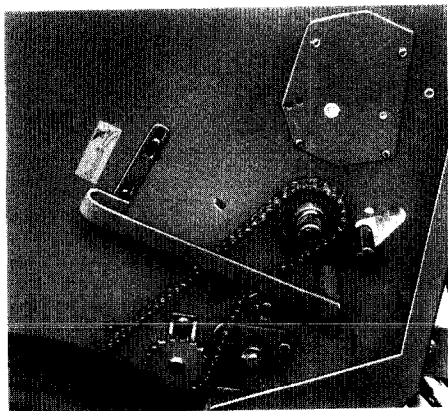


Fig. 27

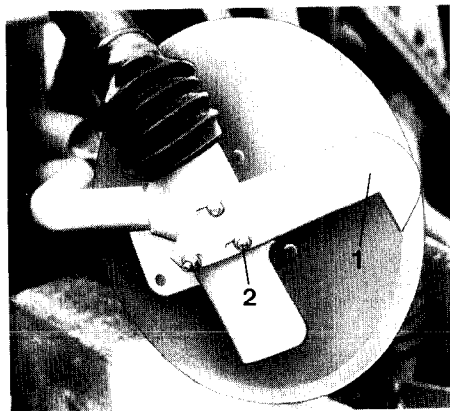


Fig. 28

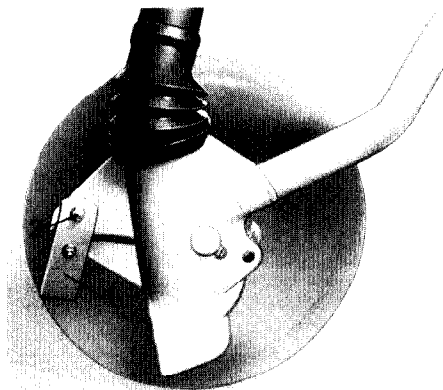


Fig. 29

NOTE!

Please do not forget after sowing rape or green peas/bean seed to engage the agitator drive by inserting the lynch pin (Fig. 25/2) again. Otherwise problems would occur especially when sowing seeds with beards of ears in that the seed may cause bridging and thus a faulty seed rate result.

6 After-use care

After use – as already described under para 3.7 – the drill is emptied and cleaned.

NOTE: When the machine is put away, leave the bottom flaps fully open. Where these are left closed, the danger exists that mice will try to enter the seed-hopper, since even when empty, the smell of grain persists. When the bottom flaps are closed, mice will gnaw at the bottom-flaps and metering-wheels. **Therefore** – bottom-flaps open!

The machine can be cleaned with a jet of water or high-pressure air. If you should use compressed air to clean out the seed-hopper, remember that the dust from dressing-agent is poisonous – do not breathe this dust in!

7 Care and maintenance

7.1 Lubrication

The AMAZONE drill has only two grease-nipples on the track markers. The grease in the track marker discs (Fig. 9/3) should be replenished after approx. 50 operating hours, at the latest however, when the track marker discs squeak.

Check the oil-level on the gearbox using the sight-glass. An oil-change is not necessary. When it is necessary to top-up the oil, remove the cover and refill with hydraulic fluid WTL 16,5 cSt/50°C. The max. oil quantity is 1.8 litre.

7.2 Tyre pressure

This should be checked regularly. A pressure of 2 bar is prescribed for the tyres 6.00-16 of the D7/30-EC and 0.8 bar for the tyres 10.0/75-15 of the D7/40-EC. A large loss of tyre pressure will lead to variations in seed rate.

7.3 Drive-chain tensioning

The AMAZONE drill D7/EC has a chain-drive on the righthand side from the wheel to the gearbox, and on the lefthand side from the wheel to the agitator shaft. Both chains are equipped with tensioners (Fig. 27/1) which are practically maintenance-free.

At the end of the sowing season it is recommended to oil the chains. For this, the chain-cover has to be removed.

7.4 Resetting the roll-coulter scrapers (Fig. 28/1, 29/1)

These are set at the factory so that they contact the back of the disc without any perceptible braking effect.

After extensive use of the roll coulter, wear can take place at the scrapers. Adjust the scraper by means of the screw (Fig. 28/2, 29/2) until the scraper once more just comes into contact with the coulter.

7.5 Coulters

All hinges of "K"-Suffolk- and "K"-roll coulters have maintenance-free bearings.

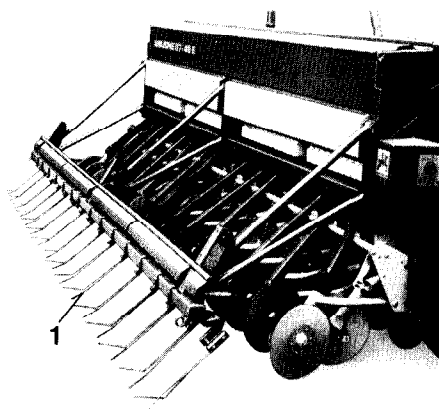


Fig. 30

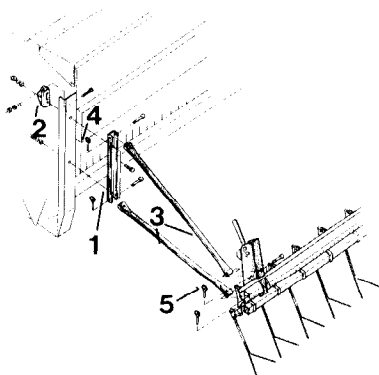


Fig. 31

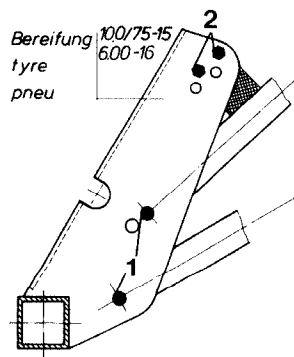


Fig. 32

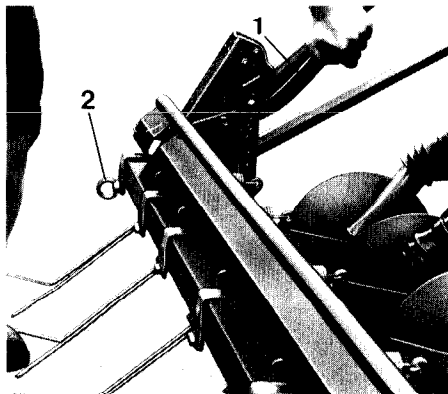


Fig. 33

8 Special Accessories (Options)

All components listed under this heading are extras which do not form part of the standard fitment and must be separately ordered. They can all, however, retrospectively fitted, all mounting holes and fixtures being available on the standard production machines.

8.1 Fitting and Setting of Extra Coverage Following Harrow

After sowing the seed is evenly covered with soil by the extra coverage harrow (Fig. 30/1). Like the roll coulters, the extra coverage following harrow (Fig. 30/1) operates totally without blocking, even where there are large amounts of organic material (trash).

Fitting of the extra coverage harrow:

- Mount the upper channel iron (Fig. 31/1) with the reinforcement angle (Fig. 31/2) to the seed box.
- The extra coverage harrow has to be bolted with two bolts according to Fig. 32/1 to the carrying tubes (Fig. 31/3) and secured by lynch pins (Fig. 31/5).
- The swing metal buffer has to be fitted according to Fig. 32/2.
- The carrying tubes (Fig. 31/3) now should be fitted to the upper channel iron (Fig. 31/1) with pins and lynch pins (Fig. 31/4).

In the operating position, the v-shaped ends of the harrow tine elements (Fig. 30/1) should lay approx. horizontally on the soil. They should possess some 5–8 cm freedom of movement downwards so that they can also function where the ground level in the field is somewhat lower. This working position must be set up on the field by lengthening or shortening the top link.

There are no disadvantageous consequences, should it be necessary in this regard to slightly tilt the drill forwards or backwards. Tilting the drill forwards or backwards has no effect on the coulters pressure because on the AMAZONE-drills the coulters pressure is independent of the coulters position.

The operating intensity of the harrow tine elements or the pressure which they exert on the soil, must be set according to the soil conditions by means of the central coulters pressure adjustment (Fig. 33/1). The setting is to be such that no walls are to be found behind the harrow. Please note that always one harrow tine element should run between the coulters of the rear row (see table below).

For road transport it is necessary to slacken off the outer harrow elements and to push them inwards towards the square profile tube, so that the maximum permissible transport width is not exceeded. The crank handle can be used for slackening the ring bolt (Fig. 33/2).

Number of harrow tine elements of the extra coverage following harrow

Bout-width	Coulter Type	Number of Coulters	Row spacing	Number of tine elements
3,00 m	Roll-coulter	31	9,6 cm	12
	K-coulter	25	10,8 cm	14
		33	8,1 cm	10*
4,00 m	Roll-coulter	43	9,6 cm	16
	K-coulter	33	11,2 cm	18
		45	8,1 cm	13*

*extended tines

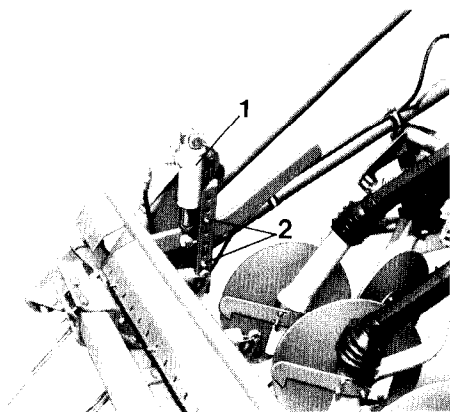


Fig. 34

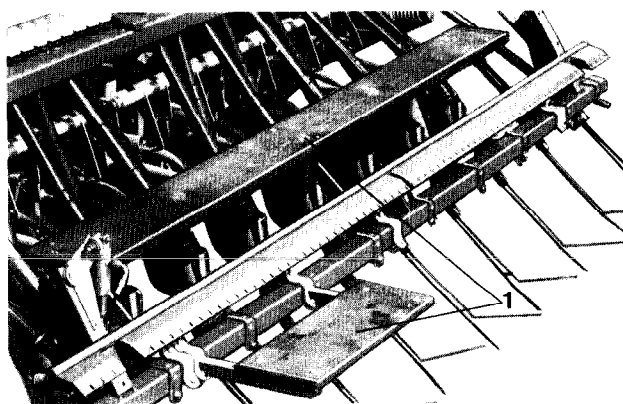


Fig. 35

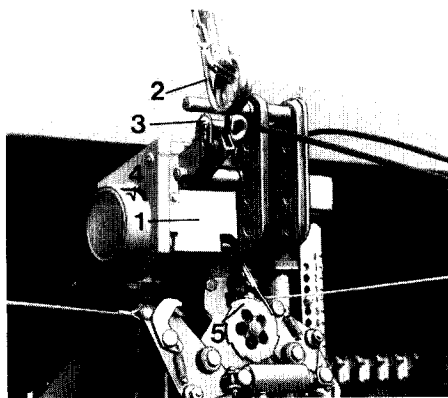


Fig. 36

8.1.1 Hydraulic pressure adjustment for extra coverage following harrow

With very changeable soil conditions it is practical – together with coulter pressure – to also change the pressure of the extra coverage following harrow. For this purpose a hydraulic ram (Fig. 34/1) with mounting can be bolted to the extra coverage harrow. Then the harrow pressure will be increased at the same time as that of the coulter.

In the same way as with the central hydraulic coulter pressure adjustment, a higher and lower harrow pressure can be selected by inserting the two pins (Fig. 34/2) into the pre-selection bracket.

8.2 Loading step

This loading step (Fig. 35/1) may be attached to a existing extra coverage following harrow for easier access of the seed box for filling.

ATTENTION:

The loading step may only be used for the refilling of the machine. Never allow any persons to stay on it during the sowing operation.

8.3 Hydraulic metering wheel tramlining unit with wrap-spring coupling

With the aid of the tramlining unit on the seed drill it is possible to create in certain distances so called tramlines by which some rows behind the tractor's wheelmarks are not sown. The spacings depend on the working width of the following operations (fertilizer spreader, sprayer etc.). In para. 8.5 you may find some examples.

For creating tramlines it is possible to close down up to four coulters in the desired switching rhythm.

The hydraulic operated tramlining unit (Fig. 36/1) of the AMAZONE extra coverage seed drills is coupled to the hydraulic marker changeover (Fig. 36/5) so that when changing the boutmarks with a single acting control valve also the tramlining unit is switched one section on.

A tramline indicateer wheel (Fig. 36/4) is visible from the tractor seat to show which position the automatic tramlining kit is actually on. As soon as the indicator number "0" can be seen, the drive sprockets (Fig. 19/5) come to a standstill and the metering wheels discontinue to turn so that they cannot deliver any further seed, in order to create tramlines. A shifting sprocket inside of the shift box (Fig. 36/1) controls the bout in which the tramlines are created.

When beginning with the operation, the tramlining unit has to be shifted by pulling by hand the overriding lever (Fig. 36/2) until the correct number (Fig. 36/4) can be seen in the shift box. Further details you can see in para. 8.5, explaining some examples of the creating of tramlines. Also note when beginning that the hydraulic marker changeover (Fig. 36/5) has been set correctly and that the spoor markers are lowered on the correct side.

Should it be desired to disconnect the tramlines but still create boutmarks, the tramlining unit has to be overridden by holding the shift box in the extended position by means of the bolt in the slotted hole.

NOTE:

Now the figure (Fig. 36/4) in the shift box **must not show "0"**, as otherwise continuously tramlines would be created.

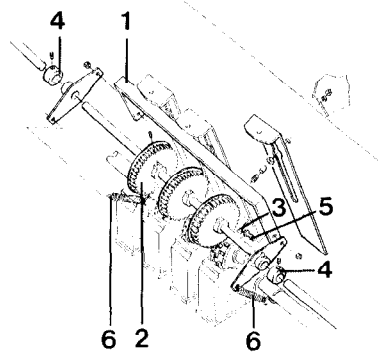


Fig. 37

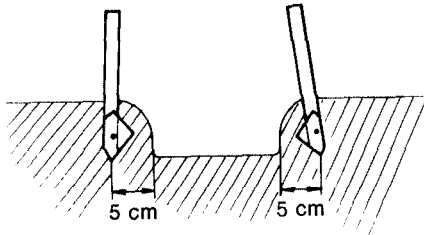


Fig. 38 a

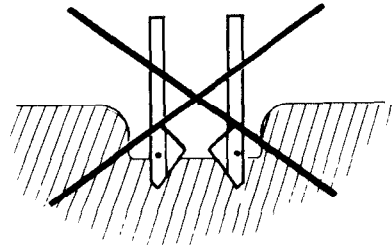


Fig. 38 b

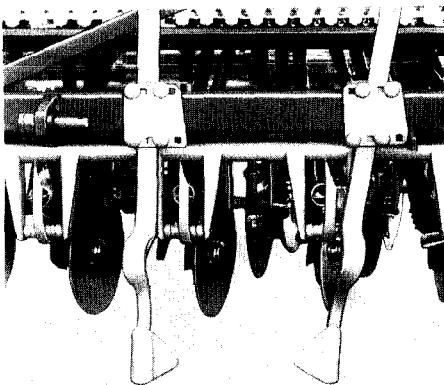


Fig. 39

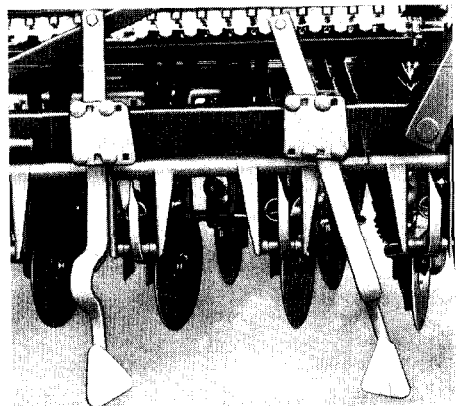


Fig. 40

The distance between the tramlines normally is set in the factory according to your order. Should it, however, be necessary, for instance, when purchasing a new tractor, to change the base of the tramlines according to the tractor's wheel base, procede as follows:

- take the mounting frame (Fig. 37/1) off the shutter slide bolts.
- loosen drive sprocket (Fig. 37/2) and slide it sideways fix it with the mounting frame above the new tramline by using longer shutter slide bolts M6 x 25, DIN 933 (Fig. 37/3) for mounting it to the seed drill.
- it may be necessary to transfer the seed tubes within the seed tube carrying rail.
- loosen the fixing bolts of the new tramline metering wheel until they turn freely.
- affix previously used tramline metering wheels to metering shaft. Drive the threaded pin into the fine-seed metering wheel until it is fixed to the metering shaft. Do not tighten these threaded pins too much as this might cause bending of the metering wheels.
- push arresting rings (Fig. 37/4) slightly against the swivel-bearings and fix in that position.
- push the drive sprocket (37/2) along the secondary shaft until the teeth of the drive sprocket and of the tramline metering wheels mate and fix in that position.
- to prevent a shifting away of the secondary shaft the hexagan bolts (Fig. 37/5) of the swivel-bearing fixing have to be tightened with a slight play. Attach the four lateral pulling springs (Fig. 37/6) to the bottomflap shaft.

8.4 Tractor-wheelmark eradicator

As shown in Fig. 38a the wheelmark eradicators are to be mounted so that they work in the loose soil approx. 5 cm right and left of the tractor wheelmark. This provides for the most effective levelling of wheelmarks, obtaining adequate loose soil for covering the seed and reducing the risk of damage to the track looseners due stones being present in the compacted wheelmark.

Never mount the wheelmark eradicators as shown in Fig. 38b.

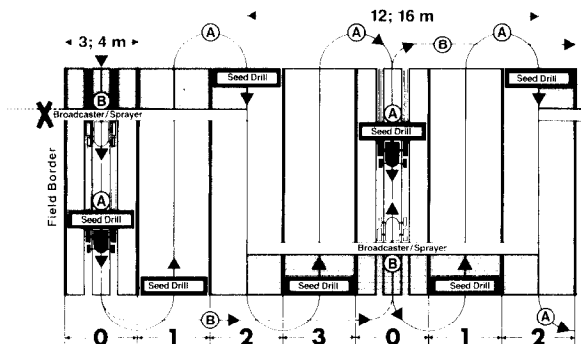
Due to the coulter mountings (bearings) under the main frame tube (square profile) to which the wheelmark eradicators are attached, it is sometimes necessary to mount them *obliquely* to obtain the correct positioning of the wheelmark eradicator tips adjacent to the tractor wheelmarks. This may be done with the aid of the different holes in the wheelmark eradicator mounting plates, the wheelmark eradicators can be placed in any required position as shown in Fig. 39 and Fig. 40.

8.5 Example of tramline bout width

4-sectioned shifting, i. e. 1 time with tramliner, checking No. ①

3 times without tramline, checking No. ①, ②, ③

Seed Drill:	3 m	4 m	Bout width
Fertilizer spreader and sprayer:	12 m	16 m	Bout width



At the boundary/hedge: **Seed drill sows with full bout width**

Seed drill AMAZONE D7

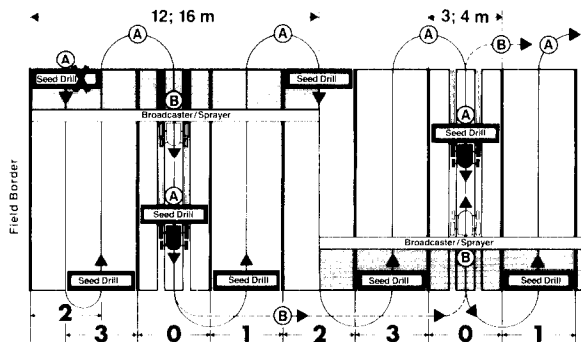
Fertilizer broadcaster spreads to one side only

Fertilizer broadcaster AMAZONE ZA-F with boundary spread device

Fertilizer broadcaster AMAZONE ZA-U with boundary spread device

Sprayer (one boom half folded and stopped)

Field sprayers AMAZONE S and US



At the boundary/hedge: **Half of bout width with closed shutter slides**

Seed drill AMAZONE D7

Fertilizer broadcaster spreads with full working width

Fertilizer broadcaster AMAZONE ZA-F

Fertilizer broadcaster AMAZONE ZA-U with border spread disc

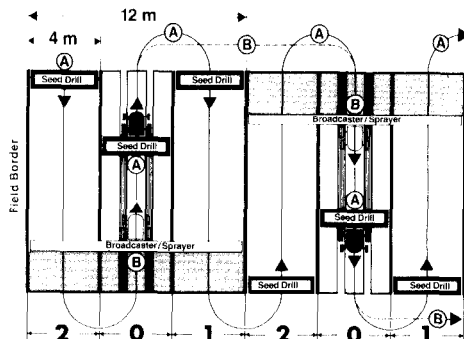
Pneumatic fertilizer broadcaster AMAZONE JET

Sprayer works with full boom width

Fieldsprayers AMAZONE S and US

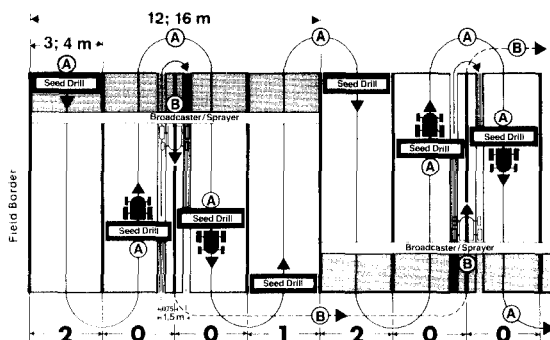
3-sectioned shifting, i. e. 1 time with tramline, checking No. ①
2 times without tramlines, checking No. ①, ②

Seed Drill:	4 m	Bout width
Fertilizer spreader and sprayer:	12 m	Bout width



2-sectioned shifting, i. e. 2 times with tramline, checking No. ①, ①
2 times without tramline, checking No. ①, ②

Seed Drill:	3 m	4 m	Bout width
Fertilizer spreader and sprayer:	12 m	16 m	Bout width



Shift-sprockets for other shifting sequences (5-, 6-, 7-, 8-, 9 sectioned) are also available.

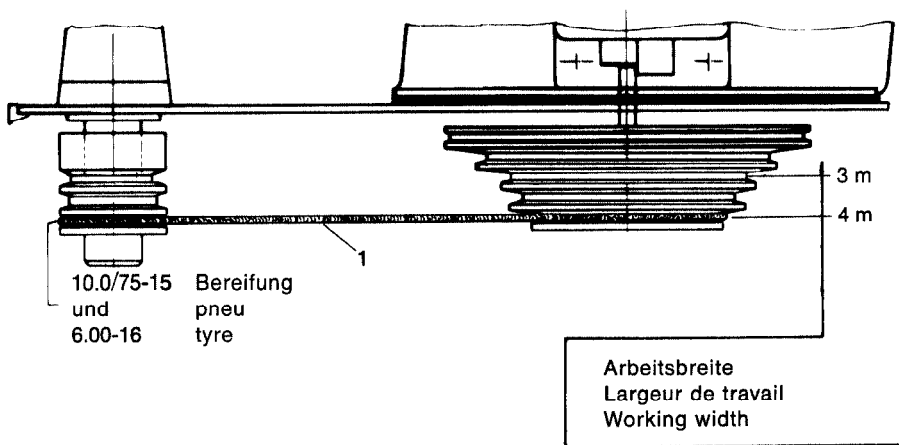


Fig. 41

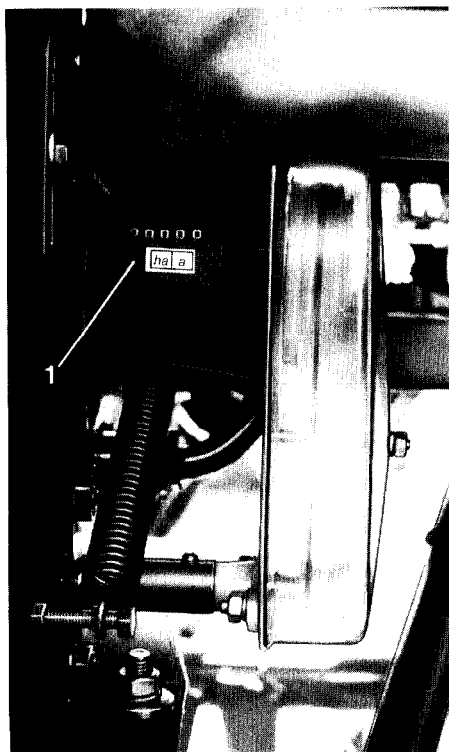


Fig. 42

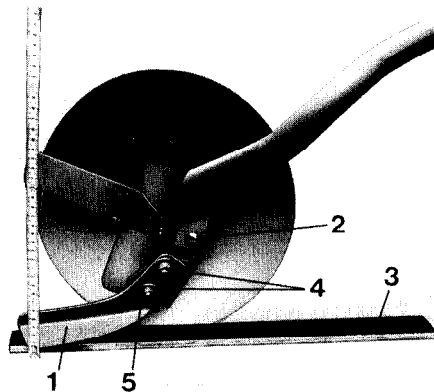


Fig. 43

8.6 Hectare meter

The hectare meter (Fig. 42/1) is mounted on the inside of the right side panel below the drill's seed box. For its function it is important that the chain from the drill wheel to the gearbox is correctly tensioned with the tensioning plate, as this chain provides the drive to the counter. When retrospectively fitting the hectare meter, ensure that the round section belt is in the correct groove on the belt pulley. A diagram on the transparent cover (Fig. 41) shows the groove in which the belt must be situated, whereby the small diameter pulley relates to the drill's tyre size and the big pulley to the drill's working width. (For example: for tyre size 10.0/75-15 use pulley for working width four metre.)

8.7 Sowing depth limiter

8.7.1 Depth limiter for roll disc coulters (Fig. 43/1)

On light, straw-free soils, it is imperative that the roll coulters are additionally fitted with depth limiters (Fig. 43/1). These are fitted by inserting a clevis pin (Fig. 43/2) which is to be secured by a cotter pin.

To obtain a sowing depth on medium soil types of approx. 2.5 cm – e.g. with grain sowing – the roll coulters disc is placed on level ground and an approx. 1 cm thick plank (Fig. 43/3) is laid beneath the depth limiter (Fig. 43/1). In this position the bolts with nuts (Fig. 43/4) which connect the depth limiter skid with the upper part of the depth limiter are tightened.

To achieve a slightly greater sowing depth it is normally sufficient to increase the coulters pressure only.

On heavy soils it can, however, be necessary – when setting up the depth limiters – to use a thicker plank, e.g. one which is approx. 2 cm thick.

Then – due to the slot under the M 10-screw – a displacement between the upper part of the depth limiter and the skid is possible.

If, on the other hand, a lesser sowing depth is required, e.g. on extreme light soils, the skid and roll coulters disc must be set to uniform heights. In extreme cases, it is even possible for the skid to be lower than the roll coulters disc. In order to attain the required position, place the M 6 hex. bolt (Fig. 43/5) in the second hole in the top of the depth limiter.

On sticky soils which tend to build up on the front surface of the disc, it is advisable to use the depth limiters and operate with a higher coulters pressure. Then – independent whether the soil adheres to the front surface of the disc, or falls off – the sowing depth will always remain constant.

Especially with very changeable soil conditions, the use of depth limiters provides a very constant sowing depth.

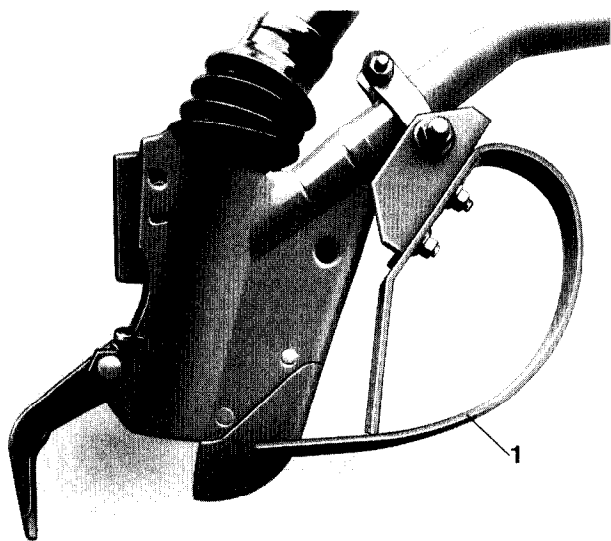


Fig. 44

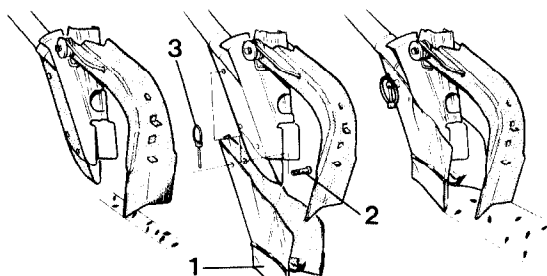


Fig. 45

8.7.2 Depth limiter for “K”-Suffolk coulters

On very light soils it is possible that the “K”-coulters even without the use of any coulters pressure, will be running too deep through the soil. This can be avoided by the use of depth limiters (Fig. 44/1).

Also in frequent changing soil conditions, the use of the depth limiters in connection with the central coulters pressure adjustment is practical.

On heavy soils, the necessary sowing depth can be attained by an increased coulters pressure, whereas the coulters pressure on lighter soils will have to be reduced.

8.8 Band sowing coulters shoe I for “K”-Suffolk coulters

The band sowing shoe I is used on heavy to medium heavy soils. The band sowing improves the individual growing area of the grain plants. Therefore, yield increases result over row placement of grain. Comparison tests over many years with various chambers of agriculture, agricultural institutes and consultancy rings have shown yield increases between 4 and 8% over the row placement at the same coulters spacing.

Precondition for the useability band sowing shoe is a seed bed with fine tilth and a clean surface. In such cases, the band sowing shoe (Fig. 45/1) can be clipped onto the “K”-coulters and fixed with the pins (Fig. 45/2) and secured with lynch pins (Fig. 45/3). Should these preconditions be not available, i. e. on heavy sticky soils in winter corn, the band sowing shoes can be removed again.

For the proper covering of the wide sown seed beds, the use of the extra coverage harrow (see para. 8.1) is imperative. The extra coverage harrow works under all conditions absolutely free of plugging up and of course also behind the normal “K”-coulters without band sowing shoe.

8.8.1 Band sowing shoe II for “K”-Suffolk coulters

The band sowing shoe II is used for light to medium light soils, where the band sowing shoe I would penetrate too deeply. The band sowing shoes II are equipped with an upwards faced skid surface so that these coulters always have the tendency to come out of the soil and therefore will never run too deep. It might then be, that sometimes a little coulters pressure will have to be added. Fitting and features are the same as stated above (under para. 8.8).

8.8.2 Deep sowing shoe for “K”-Suffolk coulters

The deep sowing shoes are especially designed for heavy soils whenever the penetration of the normal “K”-coulters is insufficient. The deep sowing shoes have a downward facing tip which creates a down drift of the coulters. These shoes are often used when planting beans or peas.

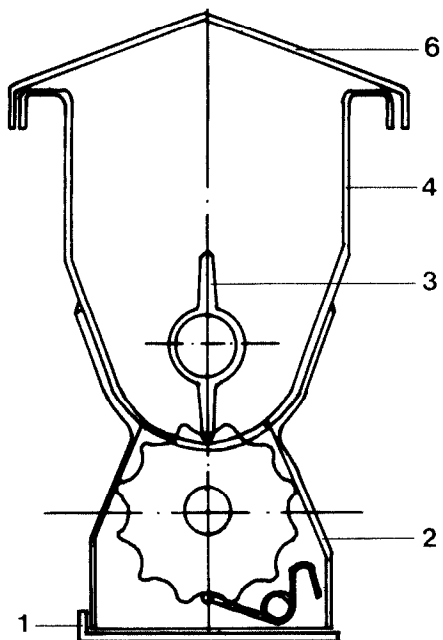


Fig. 46

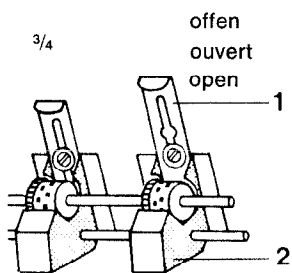
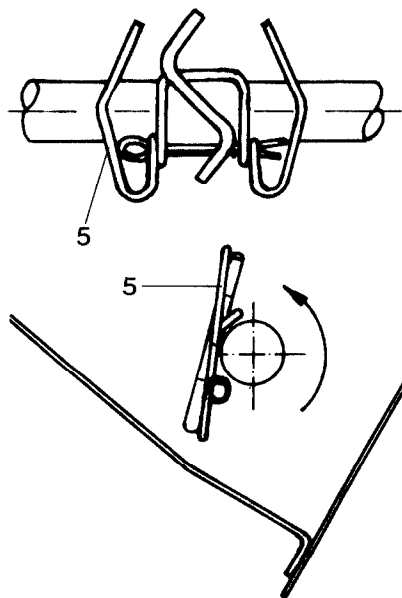


Fig. 47

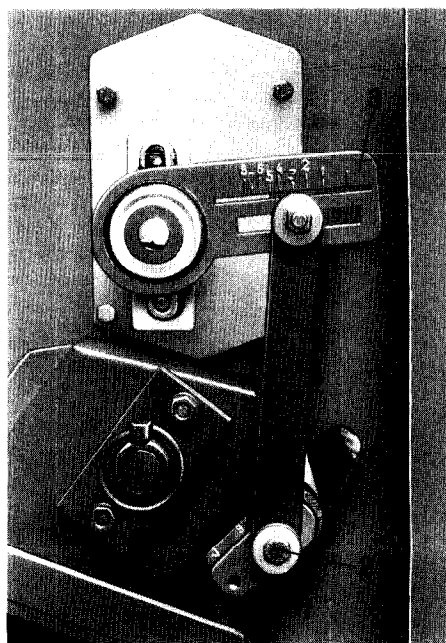


Fig. 48

8.9.4 Table for Dressing unit II

Setting at crank (on metering-shaft) indicated by A–B–C.

Setting at the swingarm (on dressing-device) indicated by 1, 2, 3, 4, 5, 6, 7 and 8.

Mercury-containing dressing agents and powder	Wheat			Barley			Rye			Oats			Bulk weight
	–	–	gr/kg	–	–	gr/kg	–	–	gr/kg	–	–	gr/kg	kg/litres
Aagrano	B	1	2	B	1	2	A	8	2	B	2	3	
Aagrano Krähex	B	1	2	B	1	2	A	8	2	B	2	3	
Abavit	A	3	2	A	4	2	A	4	2	A	6	3	
Aagrano Plus K	A	8	2	A	8	2	B	1	2	B	3	3	
Ceresan Gamma M	A	6	2	A	7	2	A	7	2	B	1	3	
Ceresan Special	A	2	2	A	3	2	A	3	2	A	5	3	
Fusariol	A	8	2	A	8	2	B	1	2	B	2	3	
Germisan	A	8	2	B	1	2	B	1	2	B	3	3	
Vitavax Combi	A	8	3	A	8	2,5	–	–	–	–	–	–	
Nexion Seed-powder	B	6	2,5	B	5	2,5	B	6	2,5	B	4	2,5	0,350
Mercury-free dressing agent													
Aarbosan UT	B	4	2	B	2	2	B	3	2	A	4	2	0,520
Drawigan plus	C	3	3	C	1	3	B	8	2,5	A	5	1	0,490
Baytan Spezial	A	6	1,5	–	–	–	A	6	1,5	A	4	1,5	0,530
Baytan Universal	A	6	1,5	A	5	1,5	A	6	1,5	A	4	1,5	0,530
Aagrano 2000 UT	B	5	2	B	3	2	A	7	1	A	6	1	0,460
Panoctin TB	C	1	3	B	7	3	B	8	3	B	3	3	0,620
Derosal	B	2	1	A	6	1	A	7	1	A	6	1	0,390
Voronit Special	A	6	2	–	–	–	A	7	2	–	–	–	0,900

These setting rates refer to rates prescribed by the manufacturers

Altering the settings of the dressing device by one marking at the swingarm (Fig. 48/3) for example from A2 to A3 or A8 to B1 means an application difference of 10%, in both these cases the amount would increase by 10%.

If on the contrary the setting is being changed to the next lower setting then an application reduction of 10% takes place.

8.9.2 How to empty the dressing unit

Undo the eye bolt and turn the unit upside-down on its own bearings. The remaining dressing material will thereby collect in the hopper cover and can then by removing the hopper cover be easily disposed of.

8.9.3 Checking calibration rates when operating the seed dressing attachment II

To achieve exact results the following test must be made:

a) Checking the volume density

The volume density of non mercury dressing can distinctly vary from the average rates shown on the chart of page 38. It is therefore advisable to check the density of the material. If it is found that there is a variation between the established weight and the weight given on the chart, then it will be necessary to correct the setting. Weigh one litre measure of dressing agent. If you establish that the weight is for example 10% lower than shown on the chart (page 38) then you must increase the amount of dressing agent by readjusting the setting per 10%, for example from A2 to A3.

b) Calibration test of the dressing agent

A calibration test aids towards good end results.

Proceed as from point one to and including point five and then empty the seed hopper. By turning the calibration crank one can establish if the dressing agent is being discharged correctly through all metering housings. After this trial one must close all shutters (Fig. 46/1) of the metering housings.

The same number of turns on the crank must be applied as when performing the corn calibration test. The dressing material will collect on the closed shutter plates (Fig. 46/1) beneath the metering housings (Fig. 46/2).

Carefully remove each shutter plate (Fig. 46/1). Care must be taken not to spill any of the dressing material. Collect the material on a sheet of paper and weigh it on a letter scale.

The corn test (according to para. 3.6.1) has already given us the calibrated rate of corn. The required amount of the dressing material resulting from the calibration test at correct settings can now easily be established.

150 grammes of dressing on 100 kg of corn equals for example 1.5 grammes of dressing on 1 kg of corn.

If for example the result of the calibration test showed 5 kg of corn then the calibration result of dressing should show 5×1.5 grammes = 7.5 grammes of dressing agent. Correction of settings can easily be made as described above.

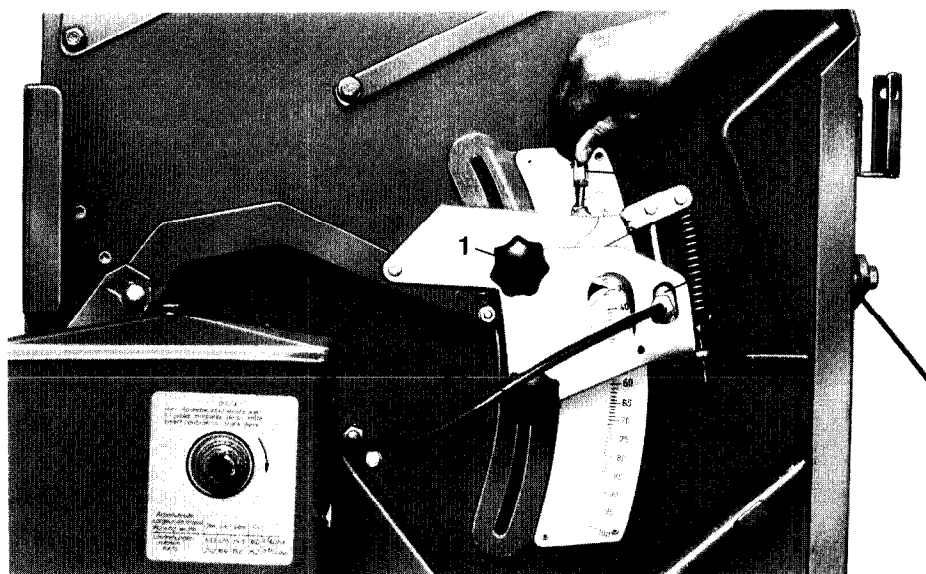


Fig. 49

8.10 Hydraulic remote controlled adjustment of seed rate

This is coupled with the coulter pressure setting. If the coulter pressure is increased, the seed rate will also be increased automatically. This can become of interest when wanting to sow on hilltops with a minimum of top soil etc.

To set, firstly the two knobs (Fig. 49/1 and 49/2) are slackened and the entire adjusting mechanism is moved until the pointer indicates the desired gearbox-setting (e.g. in Fig. 49 gearbox-setting 35). The knobs are tightened and thereafter the calibration tests can be carried out as described under para. 3.6.

Setting of the extra quantity

If on places with heavy soil, the coulter pressure is increased but no increase in the sowing quantity is desired, the adjusting screw (Fig. 49/3) is turned fully out. Then, an increase in coulter pressure will not be accompanied by an increase in seed rate.

Where on the other hand, the seed rate is required to be increased together with the increase in coulter pressure, this is to be achieved as follows:

Pressurize the hydraulic ram (Fig. 49/4). Screw the adjuster bolt (Fig. 49/3) into the welded-on nut. This will push the gearbox setting lever down via the lever mechanism. The adjuster screw is turned until the desired increased seed rate is displaced on the scale. By means of a calibration test in this position – i.e. with pressurized hydraulic ram – a calibration test is carried out to see if the desired higher seed rate has been attained.

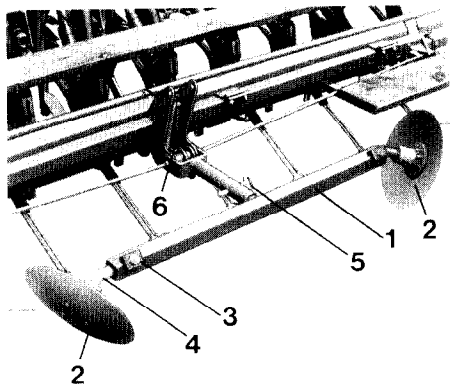


Fig. 50

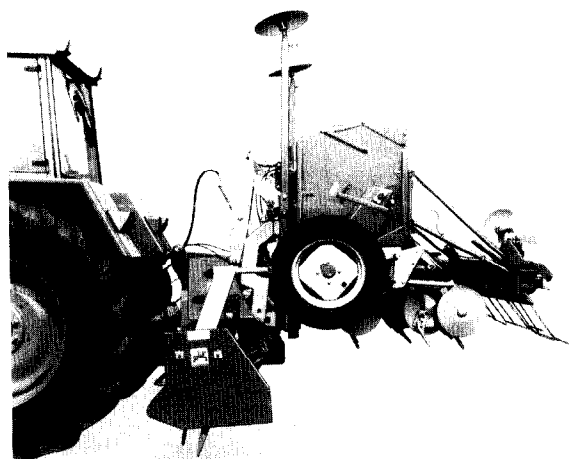


Fig. 51

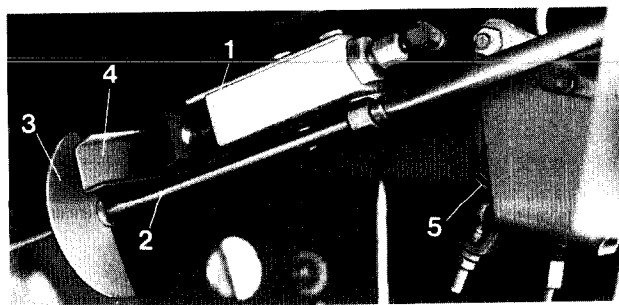


Fig. 52

8.11 Hydraulic remote controlled pre-emergence marker

A pre-emergence marker (Fig. 50/1) can be combined with the automatic tramlining system. If the drive to the metering wheels is cut off for laying out tramlines, the two large pre-emergence marking discs (Fig. 50/2) are lowered, marking the wheel marks 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 to pre-emergence spray. The discs are raised if all metering wheels are in operation, that is to say, when no tramline is created.

The marker discs can be set to the tractor wheel base by the aid of the hex. bolts (Fig. 50/3).

On lighter soils, the marker discs can be set by turning the disc axle (Fig. 50/4) so that the marker disc runs approx. 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.

If a tramlining unit with a two-bout ratchet is used, only one marker disc has to be used. This marker disc has to be set in such a way, that a tramline is created in a to and fro bout on the field (see para. 8.5).

In transport position the pre-emergence markers (Fig. 50/1) and the carrier (Fig. 50/6) have to be secured by the pin (Fig. 50/5) and counter secured. The marker discs are now folded all the way up and are positioned above the extra coverage following harrow. Fig. 51 shows a combination with the AMAZONE-system "Liftpack" and a D7/30-ECR with pre-emergence marker in transport position. When transporting on public roads, the marker discs should be removed by the removal of the pin (Fig. 50/5) complete with the axles.

The pre-emergence markers are controlled over a one-way control valve (Fig. 52/1) which in return is controlled by the tramlining ratchet kit. A steering disc (Fig. 52/3) on the pulling rod (Fig. 52/2) of the automatic tramlining kit presses in pos. "0" against the control valve lever (Fig. 52/4) and the marker discs are lowered. After the further shifting of the tramlining kit into pos. "1", the steering disc (Fig. 52/3) returns and thus the pre-emergence marker discs are lifted again. The steering disc (Fig. 52/3) is set on pos. "0".

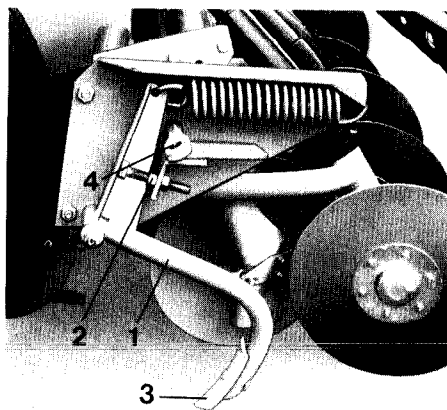


Fig. 53

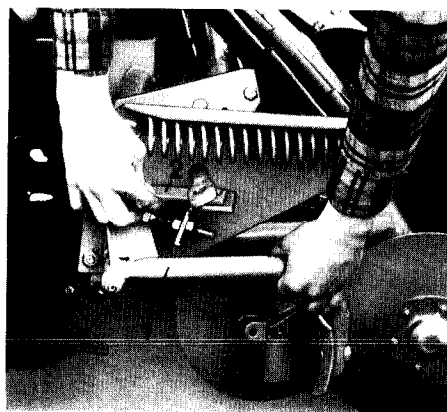


Fig. 54

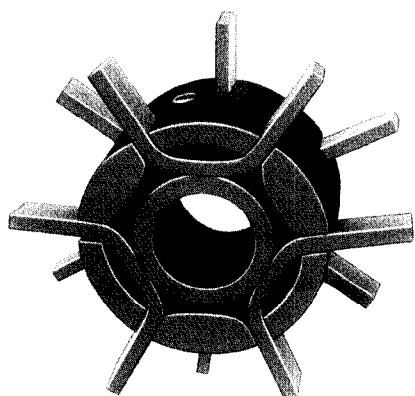


Fig. 55

8.12 Seed drill wheelmark eradicator tine for D7/ECR

For loosening of the seed drill's wheelmarks, wheelmark looseners (Fig. 53/1) can be bolted on behind the wheels. These wheelmark looseners loosen the soil in the area of the outer coulter that also here a proper sowing is possible. If the share tip hits a stone, the wheelmark loosener will break back. It is mounted swivelable and a strong spring presses it down into the working position. With the set-screw (Fig. 53/2) the working depth is set in such a way that the tip (Fig. 53/3) reaches approx. 2 cm beneath the wheel level if the seed drill is placed level. If the drill is used on fields with large quantities of organic matter on the surface it is necessary to raise the wheelmark looseners (Fig. 54/3) and to hook them by folding the locking hedge (Fig. 54/2) forward.

SPECIAL NOTE:

For transport on public roads the wheelmark looseners of the D7/ECR have to be taken off. Remove the clamp bolt (Fig. 53/4) and unhook the wheelmark loosener by pulling it forward.

8.13 Bean metering wheel

The sowing of extreme large seeds such as thick beans, may cause the standard metering wheel some trouble as the studs of the metering wheel at the bottom flap position "8" do not reach down to the bottom flap. This in consequence would result in an uneven flow of seed.

Instead of the standard metering wheels with fine seed metering wheels then the special bean metering wheels (Fig. 55) with elastic studs are used. These elastic studs are long enough to reach down to the bottom flap at bottom flap position "8" and thus guarantee an even flow of seed. As the studs are elastic it is ensured that the seed is not damaged.

For a quicker and easier exchange it is recommendable to use a second metering shaft onto which the bean metering wheels are mounted in their required spacings so that only the bearing blocks at the rear of the seed drill need to be loosened and the expansion pin on the gearbox side of the metering shaft to be removed for exchanging.

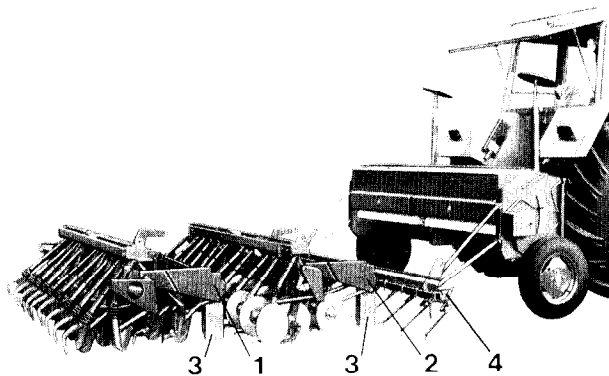


Fig. 56

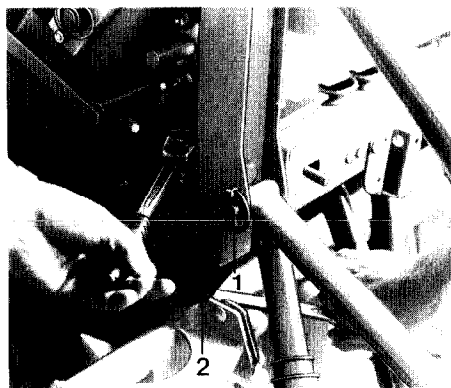


Fig. 57

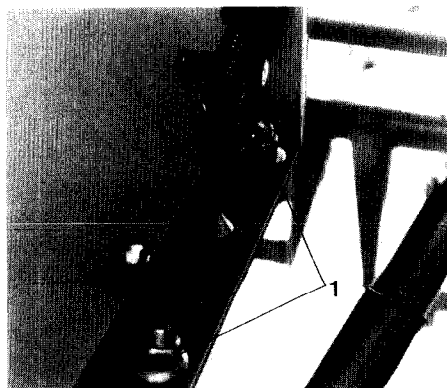


Fig. 58

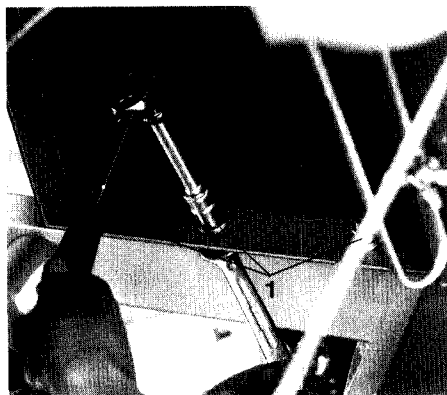


Fig. 59

8.14 AMAZONE-exchange coulters module system

The AMAZONE extra-coverage seed drills are equipped with exchangeable coulters modules. The seed drills D7/ECN are equipped with "K"-coulters, the type D7/ECR with roll coulters. Both coulters types are universally useable, however, they have different major fields of use. Therefore it might be recommendable if the conditions of use vary strongly within one farm, to equip the seed drill with both coulters modules.

The coulters module of the D7/ECN (Fig. 56/1) is especially suited for the sowing after the plough into a clean seed bed.

Also on heavy and cloddy soils the four stagger coulters module works completely free of any plugging up.

The coulters module of the D7/ECR (Fig. 56/2) is suited for precise sowing on less well preparable seed beds. As well as on ploughed on unploughed fields with a large amount of trash this coulters module can be used.

The conversion of the seed drill from the coulters module will roll coulters to the coulters module with "K"-Suffolk coulters and its possibility to make use of the band sowing shoe, can easily be done.

For exchanging the coulters modules the seed drill is placed onto level ground and two wooden blocks (Fig. 56/3) should be placed beneath either corner of the front and of the module to avoid its tipping over after unbolting.

Now firstly take off the extra coverage following harrow (Fig. 56/4). Pull out the fixing pins (Fig. 57/1) and remove the complete extra coverage following harrow. For each coulters module (roll or normal "K"-coulters) a matching extra coverage following harrow should be attached. This harrow will be attached only after the coulters module has been exchanged.

Drop the seed-tube fixing rail, relieve the hydraulic ram of the coulters pressure adjustment and pull out the lower hydraulic ram pin (Fig. 57/2). Now the nine fixing bolts (Fig. 58/1) are removed. Each three bolts you may find at the side brackets of the main frame and three bolts (Fig. 59/1) at the central frame support. Now the seed box with wheels and sowing mechanism as well as with all accessories may be lifted by the tractors 3-point-linkage off the coulters module and put over the other coulters module to be assembled in vice-versa order.

9 Trouble finding, cause and remedy

Kind of trouble	Cause and remedy
Deviation between the calibration trial and the actual seed rate	<ul style="list-style-type: none"> – Mistakes at the calibration test, see para. 3.6 – Too high wheel slip, see para. 3.6.1 – Incorrect driving (over- or underlapping) due to improper setting of markers – Sown less, due to not considering the tramlines – Incorrect air pressure in tyre
Calibration test cranks too heavy	<ul style="list-style-type: none"> – Wheel scrapers wrongly adjusted – Seed box too full, fill with less seed
Soil sticks between tyres and side part of the seed drill	<ul style="list-style-type: none"> – Wheel scrapers wrongly fitted – Turn crank of wheel rim outwards, see para. 3.2
Seed is not covered with soil behind the tyres of the D7/ECR	<ul style="list-style-type: none"> – Turn crank wheel rim, see para. 3.2 – Install drill wheel track loosener, see para. 8.12 <p>ATTENTION: For road transport these wheel looseners have to be taken off.</p>
Soil sticks to the back-side of the roll disc coulter	<ul style="list-style-type: none"> – Readjust disc scraper, see para. 7.4
Fine seed is placed unevenly	<ul style="list-style-type: none"> – Adjust bottom flap – Fine seed metering wheels are worn (to be exchanged) – Rape sticks in the fine metering wheel, see para. 5.1
Seed placement too deep	<ul style="list-style-type: none"> – Too much coulter pressure, see para. 4 – Seed bed too loose, install depth limiter, see para. 8.7 and 8.8
Seed is not covered by soil	<ul style="list-style-type: none"> – Increase coulter pressure, see para. 4 – Readjust extra-coverage harrow tines, see para. 8.1 – Depth limiters are wrongly installed, see para. 8.7
Extra coverage following harrow throws ridges	<ul style="list-style-type: none"> – Following harrow pressure is incorrect, see para. 8.1 – Harrow elements are not placed properly between the coulters of the rear row of coulters – The limiting pins of the following harrow pressure adjustment were wrongly inserted – Second limiting pin of the hydraulic harrow pressure adjustment is missing
"K"-coulters in the rear row place seed less deep	<ul style="list-style-type: none"> – Increase coulter pressure by shortening of the coulter pressure pushing rod, see Fig. 20/3

Kind of trouble	Cause and remedy
Stones clamp between the roll coulters disc and the coulters corpus	<ul style="list-style-type: none"> – Fit depth limiter with anti-clamping device (special option) – Coulters adjusted too deeply, see para. 4 – Drive slower
Band sowing shoes plug up	<ul style="list-style-type: none"> – Improve seed bed preparation – Take off band sowing shoes and continue to sow without
Band sowing shoes operate too shallow	<ul style="list-style-type: none"> – Increase coulters pressure – Improve seed bed preparation
Band sowing shoes operate too deeply	<ul style="list-style-type: none"> – Decrease coulters pressure or if this does not help, use band sowing shoe for lighter soil type II
Automatic marker changeover does not function	<ul style="list-style-type: none"> – Marker changeover clogged with soil – Bearing of the switch plate binds – Pressure decrease in the hydraulic system – Setting fault, see para. 3.3.3
Shearing device of the markers shears too frequent	<ul style="list-style-type: none"> – The marker discs are set too much on "grip" (too aggressive), ropes are set too loosely, see para. 3.3
The tramlining switch does not change ahead	<ul style="list-style-type: none"> – Lifting ram does not shift all the way; but pressure onto the ram and adjust the set-screw until the ratchet box changes ahead – Decreased pressure in the hydraulic system – Leaf spring of the warp-spring coupling does not fully rest in – Return spring is set too weakly, see Fig. 52/5
Pre-emergence marker lowers after every shifting procedure	<ul style="list-style-type: none"> – Hydraulic control valve is not properly adjusted (steering disc wrongly set up) – Control valve wrongly connected – Control valve binds, see para. 8.11
Tramlining unit shifts uncontrolled during the operation ahead	<ul style="list-style-type: none"> – Bring the tractor's additional control valve into float position, use a single acting control valve (never use a double acting control valve without float position)

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10.1 Calibration trial (summary)

The exact procedure of the calibration trial has been described already under para. 3.6. This summary allows besides of the figures taken of the seed rate chart to perform a calibration test which we would recommend always if precise seed rates are to be obtained. The following table shows the necessary number of crank turns at the gearbox.

Tyre 6.00-16 and 10.0/75-15		Turns of crank handle in gearbox	
		$\frac{1}{40}$ ha	1 a
bout- width	3,00 m	63,3	25,2
	4,00 m	47,6	18,9

NOTE: These data are only valid for AMAZONE seed drills of the type D7, equipped with the mentioned tyres, at which the crank handle is pushed inside the gearbox, i. e. D7/ECN, D7/ECR.

At $\frac{1}{40}$ ha (250 m²) collected weight of seed x 40 = seed rate in kg/ha.

At 1 Ar (100 m²) collected weight of seed x 100 = seed rate in kg/ha.

The number of crank handle turns for the tyre sizes 6.00-16 and 10.7/75-15 is calculated as follows:

$$\frac{190.0}{\text{bout width in m}} = \text{r.p.m. per } \frac{1}{40} \text{ ha}$$

$$\frac{75.6}{\text{bout width in m}} = \text{r.p.m. per 1 Ar}$$

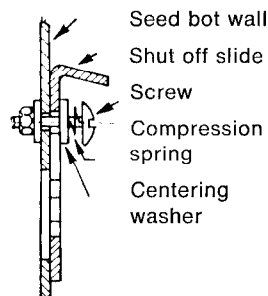
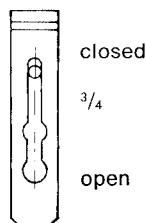
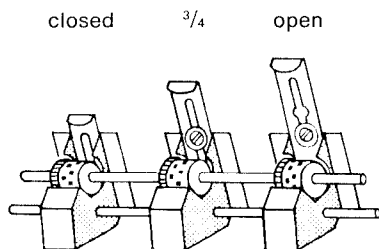
The number of crank handle turns has been determined under consideration of a 7% wheel slip.

At differences between the calibration test and the actual seed rate one should travel

$$\text{over an area of 250 m}^2 \text{ on the field, i. e. } \frac{3 \text{ m bout width}}{250 \text{ m}^2} = 83.3 \text{ m traveling distance}$$

and count hereby the number of crank handle turns. With this number of crank handle turns, now the correct calibration test can be done.

Position of the shutters (see setting chart)



10.2 Seed rate setting chart for AMAZONE Extra Coverage Seed Drills D7-EC

Seed Type	Oats (dressed) 0,56 kg/ltr.			Oats (non dressed) 0,56 kg/ltr.			Rye (dressed) 0,76 kg/ltr.		
Bottom flap position	2			2			2		
Shutter slide	open			open			¾ open		
Metering wheel	Normal metering wheel			Normal metering wheel			Normal metering wheel		
Row spacing (cm)	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5
Gearbox setting No.	20						92	91	78
	21						104	96	84
	22						111	100	90
	23						118	108	96
	24						125	114	101
	25						132	120	107
	26			110			139	126	112
	27			118			146	131	118
	28			125			154	138	124
	29			132			161	145	130
	30	102	95	140	121	116	169	150	135
	31	107	99	148	130	122	176	157	142
	32	111	104	155	141	127	182	165	147
	33	116	108	162	152	132	191	174	154
	34	121	113	170	158	137	200	180	162
	35	126	117	178	165	143	206	186	167
	36	130	122	185	170	148	214	194	174
	37	137	127	191	177	154	225	202	182
	38	145	132	198	184	160	233	211	190
	39	150	137	205	193	166	240	218	194
	40	155	143	213	199	172	249	225	203
	41	159	148	221	206	178	258	234	210
	42	164	154	228	214	184	270	242	216
	43	170	158	235	221	192	278	251	224
	44	175	162	244	228	198	290	260	233
	45	180	167	252	235	204	301	269	240
	46	186	174		243	211		280	249
	47	192	180		252	218		289	258
	48	200	185		260	226		298	266
	49	206	190		267	230		306	273
	50	211	197		276	237		314	280
	51	218	202						289
	52	225	208						297
	53	231	214						306
	54	236	219						314
	55	242	226						321
	56		233						
	57		240						
	58		246						
	59		251						
	60		221						

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type	Rye (non dressed) 0,76 kg/ltr.			Spring Barley (dressed) 0,76 kg/ltr.			Spring Barley (non dressed) 0,76 kg/ltr.			
Bottom flap position	2			2			2			
Shutter slide	¾ open			open			open			
Metering wheel	Normal metering wheel			Normal metering wheel			Normal metering wheel			
Row spacing (cm)	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	
Gearbox setting No.	20	151	140	120	109	103	89	166	153	132
	21	158	148	128	116	108	94	174	162	140
	22	168	157	136	123	114	99	183	171	148
	23	178	166	144	130	120	104	192	180	156
	24	190	175	152	138	128	112	206	193	167
	25	200	184	160	146	135	118	218	203	176
	26	210	195	168	154	142	124	231	214	186
	27	220	204	172	160	150	130	242	223	194
	28	232	214	186	168	156	136	252	234	205
	29	242	226	194	176	164	142	264	246	212
	30	250	234	202	183	170	148	275	254	221
	31	260	246	212	192	178	154	286	267	232
	32	272	254	220	200	186	162	296	278	241
	33	285	268	232	207	194	168	306	290	250
	34	299	277	242	216	200	174	313	300	260
	35	308	290	250	223	208	180	327	312	270
	36		300	260	232	216	186		325	280
	37		314	272	242	225	194		338	291
	38		326	284	249	236	202		348	302
	39		336	292	258	243	209		361	311
	40		349	301	268	248	216		372	322
	41				276	255	222			
	42				284	264	228			
	43				294	273	236			
	44				304	282	244			
	45				313	292	252			
	46									
	47									
	48									
	49									
	50									
	51									
	52									
	53									
	54									
	55									
	56									
	57									
	58									
	59									
	60									

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type		Winter Barley (dressed) 0,60 kg/ltr.			Winter Barley (non dressed) 0,60 kg/ltr.				
Bottom flap position		2			2				
Shutter slide		open			open				
Metering wheel		Normal metering wheel			Normal metering wheel				
Row spacing (cm)		8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5		
Gearbox setting No.	20	95	89	82	152	132	122		
	21	100	94	85	158	140	127		
	22	105	99	88	164	148	132		
	23	110	104	91	170	155	137		
	24	116	110	94	176	164	142		
	25	122	115	99	185	172	149		
	26	128	120	103	194	180	156		
	27	135	127	108	209	191	164		
	28	142	134	114	214	200	172		
	29	148	140	119	223	209	180		
	30	154	146	126	232	218	188		
	31	162	153	132	244	228	197		
	32	168	158	138	254	238	206		
	33	176	165	144	264	249	216		
	34	182	172	150	274	258	224		
	35	189	180	156	286	270	236		
	36	197	191	162	298	288	245		
	37	206	200	169	311	295	253		
	38	214	208	174	324	302	262		
	39	220	217	180	335	311	270		
	40	229	226	188	346	324	282		
	41	238	234	194		335	292		
	42	249	241	202		348	304		
	43	258	248	210		360	314		
	44	268	253	219		372	324		
	45	274	258	222		384	334		
	46	282	265	228					
	47	290	272	234					
	48	298	280	241					
	49	308	286	248					
	50	317	294	255					
	51		302	261					
	52		310	268					
	53		318	274					
	54		326	287					
	55		336	290					
	56								
	57								
	58								
	59								
	60								

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type		Wheat (dressed) 0,83 kg/ltr.			Wheat (non dressed) 0,83 kg/ltr.				
Bottom flap position		2			2				
Shutter slide		$\frac{3}{4}$ open			$\frac{3}{4}$ open				
Metering wheel		Normal metering wheel			Normal metering wheel				
Row spacing (cm)		8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5		
Gearbox setting No.	20	102	94	82	158	148	128		
	21	108	100	87	168	151	136		
	22	114	106	92	178	166	144		
	23	120	112	96	187	175	150		
	24	126	118	100	196	184	158		
	25	133	125	107	208	195	168		
	26	142	132	114	220	206	178		
	27	149	138	119	228	214	186		
	28	155	144	124	237	224	194		
	29	161	150	129	248	234	202		
	30	168	156	134	259	244	212		
	31	176	164	140	271	256	221		
	32	187	170	146	282	266	230		
	33	190	178	153	294	278	240		
	34	198	184	160	306	288	250		
	35	205	192	168	318	300	260		
	36	213	200	172	332	312	270		
	37	221	207	180	346	324	280		
	38	230	215	187	358	336	290		
	39	239	222	193	372	348	301		
	40	248	231	200	386	362	312		
	41	256	241	207			323		
	42	264	250	214			334		
	43	272	258	220			344		
	44	280	267	228			356		
	45	289	276	234			367		
	46	296	285	242					
	47	306	292	250					
	48	319	302	258					
	49	329	311	265					
	50	338	320	272					
	51			279					
	52			286					
	53			293					
	54			300					
	55			307					
	56								
	57								
	58								
	59								
	60								

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type	Grass-seed 0,43 kg/ltr.			Grass-Clover mixture 6 : 4 0,65 kg/ltr.			Lupines 0,85 kg/ltr.		
Bottom flap position	2			2			4		
Shutter slide	open			open			open		
Metering wheel	Normal metering wheel			Normal metering wheel			Normal metering wheel		
Row spacing (cm)	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5
Gearbox setting No.	4	11	10	9		17	16	15	
	5	13	12	11		20	18	17	
	6	15	14	12		23	22	19	
	7	17	16	14		27	26	22	
	8	19	18	16		32	30	25	
	9	21	20	17		35	33	28	
	10	23	22	18		39	36	31	
	11	25	24	20		43	40	34	138 140 132
	12	28	26	22		46	43	37	154 152 140
	13	30	28	24		50	46	40	170 164 152
	14	34	30	26		54	50	43	186 176 164
	15	36	32	28		58	54	46	202 188 176
	16	38	34	30		62	58	50	219 204 188
	17	40	37	32		67	62	53	234 220 192
	18	43	40	34		71	66	56	253 236 204
	19	46	42	37		75	70	60	272 250 220
	20	49	45	40		79	74	64	287 265 232
	21	52	48	42		84	79	68	305 280 244
	22	55	50	44		89	84	72	258
	23	57	53	46		96	88	76	272
	24	61	56	48		100	92	80	288
	25	64	58	51		105	96	84	300
	26	67	62	54		112	103	88	316
	27	71	66	57		119	108	92	
	28	75	70	60		125	114	98	
	29	79	74	63		131	120	102	
	30	83	77	66		140	125	107	
	31			69					
	32			72					
	33			75					
	34			78					
	35			81					
	36								
	37								
	38								
	39								
	40								
	41								
	42								
	43								
	44								
	45								

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type	Lucerne 0,90 kg/ltr.			Lucerne 0,90 kg/ltr.			Red Clover 0,91 kg/ltr.			
Bottom flap position	1			1			1			
Shutter slide	¾ open			¾ open			¾ open			
Metering wheel	Normal seed wheel			Fine seed metering wheel			Normal seed wheel			
Row spacing (cm)	8,0 9,3 10,8 to to to 8,5 9,6 11,5			8,0 9,3 10,8 to to to 8,5 9,6 11,5			8,0 9,3 10,8 to to to 8,5 9,6 11,5			
Gearbox setting No.	4	24,3	25,0				22	20	16	
	5	29,7	30,3				26	24	20	
	6	35,0	33,0	28,6			30	28	24	
	7	40,3	38,2	32,3			34	32	28	
	8	45,6	43,2	36,9			39	36	32	
	9	50,9	46,0	40,0			44	41	36	
	10	56,2	50,3	44,2	3,8	4,0	3,4	49	46	40
	11	59,4	57,5	48,0	4,4	4,5	3,8	54	50	44
	12	62,6	61,1	51,8	5,0	4,9	4,2	64	54	48
	13	65,7	64,5	55,6	5,6	5,4	4,6	70	66	56
	14	68,8	68,1	60,1	6,2	5,9	5,0	Fine seed metering wheel		
	15	70,8	74,1	64,5	7,8	6,5	5,5			
	16				7,4	7,0	6,0	6,8	6,1	
	17				8,0	7,3	6,9	7,2	6,7	5,8
	18				8,2	7,6	7,3	7,6	7,3	6,1
	19				8,6	8,0	7,0	8,0	7,9	6,4
	20				9,1	8,5	7,5	8,5	8,5	6,7
	21				9,7	9,1	8,1	8,9	9,1	7,1
	22				10,3	9,6	8,5	9,4	9,7	7,4
	23				10,9	10,2	9,0	9,8	10,2	7,8
	24				11,5	10,7	9,4	10,6	10,7	8,7
	25				12,0	11,2	9,8	11,5	11,2	9,6
	26				12,6	11,8	10,3	12,4	11,9	10,3
	27				13,2	12,4	10,7	13,3	12,6	11,0
	28				13,9	12,9	11,1	14,2	13,4	11,6
	29				14,5	13,5	11,5	15,0	14,1	12,2
	30				15,1	14,0	12,0	15,8	14,8	12,8
	31				15,8	14,7	12,7	16,5	15,5	13,4
	32				16,5	15,3	13,4	17,2	16,1	14,0
	33				17,2	16,0	14,0	18,0	16,5	14,6
	34				18,1	16,8	14,7	18,7	16,8	15,1
	35				18,8	17,6	15,4	19,4	17,1	15,7
	36				19,4	18,2	16,0	20,0	18,8	16,2
	37				20,0	18,7	16,6	20,8	19,6	16,9
	38				20,6	19,2	17,2	21,7	20,3	17,6
	39				21,5	20,1	17,8	22,6	21,0	18,3
	40				22,4	21,0	18,4	23,4	21,8	19,0
	41									
	42									
	43									
	44									
	45									

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type		Rape, incrustated, pilleted or talcum powdered 0,70 kg/ltr.									
Bottom flap position		1									
Shutter slide		¾ open									
Metering wheel		Fine seed metering wheel to be sown with disengaged agitator shaft.									
Row spacing (cm)		8,0 to 8,5	9,3 to 9,6	10,8 to 11,5		16,0 to 17,0	18,6 to 19,2	21,6 to 23,0			
Gearbox setting No.	4	3,2	2,7	2,3							
	5	4,0	3,3	2,9							
	6	4,7	3,9	3,4							
	7	5,5	4,6	4,0		2,8	2,3	2,0			
	8	6,1	5,1	4,4		3,1	2,6	2,2			
	9	6,7	5,6	4,9		3,4	2,8	2,5			
	10	7,6	6,4	5,5		3,8	3,2	2,8			
	11	8,4	7,0	6,1		4,2	3,5	3,1			
	12	9,2	7,7	6,7		4,6	3,9	3,4			
	13	10,1	8,4	7,4		5,1	4,2	3,7			
	14	11,0	9,2	8,0		5,5	4,6	4,0			
	15	11,9	9,9	8,7		6,0	5,0	4,4			
	16	12,8	10,7	9,3		6,4	5,4	4,7			
	17	13,5	11,3	9,9		6,8	5,7	5,0			
	18	14,4	12,0	10,5		7,2	6,0	5,3			
	19	15,4	12,9	11,2		7,7	6,5	5,6			
	20	16,3	13,7	11,9		8,2	6,9	6,0			
	21	17,2	14,4	12,6		8,6	7,2	6,3			
	22	18,2	15,2	13,3		9,1	7,6	6,7			
	23	19,2	16,0	14,0		9,6	8,0	7,0			
	24	20,1	16,8	14,7		10,1	8,4	7,4			
	25	21,1	17,7	15,4		10,6	8,9	7,7			
	26	22,1	18,5	16,1		11,1	9,3	8,1			
	27	23,1	19,4	16,9		11,6	9,7	8,5			
	28	24,1	20,2	17,6		12,1	10,1	8,8			
	29	25,1	21,0	18,3		12,6	10,5	9,2			
	30	26,2	21,9	19,1		13,1	11,0	9,6			
	31	27,2	22,8	19,8		13,6	11,4	9,9			
	32	28,4	23,8	20,7		14,2	11,9	10,4			
	33	29,6	24,8	21,6		14,8	12,4	10,8			
	34	31,0	25,9	22,6		15,5	13,0	11,3			
	35	32,1	26,9	23,4		16,1	13,5	11,7			
	36	33,2	27,9	24,2		16,6	14,0	12,1			
	37										
	38										
	39										
	40										
	41										
	42										
	43										
	44										
	45										

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type		Rape, untreated 0,76 kg/ltr.											
Bottom flap position		1											
Shutter slide		¾ open											
Metering wheel		Normal metering wheel											
Row spacing (cm)		8,0 to 8,5	9,3 to 9,6	10,8 to 11,5		16,0 to 17,0	18,6 to 19,2	21,6 to 23,0		24,0 to 25,5	27,9 to 28,8	32,4 to 34,5	
Gearbox setting No.	4	20,8	19,0	16,4		12,7	9,5	8,2		6,9	6,3	5,5	
	5	26,0	24,0	20,8		13,0	12,0	10,4		8,7	8,0	6,9	
	6	31,2	29,2	25,2		15,6	14,6	12,6		10,4	9,7	8,4	
	7	36,6	34,0	29,2		18,3	17,0	14,6		12,6	11,3	9,7	
	8	41,9	38,8	33,6		20,8	19,4	16,8		14,0	12,9	11,2	
	9	46,3	43,2	37,2		23,1	21,6	18,6		15,4	14,4	12,4	
	10	51,6	48,0	41,6		25,7	24,0	20,8		17,2	16,0	13,9	
	11	Note: strongly dressed rape has to be sown with disengaged agitator shaft.											
	12												
	13												
	14												
	15	Fine seed metering wheel											
	16	10,7	10,6	8,0		5,4	5,3	4,0		3,6	3,5	2,7	
	17	11,2	11,0	8,6		5,6	5,5	4,3		3,7	3,7	2,9	
	18	11,6	11,4	9,2		5,8	5,7	4,6		3,9	3,8	3,1	
	19	12,3	11,8	9,8		6,1	5,9	4,9		4,1	3,9	3,3	
	20	13,0	12,2	10,5		6,5	6,1	5,2		4,3	4,1	3,5	
	21	13,8	12,8	11,2		6,9	6,4	5,6		4,6	4,3	3,7	
	22	14,5	13,4	11,8		7,2	6,7	5,9		4,8	4,5	3,9	
	23	15,2	14,0	12,3		7,6	7,0	6,1		5,1	4,7	4,1	
	24	15,9	14,6	12,9		8,0	7,3	6,4		5,3	4,9	4,3	
	25	16,7	15,3	13,5		8,4	7,6	6,7		5,6	5,1	4,5	
	26	17,4	16,0	14,0		8,7	8,0	7,0		5,8	5,3	4,7	
	27	18,2	16,8	14,6		9,1	8,4	7,3		6,1	5,6	4,9	
	28	19,0	17,6	15,2		9,5	8,8	7,6		6,3	5,9	5,1	
	29	19,8	18,4	15,8		9,9	9,2	7,9		6,6	6,1	5,3	
	30	20,6	19,2	16,4		10,3	9,6	8,2		6,9	6,4	5,5	
	31	21,3	19,8	17,0		10,6	9,9	8,5		7,1	6,6	5,7	
	32	22,1	20,4	17,6		11,0	10,2	8,8		7,4	6,8	5,9	
	33	22,9	21,1	18,3		11,4	10,5	9,1		7,6	7,0	6,1	
	34	23,6	21,8	18,9		11,8	10,8	9,4		7,9	7,3	6,3	
	35	24,4	22,4	19,6		12,2	11,2	9,8		8,1	7,5	6,5	
	36	25,2	23,4	20,2		12,6	11,7	10,1		8,4	7,8	6,7	
	37	26,0	24,2	20,8		13,0	12,1	10,4		8,7	8,1	6,9	
	38	26,8	24,9	21,4		13,4	12,4	10,7		8,9	8,3	7,1	
	39	27,6	25,6	22,0		13,8	12,8	11,0		9,2	8,5	7,3	
	40	28,4	26,3	22,6		14,2	13,1	11,3		9,5	8,8	7,5	
	41	29,2	27,0	23,3		14,6	13,5	11,6		9,7	9,0	7,7	
	42	30,0	27,7	23,9		15,0	13,9	11,9		10,0	9,2	7,9	
	43	30,8	28,5	24,6		15,4	14,3	12,3		10,3	9,5	8,2	
	44	31,6	29,3	25,3		15,8	14,7	12,6		10,5	9,8	8,4	
	45	32,4	30,0	26,0		16,2	15,0	13,0		10,8	10,0	8,7	

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type		Oil-Radish 0,75 kg/ltr.			Oil-Radish 0,75 kg/ltr.			Seed-Peas 0,90 kg/ltr.		
Bottom flap position		1			1			6		
Shutter slide		¾ open			¾ open			refer to page 21		
Metering wheel										
Row spacing (cm)		8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5	8,0 to 8,5	9,3 to 9,6	10,8 to 11,5
Gearbox setting No.	4	23,5	21,8	19,2		1,9	1,8	1,6		
	5	29,6	28,0	24,0		2,5	2,4	2,0		
	6	35,9	34,4	29,2		3,2	3,0	2,4		
	7	42,0	40,0	34,0		3,9	3,6	2,8		
	8	48,1	45,6	38,8		4,4	4,0	3,2		
	9	53,0	50,4	42,8		4,8	4,4	3,6		
	10	60,5	51,6	48,8		5,4	4,8	4,1	206	178 166
	11					6,0	5,2	4,4	218	186 176
	12					6,5	5,8	5,0	244	210 196
	13					7,0	6,4	5,5	264	226 212
	14					7,4	6,8	5,9	283	242 226
	15					7,8	7,2	6,5	297	256 240
	16					8,5	7,8	7,0	325	278 262
	17					9,2	8,5	7,5	352	302 284
	18					9,9	9,2	8,0	368	318 298
	19					10,4	9,6	8,4	392	338 318
	20					10,9	10,0	8,8	418	362 340
	21					11,4	10,7	9,3	432	377 350
	22					11,9	11,3	9,9	454	392 368
	23					12,5	12,0	10,4	489	420 394
	24					13,1	12,4	10,8	517	446 418
	25					13,8	12,8	11,2	536	462 434
	26					14,5	13,4	11,7		
	27					15,1	14,1	12,2		
	28					15,8	14,8	12,8		
	29					16,4	15,3	13,3		
	30					17,0	15,9	13,8		
	31					17,6	16,4	14,4		
	32					18,2	16,9	14,9		
	33					18,8	17,4	15,4		
	34					19,4	18,1	15,9		
	35					20,1	18,8	16,5		
	36									
	37									
	38									
	39									
	40									
	41									
	42									
	43									
	44									
	45									

The seed rates shown in the setting table (kg/ha) can only serve as reference values.
Perform calibration trials to accurately determine seed rates.

Seed Type		Mustard 0,77 kg/ltr.	Late Turnip 0,76 kg/ltr.	
Bottom flap position		1	1	
Shutter slide		¾ open	¾ open	
Metering wheel		Normal metering wheel	Fine seed metering wheel	
Row spacing (cm)		8,0 9,3 10,8 to to to 8,5 9,6 11,5	40,0 43,2 46,5 48,0 54,8 to to to to to 42,5 46,0 48,0 51,0 57,6	
Gearbox setting No.	4	33,2 31,8 24,1		
	5	37,0 35,3 28,5	0,47 0,45 0,43 0,40 0,36	
	6	40,8 38,8 33,0		
	7	44,6 42,3 37,5		
	8	48,4 45,8 42,1	0,76 0,73 0,70 0,65 0,59	
	9	57,8 54,6 46,4		
	10	66,2 61,4 52,2		
	11	73,6 69,6 59,2	1,05 1,01 0,98 0,96 0,81	
	12	79,7 75,2 64,0		
	13	86,3 82,0 69,8		
	14	92,1 87,4 74,4	1,47 1,42 1,36 1,25 1,10	
	15	97,6 92,8 79,1		
	16			
	17		1,66 1,60 1,55 1,42 1,29	
	18			
	19		1,88 1,81 1,75 1,61 1,41	
	20			
	21		2,22 2,14 2,07 1,93 1,62	
	22			
	23	Fine seed metering wheel		
	24		2,44 2,35 2,27 2,14 1,83	
	25	16,6 15,6 13,4		
	26	17,2 16,1 13,9		
	27	17,7 16,6 14,4	2,83 2,73 2,63 2,48 2,02	
	28	18,3 17,2 14,8		
	29	19,0 17,8 15,4	3,10 2,96 2,88 2,69 2,54	
	30	19,8 18,4 16,0		
	31	20,4 19,1 16,5	3,42 3,30 3,18 2,97 2,60	
	32	21,7 19,7 17,0		
	33	21,8 20,4 17,6	3,77 3,63 3,50 3,23 2,98	
	34	22,7 21,6 18,3	3,96 3,80 3,68 3,45 3,04	
	35	23,6 22,8 19,0		
	36	24,5 23,3 19,7	4,32 4,15 4,02 3,81 3,34	
	37	25,3 23,9 20,4		
	38	26,2 24,4 21,2	4,64 4,46 4,32 4,03 3,60	
	39	27,1 25,6 22,0	4,84 4,67 4,50 4,23 3,76	
	40	28,1 26,8 22,8	5,01 4,83 4,66 4,41 4,00	
	41			
	42			
	43			
	44			
	45			

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Perform calibration trials to accurately determine seed rates.

Seed Type	Phacelia 0,64 kg/ltr.					Phacelia 0,64 kg/ltr.				
Bottom flap position	1					1				
Shutter slide	¾ open					¾ open				
Metering wheel	Normal metering wheel					Fine seed metering wheel				
Row spacing (cm)	8,0 to 8,5	9,3 to 9,6	12 to 13	14 to 15	16 to 17	8,0 to 8,5	9,3 to 9,6	12 to 13	14 to 15	16 to 17
Gearbox setting No.	6	2,4	2,0	1,6	1,3	1,2	Recommendation: For seed rates of more than 12 kg/ha use the normal metering wheel.			
	7	5,2	4,4	3,5	2,9	2,6				
	8	8,1	6,8	5,5	4,6	4,1				
	9	11,7	9,8	7,9	6,7	6,0				
	10	15,4	12,9	10,4	8,8	7,9				
	11	19,2	15,1	13,0	11,9	9,8				
	12	23,1	19,3	15,6	13,1	11,8				
	13	26,1	21,8	17,7	14,8	13,4				
	14	29,2	24,4	19,8	16,6	15,0				
	15	33,6	28,1	22,8	19,1	17,3				
	16	38,1	31,9	25,8	21,6	19,6				
	17	41,4	34,7	28,0	23,5	21,3				
	18	44,8	37,5	30,3	25,4	23,5				
	19	48,8	40,8	35,0	27,6	25,0				
	20	52,8	44,2	37,7	29,9	27,1				
	30					8,1	6,8	5,5	4,6	4,2
	31					8,5	7,1	5,8	4,9	4,4
	32					9,1	7,6	6,1	5,2	4,7
	33					9,8	8,2	6,6	5,5	5,0
	34					10,4	8,7	7,0	5,9	5,3
	35					10,8	9,1	7,3	6,1	5,5
	36					11,2	9,4	7,5	6,3	5,7
	37					11,6	9,7	7,8	6,5	5,9
	38					12,0	10,1	8,1	6,8	6,2
	39					12,6	10,6	8,5	7,2	6,5
	40					13,3	11,2	9,0	7,6	6,8
	41					13,9	11,6	9,4	7,9	7,1
	42					14,5	12,1	9,8	8,2	7,4
	43					15,1	12,6	10,2	8,5	7,7
	44					15,7	13,1	10,6	8,9	8,0
	45					16,0	13,4	10,8	9,1	8,2
	46					16,4	13,8	11,1	9,3	8,4
	47					16,7	14,0	11,3	9,5	8,6
	48					17,1	14,3	11,6	9,7	8,8
	49					17,6	14,7	11,9	10,0	9,0
	50					18,2	15,2	12,3	10,3	9,3
	51					18,7	15,6	12,6	10,6	9,6
	52					19,2	16,1	12,9	10,9	9,9
	53					19,8	16,6	13,3	11,2	10,1
	54					20,4	17,1	13,8	11,6	10,5
	55					21,0	17,6	14,2	11,9	10,8
	56					21,6	18,1	14,6	12,3	11,1
	57					22,3	18,7	15,1	12,7	11,5
	58					23,1	19,3	15,6	13,1	11,9
	59					23,7	19,9	16,1	13,5	12,2
	60					24,4	20,4	16,4	13,8	12,5

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NOTICE

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