

Operator's manual

PRECISON AIR SEEDER ED 01



AMAZONEN-WERKE

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The AMAZONE ED is a seed drill from the extensive range of agricultural machinery offered by AMAZONE.

Its sophisticated technology combined with proper usage offers the most efficient application and design protection.

Please read the entire operator's manual carefully as any claims for damages due to misuse must be refused.

Enter the serial number of your seed drill in the space provided. The number is located to the right of the fan hopper facing the machine.

Follow-up orders and any complaints should always be accompanied by the machine type and serial number:

AMAZONE ED	
<input type="checkbox"/>	with fertilizer drill
<input type="checkbox"/>	without fertilizer drill
Serial no: _____	

Introduction:

This operator's manual should help you familiarize yourself with the machine and its prescribed applications.

The operator's manual contains important recommendations for the safe, proper and economic operation of the machine. Compliance with these recommendations helps to prevent risks, reduce repair costs and breakdown times and increase the service life of the machine.

The operator's manual is intended for use in conjunction with existing national accident prevention laws. It should be made available at all times at work locations.

Before starting work, the operator's manual must be read and practised by every person entrusted with the operation of the machine. Only trained or instructed workers may be employed to operate the machine and the minimum age for workers must be observed.

Together with the operator's manual and mandatory accident prevention laws in the user country, any recognized special engineering regulations must be observed (ie, to ensure safe and proper operation).



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1.0 Information about the machine

1.1 Manufacturer

AMAZONEN-WERKE, H. Dreyer GmbH & Co. KG, Postfach 51, D-49202 Hasbergen-Gaste

1.2 Technical data

TYPE		ED 301		ED 451-K	ED 451
Tyres		6.00 -16	10.0/75-15	10.0/75-15	10.0/75-15
Transport width [m]		3	3	3	4
Length [m] (pressure roller ø 370 mm)		2.1	2.1	2.1	2.1
Number of sowing units (standard)		4	4	6	6
Number of sowing units (max) without underfoot fertilization with underfoot fertilization		10 6	10 6	12 6	12 6
Row distance (standard) [cm]		75	75	75	75
Seed distance [cm]		36 stages 4.1 - 26.9	36 stages 4.1 - 26.9	36 stages 4.1 - 26.9	36 stages 4.1 - 26.9
Seed hopper contents [l]		32	32	32	32
Fan		Suction fan cardan shaft speed 540 rpm, 700 rpm or 1000 rpm (standard)			
Singling element		Plastic singling discs for corn, beans, peas, soya beans, sunflower seeds, cotton			
Fertilizer hopper contents [l]		450	450	450	450
Fertilizer hopper cap + 200 l		650	650	650	650
Filling height (fertilizer) [m] with cap		1.43 1.59	1.43 1.59	1.43 1.59	1.43 1.59
Empty weight without fertilizer drill [kg] from	Pressure roller ø 370 mm	630	662	903	824
	Pressure roller ø 500 mm	670	702	963	884
Empty weight with fertilizer drill [kg] from	Pressure roller ø 370 mm	854	886	1177	1098
	Pressure roller ø 500 mm	894	926	1237	1158



1.3 Information on noise generation

The emission level for work locations is 76 dB (A) when measured with an OPTAC SLM 5 at the tractor driver's ear during machine operation with a closed cab.

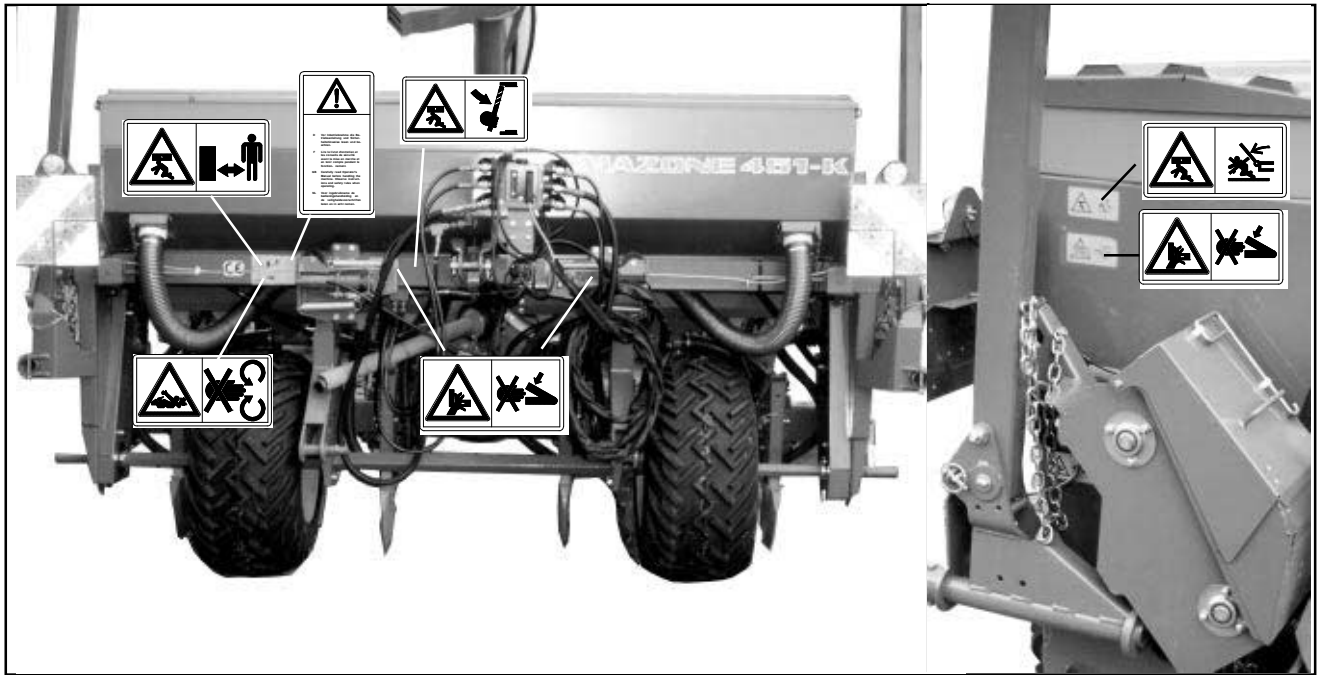


Fig. 2.1

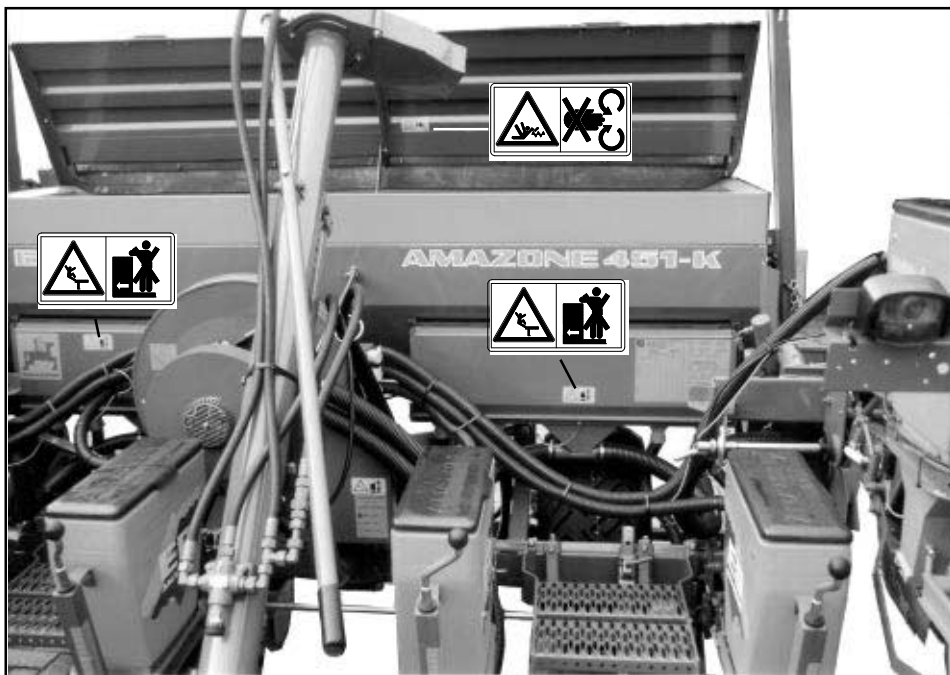


Fig. 2.2

2.0 Important recommendations

2.1 Work safety symbols



This symbol is used in all work safety labels to represent danger to life and limb. Observe the safety recommendations at all times and exercise particular caution in these circumstances. Pass on any safety recommendations to other operators. Together with the recommendations in this operator's manual, general safety and accident prevention regulations must be observed.

- Warnbildzeichen und Hinweisschilder immer sauber und in gut lesbarem Zustand halten! Beschädigte oder fehlende Warnbildzeichen und Hinweisschilder beim Händler anfordern und an der dafür vorgesehenen Stelle anbringen! (Bild-Nr.: = Bestell-Nr.:)
- Fig. 2.1 und Fig. 2.2 zeigen die Befestigungsstellen der Warnbildzeichen und Hinweisschilder. Die entsprechenden Erläuterungen finden Sie auf den folgenden Seiten.

2.2 Attention symbols



This symbol is found in locations which require special care and attention to ensure compliance with guidelines, regulations, recommendations and the correct working procedure and to prevent any damage to the machine.

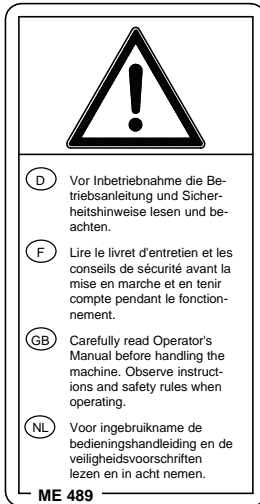
2.3 Reference symbols



This symbol identifies mechanical characteristics which must be followed to ensure proper operation.

2.4 Hazard and warning labels on the machine

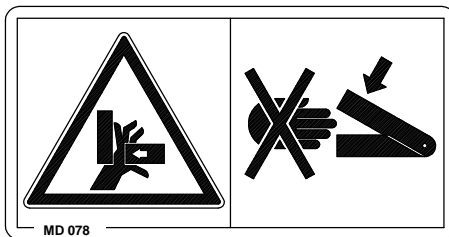
- The hazard labels are found on danger points on the machine. Compliance with these hazard labels ensures the safety of all persons who operate the machine. Hazard labels are always accompanied by work safety symbols.
- The reference symbols identify mechanical characteristics which must be observed to ensure correct operation.
- All hazard signs and reference signs must be followed to the letter!
- Pass on all safety recommendations to other users!



Sign no: **ME 489**

Explanation:

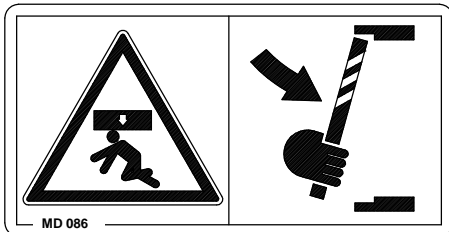
Read the operator's manual carefully before handling the machine and observe the safety recommendations!



Sign no: **MD 078**

Explanation:

Keep away from nip and squeeze points if these include moving parts!



Sign no: **MD 086**

Explanation:

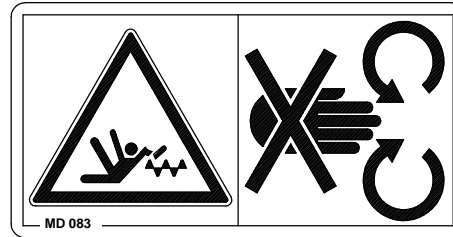
Before uncoupling remove locking devices!



Sign no: **MD 082**

Explanation:

Do not stand on the ladder or platform when vehicle is in motion!



Sign no: **MD 083**

Explanation:

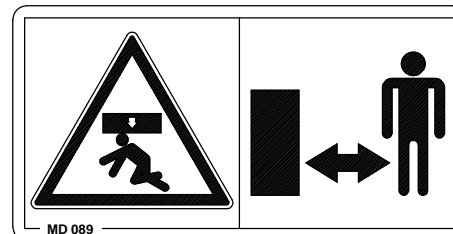
Keep hands away from seed or fertilizer hopper and filling tube. There is a risk of injury from the rotating agitator shaft or filling tube!



Sign no: **MD 084**

Explanation:

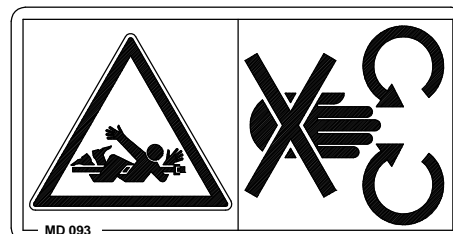
Do not stand near pivoted operating components!



Sign no: **MD 089**

Explanation:

Do not stand below a raised unit (unsecured load)!



Sign no: **MD 093**

Explanation:

Danger from rotating machine components (eg, cardan shaft)!

Never touch rotating shafts!

2.5 Taking delivery of the machine

On delivery of the machine please check for any damage during transit or missing parts! Compensation for damages is awarded only if complaints are lodged immediately with the carrier. Check that all the components listed in the consignment note are available.

Remove packaging and wires completely before commissioning and check lubrication (cardan shaft)!



When the machine is moved, the singling discs of the sowing units and, in the case of the fertilizer drill the agitator shaft of the fertilizer hopper, will start to rotate even in "0" gear position.



Therefore do not place any parts in the seed hopper or in the fertilizer hopper as this may damage the singling discs and the agitator shaft.



Do not place your hands in the seed or fertilizer hoppers. There is a risk of injury from the rotating singling discs and agitator shaft!

2.6 Prescribed use

The seed drills **AMAZONE ED 301, ED 451 and ED 451-K** are designed exclusively for conventional agricultural work. The seed machines are suitable for planting corn, beans, peas, soya beans, sunflowers and cotton.

Any other application of the drill is unprescribed and the manufacturer is not liable for any damage resulting from such use. The user bears full responsibility for such risks.

Prescribed use of the drill also incorporates compliance with the manufacturer's operating, servicing and repair conditions together with the exclusive use of original **AMAZONE replacement parts**.

The seed drills **AMAZONE ED 301, ED 451 and ED 451-K** may only be used by, serviced and repaired by persons who are familiar with, and have been instructed in the operating dangers.

The relevant accident prevention laws together with any other generally recognized safety, first aid and road safety regulations must be meticulously observed in conjunction with any safety instruction labels fixed to the machine.

Any arbitrary intervention carried out on the machine excludes the manufacturer's liability for any damage caused as a result.

Despite the care taken in the manufacture of the machine, the possibility of deviations in planting or total failure cannot be excluded even during prescribed use. This may be caused by:

- Variable composition of seed (seed size distribution, specific density, geometric shapes, dressing, sealing).
- Drift.
- Blockages or bonding (eg, through foreign matter, sack residues).
- Unevenness on site.
- Wear and tear of working parts (eg, singling discs).
- Damage caused by external factors.
- Incorrect drive speeds and engine running speed.
- Incorrect setting of the machine (incorrect mounting).

Check the machine before and during use for correct operation and seed planting accuracy.

Any claim for damages which is not directly related to the seed drill is excluded. Liability for consequential damages from seed delivery errors is also excluded. Arbitrary modifications carried out on the drill may lead to consequential damages and excludes any liability on the part of the supplier for such damages.

In the event of premeditation or gross negligence on the part of the owner or a manager, and in such cases where a claim is made based on the Product Liability Act for defects in the drill affecting persons or causing material damage to privately used objects, the supplier's non-liability is not applicable. Nor is it applicable for in the absence of qualities which are expressly guaranteed if the guarantee's specific aim is to secure the purchaser against damage which is not caused directly by the drill.

3.0 General safety and accident prevention laws

**Basic rule:**

Before handling the drill and the tractor, check for road and operating safety!

1. In conjunction with the recommendations in the operator's manual, observe any general safety and accident prevention laws in force!
2. The hazard and warning signs provide important information to ensure safe operation. They are intended for your safety!
3. Follow traffic regulations when using public roads!
4. Before starting work familiarize yourself with all the operating elements and their uses. It will be too late to do this whilst you are operating the machine!
5. The operator should wear close-fitting clothes. Avoid wearing loose-fitting clothes!
6. To avoid the risk of fire, keep the machine clean!
7. Before starting up and handling the machine check the immediate vicinity for clearance (children)! Make sure you have a clear view!
8. Carrying passengers whilst driving or operating the machine is not permitted!
9. Connect the units correctly and secure them only to the proper mounting devices!
10. Exercise special care when coupling and uncoupling units to or from the tractor!
11. Ensure that the landing gear is in the correct position when mounting and dismounting (stability)!
12. Always attach weights correctly to the mounting points provided!
13. Observe the permissible axle loads, total weights and transport dimensions!
14. Check and install any transport equipment such as lighting, warning devices and any safety devices!
15. Release cables for quick hitches should hang freely and must not work loose from their housings!
16. Do not leave the driving position at any time whilst driving!
17. Driving, steering and braking abilities are influenced by mounted or suspended equipment and ballast weights. Exercise care when steering and braking!
18. When lifting a three-point device the front axle of the tractor is differently balanced according to the size. Observe the required front axle load (20% of empty weight of tractor)!
19. When driving around corners take into account the clear radius and/or the rotating mass of the machine!
20. Operate the units only after all the safety devices have been mounted in position!
21. Standing in the operating area is prohibited!
22. Do not stand near rotating and swivelling parts of the machine!
23. Hydraulic folding frames must only be activated after making sure no-one is standing near the machine!
24. Squeeze and shear points are found on externally activated components (eg, hydraulics)!
25. Before leaving the tractor leave the unit on the ground, turn off the engine and remove the ignition key!
26. Standing between the tractor and the unit is not permissible without ensuring that the parking brake and/or tyre blocks have been applied to prevent the vehicle from rolling forward!
27. Lock the track indicators in the transport position!
28. Observe permissible filling quantities!
29. Do not place any foreign elements in the storage hoppers!
30. Watch out for hazard points from rotating machine parts during truing test!
31. Use the loading platform for filling operations only. Passengers are not permitted to travel on the platform during operation!



3.1 Mounted units

1. Before the mounting and dismounting of units to the three-point linkage, position operating device to exclude any possibility of accidental lifting or lowering!
2. For the three-point linkage the mounting sections must be correctly aligned between tractor and unit!
3. There is a danger from squeeze and shear points near the three-point linkage!
4. Do not step between the tractor and the unit when the three-point linkage is activated externally!
5. Ensure that the tractor three-point linkage is adequately secured to the side when the unit is in the transport position!
6. When the unit is raised for transport on public roads, the operating lever must be locked to prevent any accidental lowering!
7. Suspend/mount the units as specified. Check the trailer brake system and observe the manufacturer's instructions!

3.2 Power take-off shaft operation

1. Only a cardan shaft prescribed by the manufacturer and fitted with the proper safety devices must be used!
2. A protective tube and hopper for the cardan shaft and protection for the power take-off shaft must be provided and maintained in proper condition!
3. Apply coverings specified for transport and work positions of cardan shaft (follow operator's manual of cardan shaft manufacturer!)
4. Mount and dismount the cardan shaft only when the power take-off shaft and the engine are switched off and the ignition key has been removed!
5. Always ensure that the cardan shaft has been correctly assembled and secured!
6. Prevent the cardan shaft rotating by suspending chains!
7. Before switching on the power take-off shaft, make sure that the power take-off shaft speed of the tractor matches the permissible power take-off speed of the unit!

8. When using the path-dependent power take-off shaft make sure that its speed is dependent on the running speed and that the sense of direction is reversed when the vehicle is reversed!
9. Before switching on the power take-off shaft make sure that no-one is standing near the hazardous area of the unit!
10. Never switch on the power take-off shaft when the engine is switched off!
11. When operating the power take-off shaft make sure no-one is standing near the rotating power take-off shaft or cardan shaft!
12. Always turn off the power take-off shaft for wide angles where it is not required!
13. Attention! There is a danger from the subsequent rotating force of the power take-off shaft after switching off!
Do not step too near the unit at this time! Start work only when it has come to a standstill!
14. Clean, lubricate and adjust the power take-off driven unit and the cardan shaft only after the power take-off shaft and the engine have been switched off and the ignition key removed!
15. Attach the uncoupled cardan shaft to the bracket provided!
16. After removing the cardan shaft place protective cover on power take-off shaft end!
17. Rectify any damage immediately before operating the unit!

3.3 Hydraulic system

1. The hydraulic system is under high pressure!
2. When connecting hydraulic cylinders and motors make sure hydraulic hoses are connected as prescribed!
3. When connecting the hydraulic hoses to the tractor hydraulic system ensure that the hydraulics and the tractor is at zero pressure!
4. When carrying out hydraulic operations between the tractor and the unit coupling sleeves and connectors should be identified to prevent any operating errors.
If connections are mixed up reversed operations, eg, lifting instead of lowering, may cause accidents!



5. Check hydraulic hoses regularly and replace when damaged or worn! Replacement hoses must comply with the manufacturer's requirements!
6. Use suitable tools when searching for leaks to prevent injury!
7. Under high pressure any fluids (such as hydraulic oil) may penetrate the skin and cause serious injury! In the event of injury call for a doctor immediately! There is a danger of infection!
8. Before starting work on the hydraulic system, lower the units, turn the system to zero pressure and switch off the engine!
9. The service life of the hose assemblies should not exceed six years including a possible storage time of 2 years at most. Even during proper storage and permissible stress, hoses and hose connections are subject to natural ageing which limits their storage and service life. By way of exception, the service life may be determined according to empirical values taking into account the risk of danger. Other standard values may be applied to hoses and hose connections made of thermoplastic material.
9. Repairs to the tyres may only be carried out by experts using suitable tools!
10. Tyre assembly requires expert knowledge and specific tools!
11. There is a danger of explosion if air pressure in tyres is too high!
12. Check air pressure regularly!
13. Replacement parts must comply with the manufacturer's technical requirements! Therefore original replacement parts must be used!

3.4 General safety and accident prevention laws for servicing, repair and maintenance

1. Servicing, repair and cleaning operations together with rectification of operating defects should only be carried out when the drive and the engine have been disconnected! Remove the ignition key!
2. Check nuts and bolts regularly for tightness and re-tighten if necessary!
3. When servicing a raised unit always ensure it is secured by suitable supports!
4. When replacing work tools by means of cutting operations, use a suitable implement and gloves!
5. Remove oil, grease and filter correctly!
6. Always disconnect power before starting work on the electrical system!
7. Disconnect cable to the tractor generator and battery when carrying out electric welding work on the tractor and the mounted units!
8. When working on the tyres, make sure that the machine is stable and cannot roll away (tyre block)!



Fig. 4.1

4.0 AMAZONE-ED

The basic AMAZONE seed drill is the 4 row ED 301 with a three-point mounting frame. Attaching a fertilizer drill (Fig 4.1) is possible by simply mounting the fertilizer drill on the existing framework.

The basic machine includes up to 10 sowing units for planting beans and peas. The seeds are deposited at equal intervals of 3 m. (see Chapter 6.4).

Seed drill models ED 451 and ED 451-K offer greater capacity. The ED 451-K is characterised by an integral folding mechanism for the outer sowing units, whilst the ED 451 offers a working width of 4.5 m thanks to its 4 m wide frame. The fertilizer drill can also be easily mounted on both models.

If a fertilizer drill is retrofitted to the ED 451 or ED 451-K, an additional compressed air fan must be fitted to the existing suction air fan to supply the outer fertilizer coulter with fertilizer.

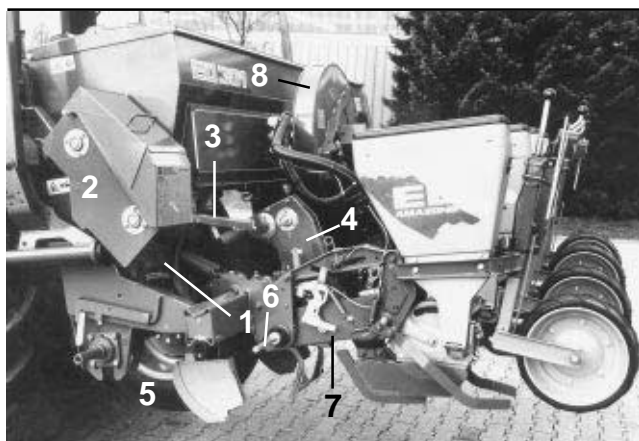


Fig. 4.2

4.1 Operating characteristics of the ED

The AMAZONE ED is a seed drill used for planting corn, soya beans, field beans, peas, dwarf beans, sunflowers and cotton. The singling discs of a sowing unit are driven by a chain (4.2/1), a mechanical variable speed gear (4.2/2), cardan shaft (4.2/3) and secondary transmission (4.2/4) via drive wheels (4.2/5). The power transmission from the drive shaft (4.2/6) to the sowing units and the singling discs (4.3/1) is carried out via toothed wheels and a roller chain installed in the lower link (4.2/7) of the parallelogram wheel suspension.

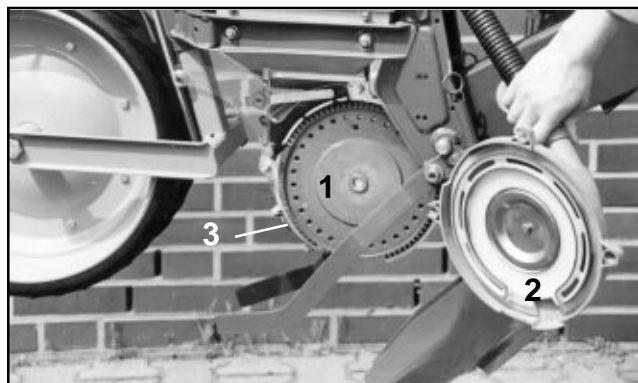


Fig. 4.3

The seed is fed into the singling disc (4.3/1) via the opening (4.4/1) leading from the seed hopper. The singling assembly operates on an air suction principle. The low air pressure produced by the suction fan (4.2/8) draws the seeds from the seed hopper into the holes in the singling discs.

The long filling section in the seed housing ensures that all the holes in the singling disc are filled. The stripper (4.4/2), which can be adjusted to five different positions, singles the seeds drawn into the holes. Excess seeds fall back into the seed hopper. The singled seeds are then fed through the seed housing to the ejector opening. If the seed reaches the lowest point the low air pressure is interrupted. The seed falls from the holes in the singling discs directly into the furrow made by the drill coulter (Fig 4.5). Any seeds which remain in the holes are carefully removed by the ejector for redistribution.

Easily replaceable plastic singling discs are available for the various types of seeds. The careful sealing between the singling disc and the suction cover (4.3/2) and the sealing between the singling disc and seed housing (4.3/3) in the form of two different high-quality plastics and foam material guarantee trouble-free operation and long life.

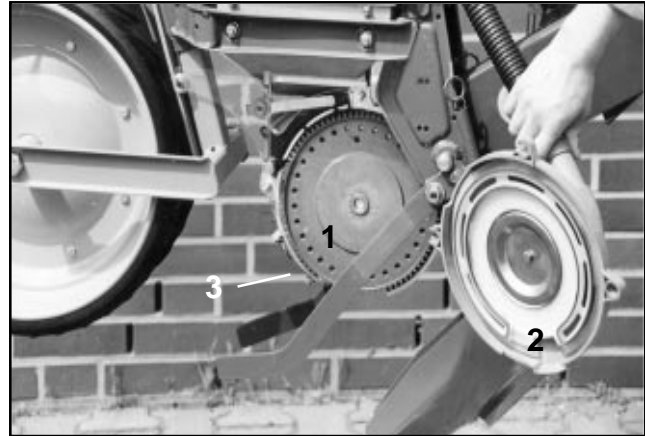


Fig. 4.3

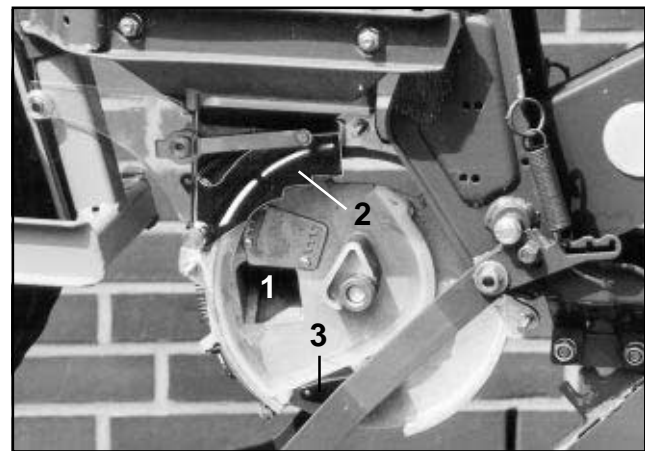


Fig. 4.4

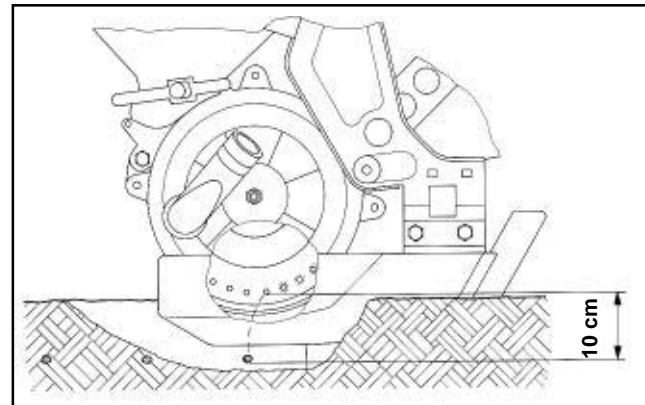


Fig. 4.5

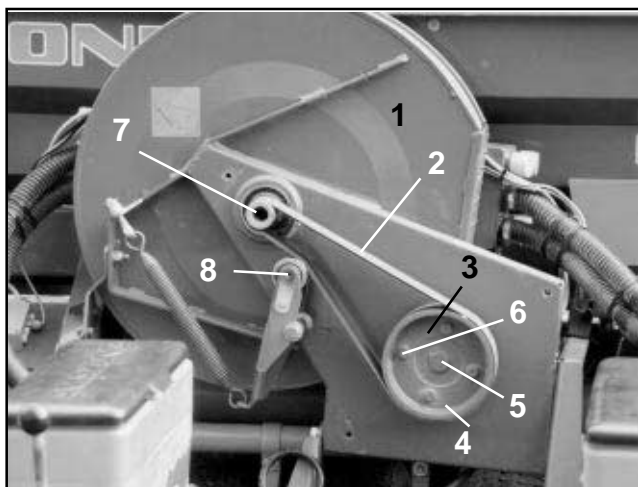


Fig. 4.6



Fig. 4.7

4.2 Various options for fan operation

The fan (4.6/1) is fitted with a transmission gear (4.6/3) including a belt drive (4.6/2) and is driven by a cardan shaft from the tractor power take-off shaft. Through the use of belt pulleys (4.6/4) of variable diameters "D", it is possible to drive the input shaft (4.6/5) of the transmission gear with various tractor power take-off speeds without changing the speed of the fan drive. The gear case (4.7/1) of the transmission gear was removed for demonstration purposes.



Operate machine only after the gear case has been properly assembled!

Possible power take-off speeds and appropriate belt pulley diameters:

- a) Drive for power take-off shaft at **1000 rpm (standard)**
belt pulley diameter D = 178 mm, belt length 1105 mm.
- b) Drive for power take-off shaft at **700 rpm (reduced tractor engine speed)**
belt pulley diameter D = 255 mm, belt length 1244 mm.

If the fan is driven at a reduced tractor engine speed

- connect the cardan shaft to the 1000 power take-off shaft of the tractor and
- install the belt pulley with a diameter of D = 255 mm (special fitting).

- c) Drive for power take-off shaft at **540 rpm**
belt pulley diameter D = 330 mm, belt length 1397 mm.

If the fan is driven at 540 rpm

- connect the cardan shaft to the 540 power take-off shaft of the tractor and
- install the belt pulley with a diameter of D = 330 mm (special fitting).

4.2.1 Belt pulley replacement from transmission gear

The belt pulley (4.6/4) is attached to the input shaft (4.6/5) of the transmission gear with four bolts (4.6/6). The multiple ribbed belt (4.6/2) links the belt pulley to the fan drive shaft (4.6/7). The belt is tensioned with the aid of a spring-loaded roller (4.6/8).



The correct belt pretensioning is achieved when the tension spring is 260-5 mm long.

The replacement of the belt pulley is carried out as described below:

- **ED with suction fan:**

- Remove the gear case after unscrewing the three bolts.
- Release belt pretensioning and remove multiple ribbed belt.
- Unscrew bolts (4.6/6) and replace belt pulley.

- **ED with compressed air fan and suction fan:**

- Unscrew the 4 bolts in the retaining plate (4.9/1) of the compressed air fan and remove the retaining plate.
- Remove 3 sectioned case (4.9/2) after removing threaded connections.
- Release belt pretensioning and remove multiple ribbed belt.
- Unscrew bolts (4.6/6) and replace belt pulley.

Assembly is carried out in reverse.



The belt pulley replacement requires a multiple ribbed belt of a different length.



Pretension spring to length of 260⁵ mm once again. Attach case!



Operate the machine only after all the safety devices are in place !

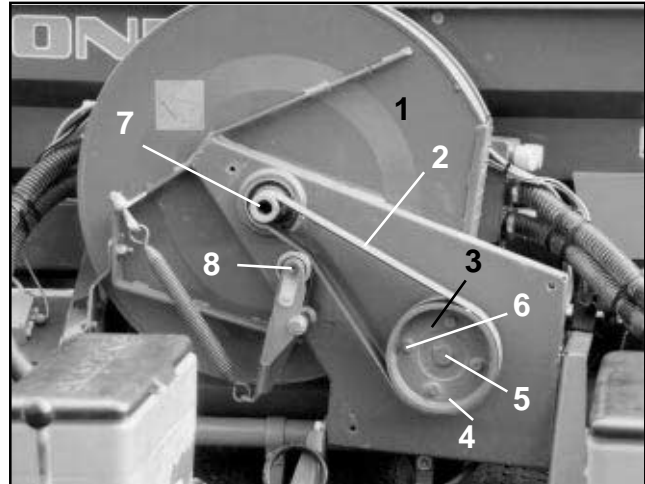


Fig. 4.6

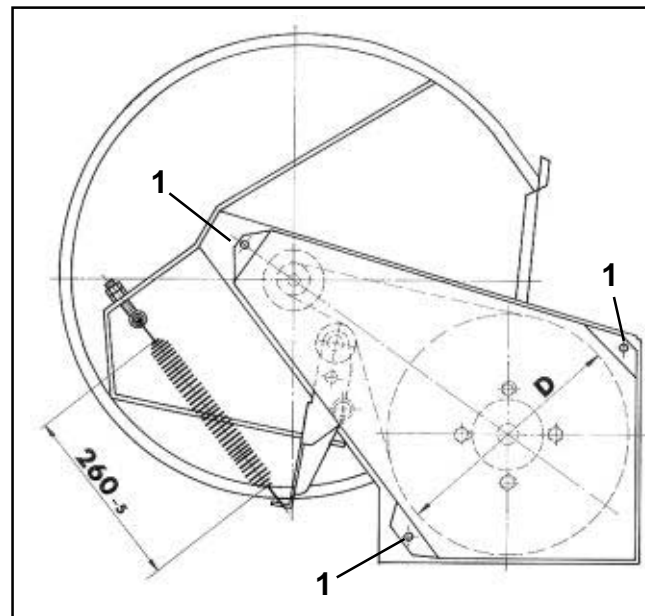


Fig. 4.8

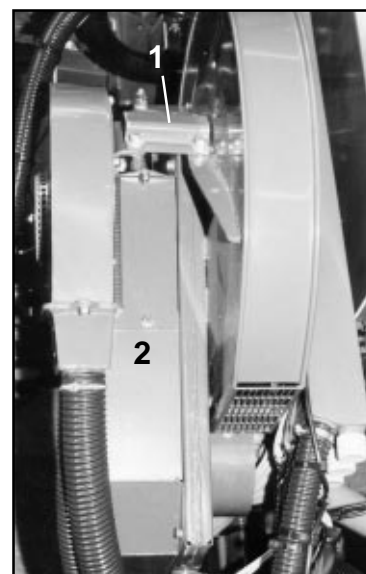


Fig. 4.9

5.0 Sowing different types of agricultural seeds

The AMAZONE ED is suitable for sowing corn seed, soya beans, field beans, peas, dwarf beans, sunflowers and cotton. Easily interchangeable singling discs (special fittings) are available for singling these various types of seeds.

5.1 Replacing singling discs

- Raise the sowing unit (see Chapter 9.1) or lift the entire seed drill.



When raising the machine, guard against accidental lowering!

- Unscrew rear bolt (5.1/1) from coulters bracket and swivel coulters downwards.
- Unscrew upper bolt (5.1/3) and rotate transparent plastic flap (5.1/4) to the right.
- Unscrew front bolt (5.1/5) and rear bolt (5.1/6) and remove suction cover (5.2/1).
- Remove suction cover together with the singling disc (5.2/2).
- Replace singling disc.



Examine the foam seal (5.2/3) for any damage and replace if necessary.



The holes (5.2/4) should face the housing (5.2/5) not the suction cover (5.2/1).

- Assemble the singling disc and the suction cover and screw on the cover.
- Check workability of stripper (5.3/1) by tilting the lever (5.3/2) lightly several times (where the spring is suspended) so that it is deflected from its resting position.



The spring should consistently return the stripper to its original position.

- Replace with a new stripper if required according to type of seed (see Chapter 8.4).
- Raise the coulters and secure it.

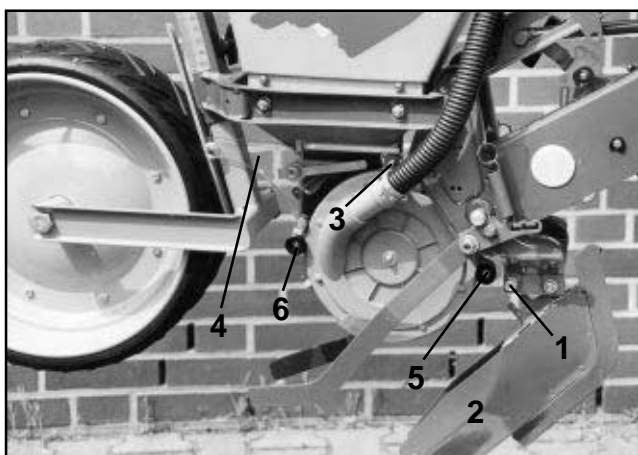


Fig. 5.1

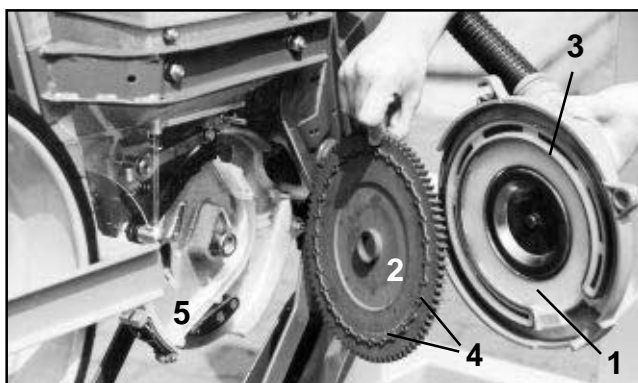


Fig. 5.2

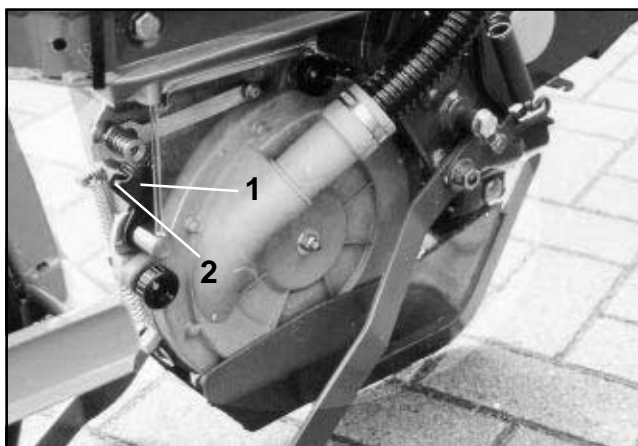


Fig. 5.3

6.0 Mounting and basic setting of ED 301, ED 451 and ED 451-K

6.1 Mounting

- Mount the AMAZONE ED to the rear three-point hydraulic system of the tractor (see Chapter 3.1). Secure the lower link of the tractor with the aid of the ED lower link bolts (category II).
- Secure the top link with the aid of insert bolts (category II).



Adjust the upper link length so that the seed hopper lids of the sowing units are horizontal when the machine is in the lowered position and the drill coulters dig into the soil. Only if this setting is obtained will the drill coulter be positioned correctly in the soil to produce trouble-free, uniform seeding.

The lower links of the tractor three-point hydraulic linkage should be equipped with stabiliser bars or chains. When raised, the lower links of the tractor should have a little slack to the side only to ensure that the machine remains in the centre behind the tractor during sowing operations. This will guarantee uniform row distances even on slopes and, during turning operations on headlands, prevent the drill getting knocked back and forth when raised.



As a rule additional front ballast must be provided to obtain a sufficiently high front axle load (minimum of 20% of empty tractor weight).



The tractor should have sufficient reserves for additional rear axle loading which is already very high when the vehicle is empty! For this reason the vehicle may only be driven on public road unladen.



Fig. 6.1



Tighten and secure locking devices (6.1/1) on mounted machine!



Fig. 6.2



Before uncoupling the machine, release locking devices (6.2/1) and secure with spring-loaded bolts (6.2/2).

6.1.1 Cardan shaft

The fan's transmission gear is driven via the cardan shaft from the tractor power take-off shaft.

The following cardan shafts are available:

- a) standard cardan shaft
- b) free-running cardan shaft (special fitting).

The latter is required if the seed drill is used in combination with an agricultural implement (eg, vibrating harrow, circular spike harrow or rotary cultivator) and a furrow press since the fan drive is operated via the agricultural implement which, when the brake is applied, causes the fan impeller to stop abruptly due to its high speed when the power take-off shaft is switched off. A free-wheeling cardan shaft prevents damage to the cardan shaft and to the drive unit of the suction fan.

A free-wheeling cardan shaft is also required for tractors with a hydraulically activated power take-off clutch since the fan impeller is also subject to sudden braking.

6.1.1.1 Adjustment and assembly of cardan shaft

Insert the cardan shaft halves into the tractor power take-off shaft connection and the power take-off end of the AMAZONE ED as indicated (see symbol on cardan shaft).



Clean the power take-off end on the machine in advance!



Use the cardan shafts specified by the manufacturer only!



Assemble the cardan shaft to the tractor as indicated in Fig 6.3. Since this procedure applies to this type of tractor only, check the adjustment of the cardan shaft for different tractor types.

During the initial assembly insert the cardan shaft halves into the power take-off shaft on the tractor without inserting the cardan shaft pipes into each other.

1. Whilst holding the cardan shaft pipes next to each other, check to ensure that the transverse contact ratio of the cardan shaft pipes is guaranteed when the machine is both raised and lowered at a minimum of 40% of LO (LO = length when pushed in).

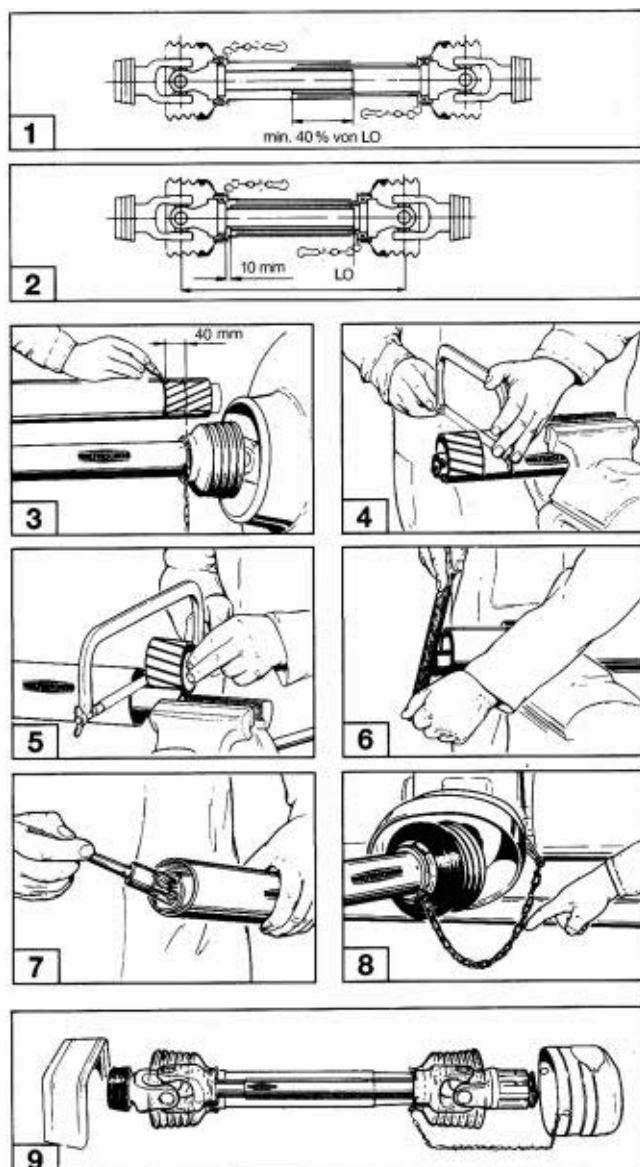


Fig. 6.3

2. When pushed together the cardan shaft pipes must not push against the forks of the universal joint. A safety distance of 10 mm minimum must be maintained.

3. To set the correct length hold the shaft halves together at the shortest working position and mark out.

4. Cut off inner and outer pipe evenly.

5. Cut off inner and outer profile to the length of the pipe above.

6. Round off cut edges and carefully remove swarf.

7. Grease profiles and insert into each other.

8. Hang the retaining chain to the lug on the top link to allow the cardan shaft sufficient play to work in all operating positions and to ensure that the cardan shaft protector does not rotate during operation.

9. **Operate the machine only after the drive is fully protected.**



Only operate the cardan shaft after it has been properly and safely mounted to the tractor and unit. Safety devices should be replaced as soon as they become damaged.



The maximum angle of a universal joint in the cardan shaft should not exceed 25°.

Observe the manufacturer's assembly and servicing instructions indicated on the cardan shaft!



If the seed drill is used in combination with an agricultural implement and a furrow press and the drill is raised above the furrow press by a power lifting frame, a lifting guard should be fitted to the agricultural implement so that the angle of the universal joint of the cardan shaft does not exceed 30°.



To prevent any damage to the cardan shaft and fan, the power take-off shaft should be engaged slowly at low tractor speeds only.

6.2 Track indicator

The AMAZONE ED seed spacing drill is fitted with track indicator discs (6.4/1) as standard.

When unfolded (Fig 6.4) the track indicator discs (6.4/2) dig into the soil continuously if the sowing unit is **not** fitted with an automatic switch unit (special fitting).

When the track indicator meets a solid obstacle the shearing bolt shears off thereby protecting the track indicator from any damage.



Use bolts with a resistance of 8.8 only when replacing the shearing bolt.

6.2.1 Track indicator setting

Set the track indicator discs so that they

- run parallel to the running direction on **light soils**
- work more aggressively on **heavier soils** to produce a clearly visible track.

After loosening the locking screw (6.4/3) adjust the position of the track indicator discs by turning the disc.

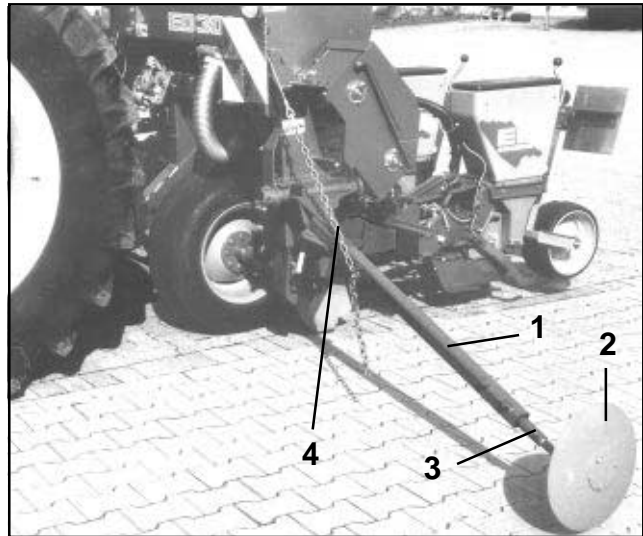


Fig. 6.4

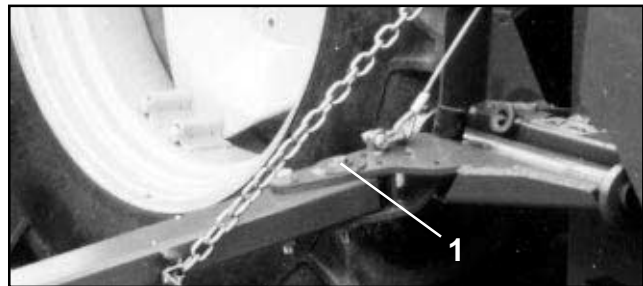


Fig. 6.5



Make sure that the track indicators do not dig too deeply into the soil. If the track indicators are set too deeply there is a danger of damage from the rough, stony seedbed.



Fig. 6.6



Various chain lengths can be obtained by setting the chain at different chain links.



Lock the track indicators in their transport position when travelling on public roads.



Secure the track indicators (6.7/1) in this transport position with the aid of a split pin (6.7/2).



When raising and lowering the track indicators, squeeze and shear points can be found between the track indicator and the machine frame. Do not touch these areas as long as they contain potentially moving parts!



Never stand below a raised, unsecured track indicator!

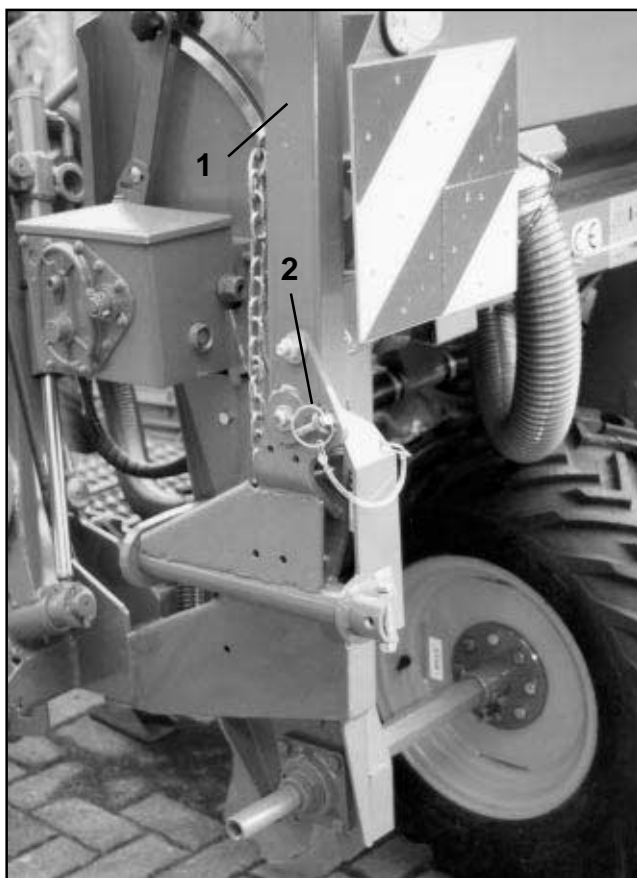


Fig. 6.7

6.2.2 Adjustment of track indicator length

To adjust their length, lower both track indicators.

The track indicator dimensions vary according to the working width, row distance and number of rows of the drill, ie, the distances from the contact surface of the track indicator disc on the soil to the centre of the machine or to the outer sowing unit.

6.2.2.1 Track indicator setting for ED 301



Length adjustment can only be carried out from tractor centre!

- Remove locking screws (6.8/1).
- Extend radial arm (6.8/2) to required length.
- Remove locking screw (6.8/3).
- Extend track indicator disc (6.8/4) to precise length required and rotate if necessary.
- After adjustment tighten all locking screws.

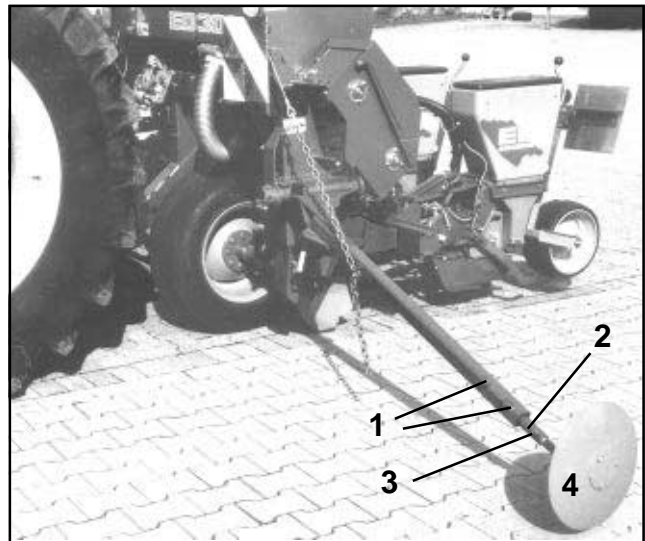


Fig. 6.8

6.2.2.2 Track indicator setting for ED 451, ED 451 K



Length adjustment can only be carried out from tractor track or tractor centre!

- Pull spring-loaded retainer and pull out radial arm (6.9/2) until the retainer (6.9/1) is again locked into place (adjustment for tractor track).
- For adjustment from the tractor centre pull the retainer (6.9/1) once again and pull out the radial arm further until the retainer (6.9/1) locks into place.
- To adjust precisely, loosen the locking screw (6.9/3), pull out the track indicator disc and rotate if necessary.
- Replace locking screw (6.9/3).

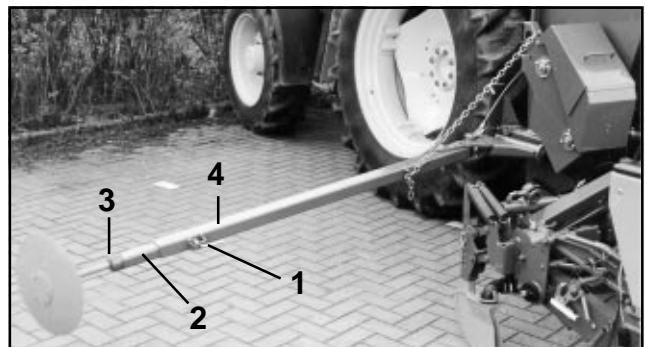


Fig. 6.9



By activating the retainer (6.9/1) the radial arm (6.9/2) may be moved telescopically in and out of the radial arm (6.9/4) without changing the length of the track indicators. The length of the track indicator extension arm can be easily reduced for transport purposes.

6.2.3 Track indicator length calculation for track marking in tractor centre (Fig 6.10)

The track indicator distance A measured from the centre of the machine to the contact surface of the track indicator disc on the soil represents the working width.

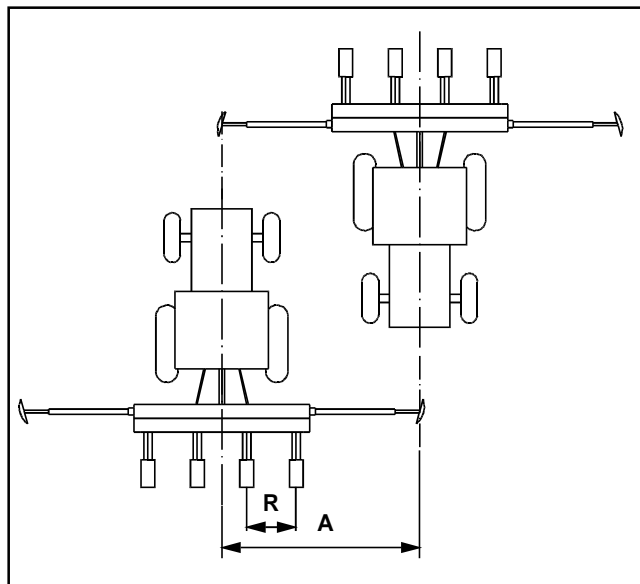


Fig. 6.10

$$\text{Track indicator distance } A = R \times n$$

R: row distance
n: number of sowing units

Example:

Row distance **R:** 75 cm
 Number of sowing units **n:** 4

Track indicator distance **$A = 75 \text{ cm} \times 4 = 300 \text{ cm}$**



When the machine is raised and the track indicators (ED 451) are folded up the height of the machine is more than 4 m high. Reduce the length of the track indicators for travelling on public roads (see Chapter 6.2.2.2).

6.2.4 Track indicator length calculation for track marking on tractor wheel track

6.2.4.1 Measured from the centre of the machine (Fig 6.11)

Use the formulae below to calculate the correct track indicator distances for symmetrical configuration of the coulters from the centre of the machine:

$$\text{Track indicator distance A} = \text{working width B} - \frac{\text{tractor track S}}{2}$$

$$\text{Working width B} = \text{number of rows n} \times \text{row distance R}$$

$$\text{Track indicator distance A} = R \times n - \frac{S}{2}$$

R: row distance
n: number of sowing units
S: tractor track

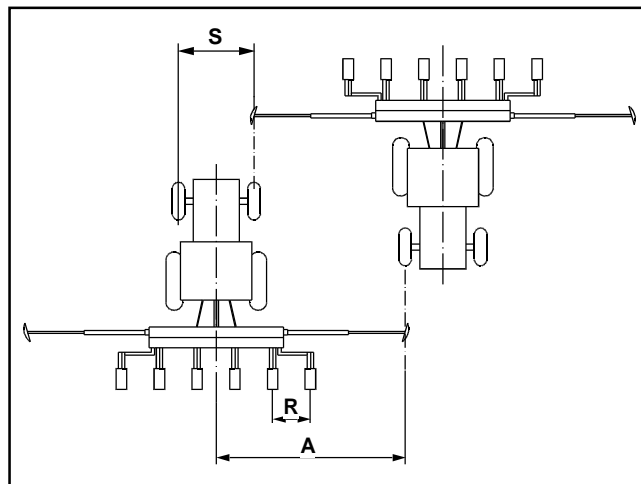


Fig. 6.11

Example:

Row distance R : 75 cm
Number of sowing units n: 4
tractor track S: 150 cm

$$\text{Track indicator distance A} = 4 \times 75 \text{ cm} - \frac{150 \text{ cm}}{2} = 225 \text{ cm}$$

6.2.4.2 Measured from outer coulter (Fig. 6.12)

Use the formulae below to calculate the correct track indicator distances for symmetrical configuration of the coulters:

$$\text{Track indicator distance A} = \frac{R(n+1) - S}{2}$$

R: row distance
n: number of sowing units
S: tractor track

Example:

Row distance R: 75 cm
Number of sowing units n: 4
Tractor track S: 150 cm

$$\text{Track indicator distance A} = \frac{75 \text{ cm} (4+1) - 150 \text{ cm}}{2} = 112,5 \text{ cm}$$

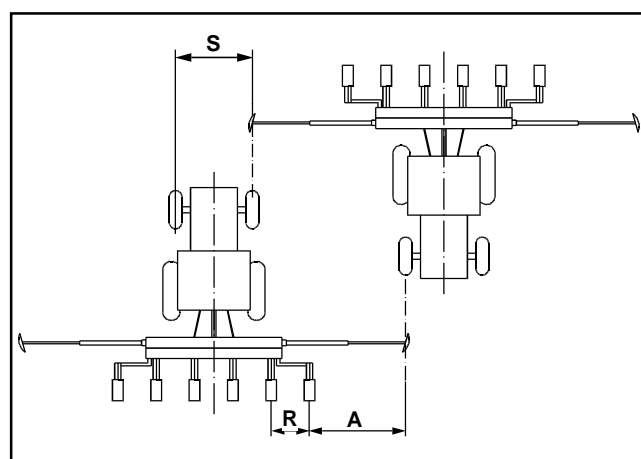


Fig. 6.12

6.3 Setting row distances

The row distances on the sowing units of the AMAZONE ED may be progressively adjusted greater than 27 cm as follows:

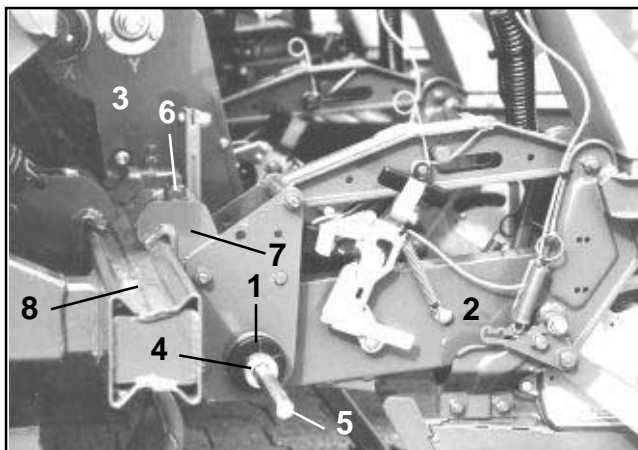


Fig. 6.13

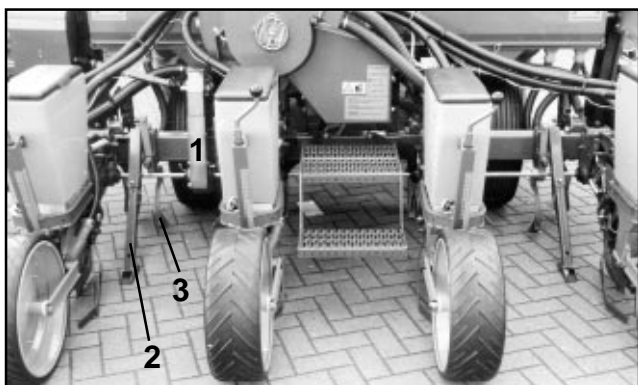


Fig. 6.14

- Remove grub screws from dust guard (6.13/1) on sowing units (6.13/2) and remove secondary transmission (6.13/3).
- Remove the collar (6.13/4) on both outer sowing units (on ED 301 and ED 451 only).
- Pull out hexagon shaft (6.13/5) if necessary.
- Loosen nuts (6.13/6) on retaining brackets (6.13/7).
- Push sowing units on to rail (6.13/8) as required.
- If the transmission gear (6.14/1), locking device (6.14/2) or track loosener (6.14/3) need displacing, release retaining brackets and move them.
- Tighten the nuts on the retaining brackets.
- Assemble the hexagon shaft where applicable.
- Push the collars (6.13/4) against the outer sowing units and secure with grub screws (for ED 310 and ED 451 only).
- Tilt the grub screws of the dust guard against the sowing units and secondary transmission and tighten.



After operating the machine for 2 hours check screws for tightness.

7.0 Conversion for transport on public roads and paths

Please observe the following recommendations which are intended to prevent accidents on public roads and paths.



As a rule, additional front ballast must be provided to obtain a sufficiently high front axle load (minimum of 20% of empty tractor weight).



The tractor should have sufficient reserves for additional rear axle loading which is already very high when the vehicle is empty! For this reason the vehicle may only be driven on public road unladen.

If you use public roads and paths to reach seed fields both the tractor and the machines must comply with StVZO regulations:

- Do not exceed the transport width of 3 m.
- **Lighting and identification:**

Lighting equipment and licence plate lamps (Fig. 7.1):

- Full rear lighting with rear reflectors and licence plate lamps where applicable, additional front side lamps at night.

Labelling:

- Warning labels to comply with DIN 11 030 or parking warning labels front and back, right and left.

Parking warning labels, front side lamps, rear lights, rear reflectors and licence plate lamp holders are available as special fittings in a complete set.

The currently valid version of StVZO is authoritative. The equipment owner is responsible for the lighting and labelling of the equipment.

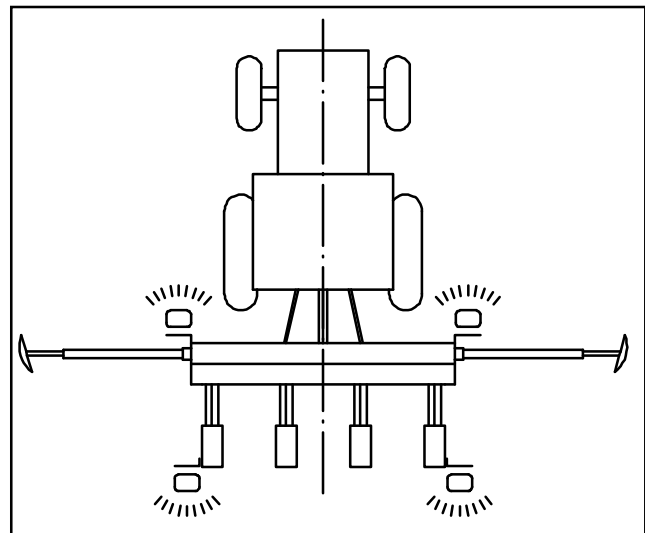


Fig. 7.1

- Check the lighting system for reliability.

7.1 Machine conversion for road transport

- Lift the individual sowing units to their transport position and secure.

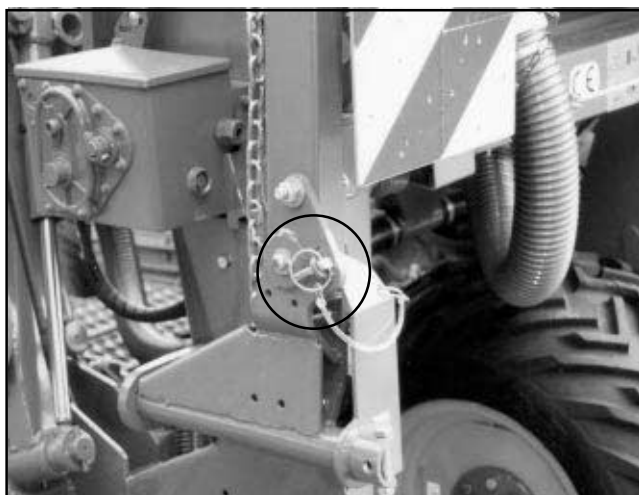


Fig. 7.2

- Return the track indicators to the transport position and secure as shown in Fig 7.2.



When raising and lowering the track indicators, squeeze and shear points can be found between the track indicator and the machine frame. Do not touch these areas as long as they contain potentially moving parts!



Never stand below a raised, unsecured track indicator!

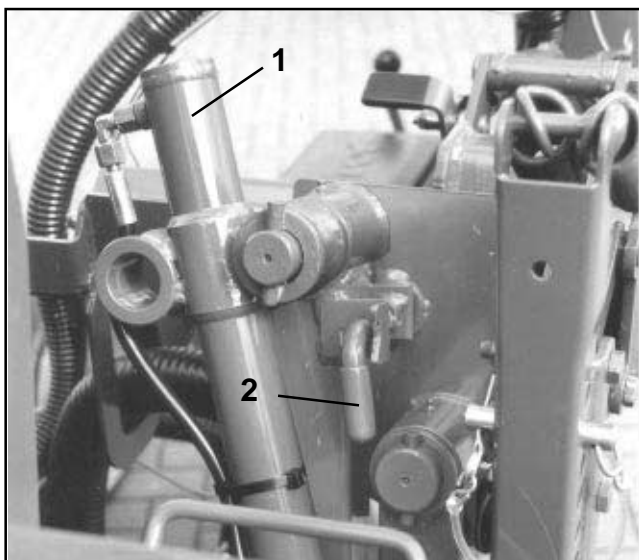


Fig. 7.3

- Raise the outer sowing units on the ED 451-K with the aid of the hydraulic cylinder (7.3/1) to the transport position and lock in position by means of a bolt (7.3/2). When **locked** the bolt (7.3/2) remains in the position indicated in Fig 7.3.



Make sure no-one is standing near the sowing units when the outer units are being raised or lowered (risk of injury from squeeze points!).



Keep the tractor control lever in the "lifting" or "lowering" position until the units are fully raised or lowered. The tilting motion of the sowing units is immediately interrupted if the control lever is released.

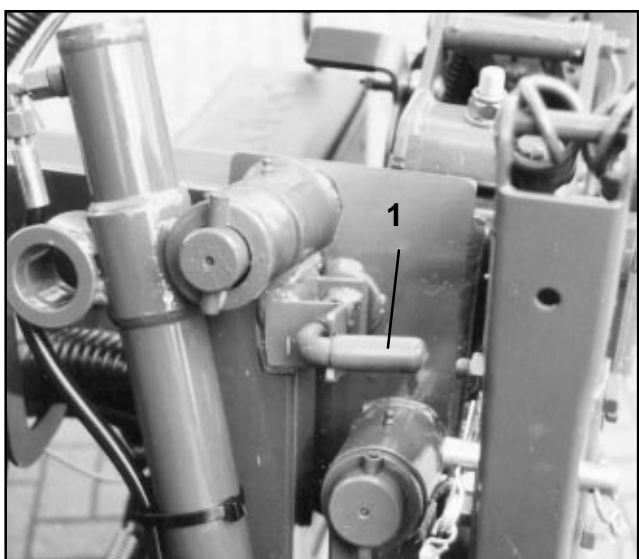


Fig. 7.4

- To **unlock**, tilt bolts (7.4/1) to the position shown in Fig 7.4.

8.0 Commissioning and use of the ED drill

For ED 301 and ED 451:

- Lower track indicator (Fig 8.1).
- Check working depth of track indicator (see Chapter 6.2.1).



When lowered both track indicator discs are in the working position.



Fig. 8.1

For the ED 451-K

- Release transport lock for outer sowing units and lower units hydraulically. When lowered the outer sowing units are automatically hydraulically locked.



To lower the outer sowing units the tractor must be fitted with a dual-acting control valve.



Keep the tractor control lever in the "lifting" or "lowering" position until the units are fully raised or lowered. The tilting motion of the sowing units is immediately interrupted if the control lever is released.

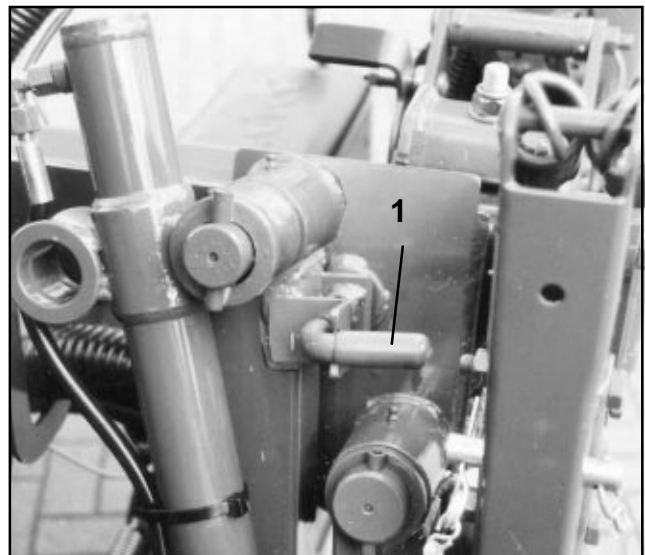


Fig. 8.2

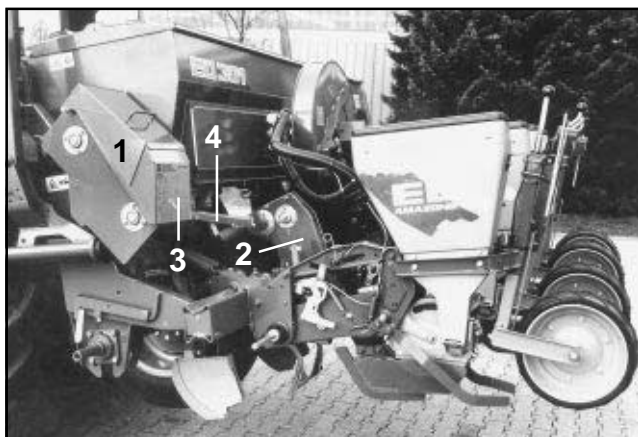


Fig. 8.3

8.1 Setting seed distances

The seed distances in the row may be adjusted via the variable speed gearbox (8.3/1) and secondary transmission (8.3/2) by means of 36 fine graduations (8.3/3).

Setting seed distances:

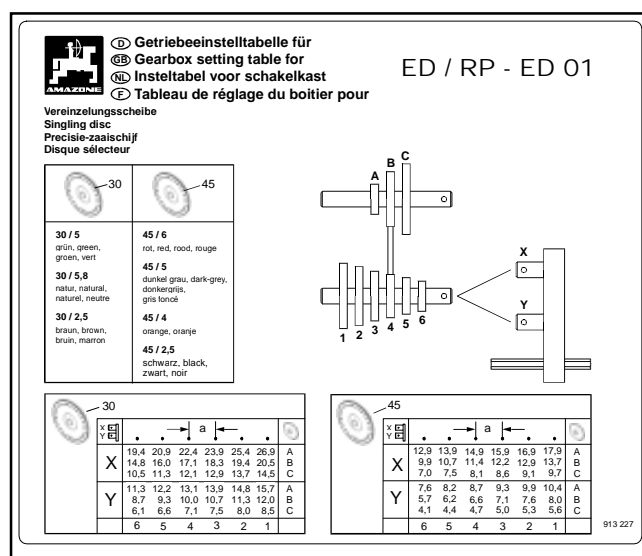
1. Select the area of the seed distance roughly by arranging the cardan shaft (8.3/4) in the "X" or "Y" inputs of the secondary transmission (8.3/2).
2. Set the required seed distance by changing the transmission in the gearbox (8.3/1).

To set the depositing depth the following information must be known:

1. Number of plants or seeds required per m² (seeds per ha/10 000).
2. Row distance.
3. Number of holes in singling disc.

From the given number of seeds (plants) per m², obtain the seed distance "a" for the required row distance "R":

$$\text{Seed distance } a [\text{cm}] = \frac{1}{\text{seeds per m}^2 \times \text{row distance } R [\text{m}]} \times 100$$



Example:

Required: **95 000 seeds per ha**
 Row distance R: **0.75 m**
 Singling disc: **30 holes**

90 000 seeds per hectare: 10 000 = 9.5 seeds per m²

$$\text{Seed distance a [cm]} = \frac{1}{9,5 \text{ seeds pro m}^2 \times 0,75 \text{ m}} \times 100 \text{ cm}$$

Seed distance
a [cm] = 14,04 cm


Seed distance a: **14,04 cm**
Singling disc: **30 holes**

Since this seed distance cannot be found in the table, select the nearest distance to it listed in the table.

Table: **13,9 cm**

For a seed distance of 13.9 cm, the seed table (Fig 8.5) indicates the following example:

Secondary transmission: Y
Sprocket pairing: A - 3

 30

	X	Y	a	b	c	d	e	f
X	19,4 14,8 10,5	20,9 16,0 11,3	22,4 17,1 12,1	23,9 18,3 12,9	25,4 19,4 13,7	26,9 20,5 14,5	A B C	
Y	11,3 8,7 6,1	12,2 9,3 6,6	13,1 10,0 7,1	13,9 10,7 7,5	14,8 11,3 8,0	15,7 12,0 8,5	A B C	
	6	5	4	3	2	1		

Fig. 8.5

Set the required seed distance as follows:

- Raise gearbox cover and secure it (8.6/1).
- Remove crank (8.6/2) from the bracket (8.6/3), insert in square tube (8.6/4) and release the chain (8.6/5) by turning the crank in an anti-clockwise direction until the spacer shaft (8.6/6) of the wire cable (8.6/7) is locked in position (Fig 8.7).

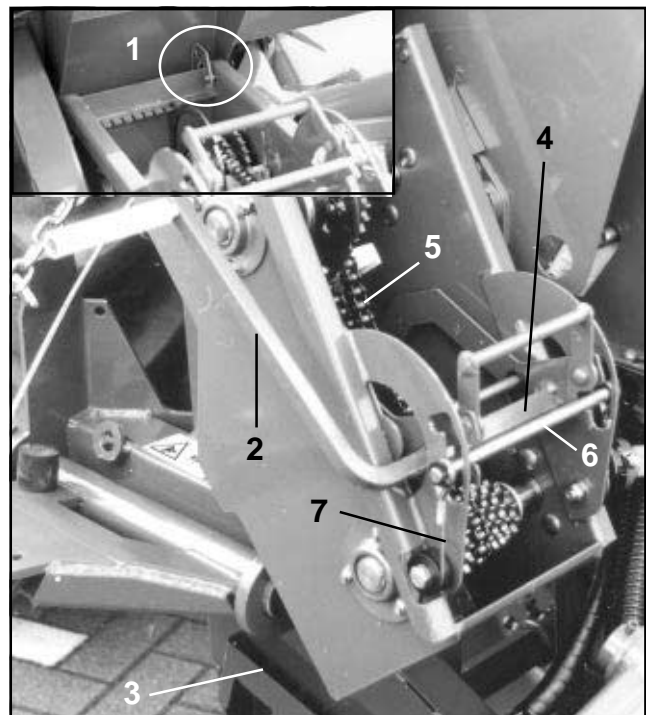


Fig. 8.6

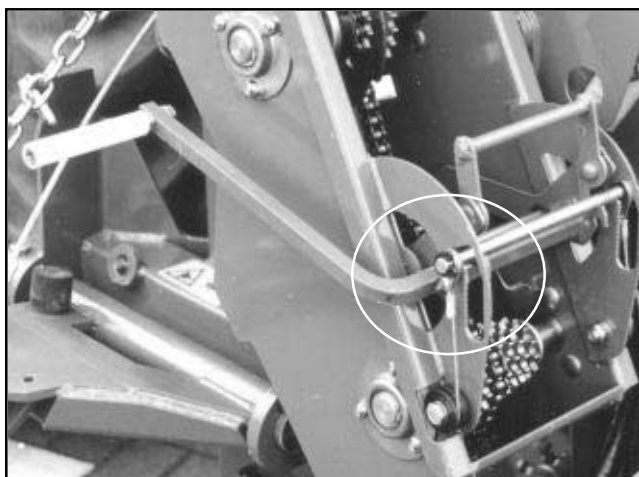


Fig. 8.7

Spacer shaft locked in position.



Fig. 8.8

- Unlock the catch manually (8.8/1). Turn the tension mechanism with the crank until you reach the end position.

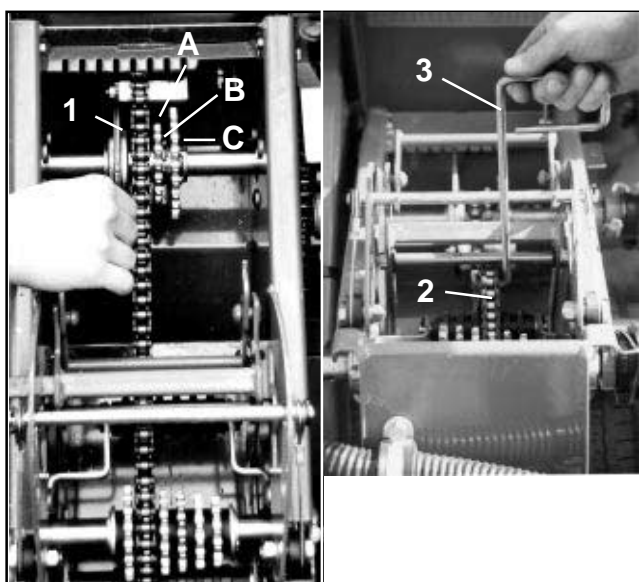


Fig. 8.9

- Move drive-mounted lifter (8.9/1) and position the chain (8.9/2) on the required sprocket (A, B, C) with the aid of the hook (8.9/3). After use replace hook in bracket on the gearbox.

- Position the chain on the required sprocket (1 - 6) on the power take-off side. Move the spacer shaft (8.10/7) to the correct position so that the chain is in alignment with the sprockets and the guide rollers.
- Position the tip of the lifter (8.10/8) in the correct slot (8.10/9) of the axial safety plate (8.10/10).

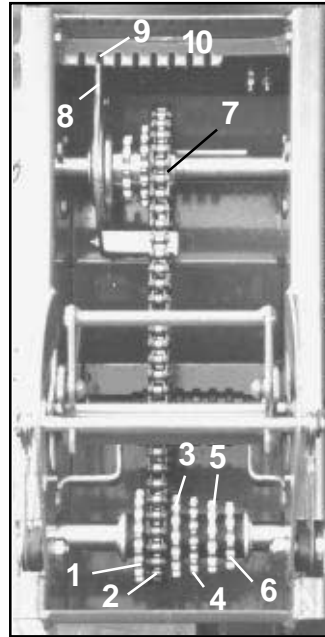


Fig. 8.10

- Use the crank to turn the tension mechanism back, guide the catch (8.11/1) back under the spacer shaft (8.11/2) and keep loosely locked in position.

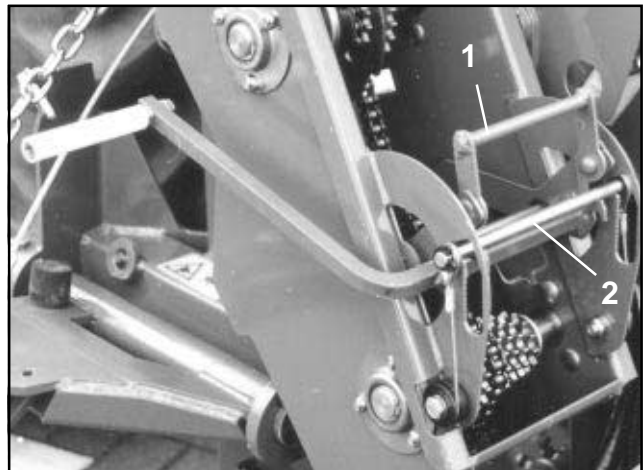


Fig. 8.11

- Check the secondary transmission X/Y and change the cardan shaft (8.12/1) if applicable.



Fig. 8.12

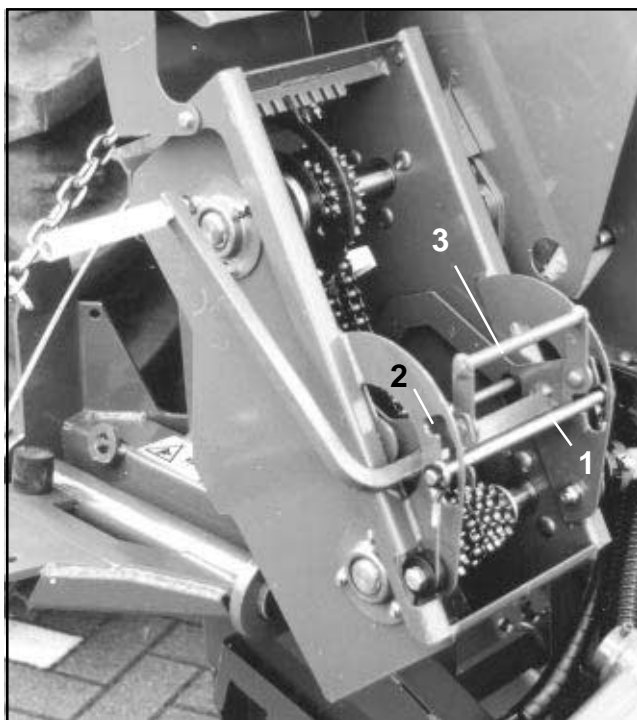


Fig. 8.13

- Pull the spacer shaft (Fig 8.13/1) slightly out of the slot (8.12/2) with the aid of the crank, then lift it out of the slot by pressing the catch (8.12/3) down.



Keep a firm hold on the crank. After lifting, the full spring resistance acts on the entire tension mechanism.

- Close the gearbox cover..

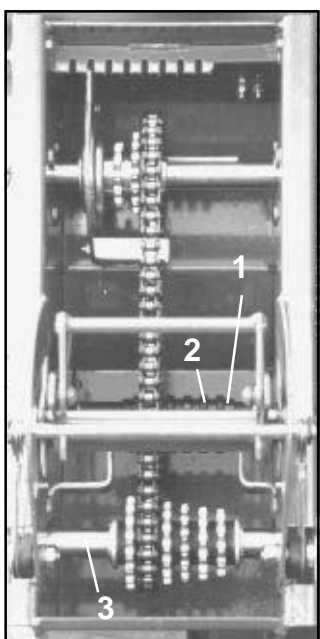


Fig. 8.14



If the guide rollers (8.14/1) of the chain unit are disassembled, when reassembling make sure that the guides (8.14/2) on the guide rollers are flush with the sprockets of the intermediate shaft (8.14/3). The washers on the chain unit ensure that the guide rollers can be moved to become perfectly flush with the sprockets on the intermediate shaft.

8.1.1 Calculation of "seeds per hectare"

If the seed distance **a** and the row distance **R** are known the number of "**seeds per hectare**" can be calculated as follows:

$$\text{Seeds per ha} = \frac{10.000}{a [m] \times R [m]}$$

Example:

Seed distance **a**: 14,8 cm = 0,148 m

Row distance **R**: 75 cm = 0,75 m

$$\text{Seeds per ha} = \frac{10.000}{0,148 \text{ m} \times 0,75 \text{ m}} = 90090 \text{ K/ha}$$

8.2 Lowering sowing units and preparing the operating mechanism

- Release leg spring (8.15/1).
- Lift the sowing unit up until the bolt (8.15/2) automatically falls out of the slot (8.15/3).
- Lower the sowing unit slowly.
- To prepare the operating mechanism, remove the hand lever (8.15/4) from the lower slot (8.15/5) and push down until the screw (8.15/6) locks into the upper slot.

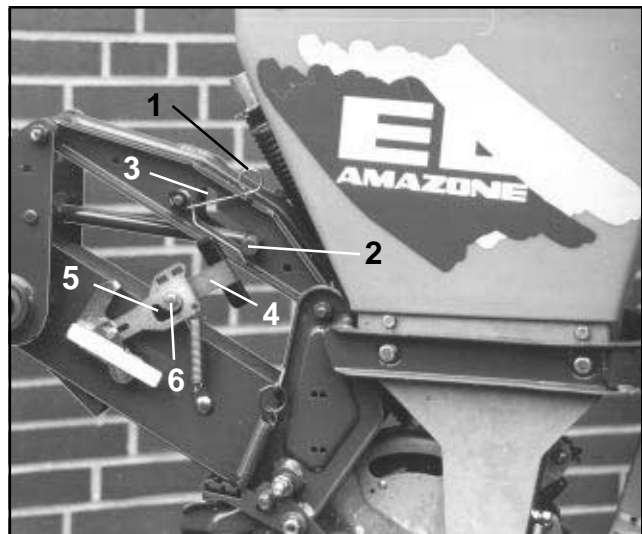









Fig. 8.15

8.3 Filling the seed hopper (sowing requirements)

-  Do not sow damp or adhering seed.
-  Experience has shown that any seed incrustation, eg, with "Mesorol", must be carried out with great care.
-  To prevent bonding, ensure that the non-sticking characteristics of the seed are maintained as far as possible.
-  Carry out incrustation of the seed in advance (1 day before sowing) to ensure that it is dry when sown.
-  The flowability of the incrustated seed is improved if around 200 g of talc is added per 100 kg of seed.
-  The mixing ratios recommended by the manufacturer in any instructions for plant protection agents must be observed.
-  When filling the seed hopper make sure there are no foreign bodies in the seed (wire, stones, pieces of wood).

8.4 Setting stripper

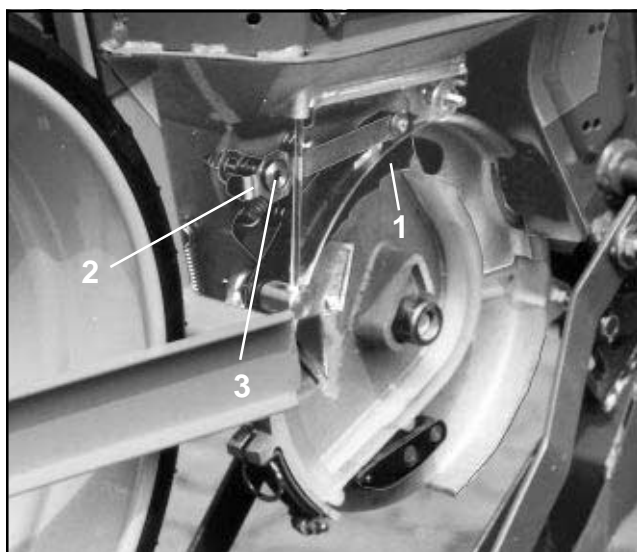


Fig. 8.16

The stripper (8.16/1) consists of a three-part serrated plastic component. Set the stripper with the aid of the setting plate (8.16/2) opposite the holes in the singling disc. The setting plate can be hooked into 5 positions with the adjusting screw (8.16/3).

If the stripper is too far from the holes in the singling disc, this may lead to double seed settings. If the stripper is too close to the holes in the singling disc, faulty settings may occur.

The correct setting is generally dependent on a thousand seed weight of the relevant seed and may be found in the table below.


-  The table below shows recommended values only which may vary according to the type of seed.

Table for setting stripper and singling disc		
		Position
Corn:	Singling disc green 30/5	
	TKG less than 220 g (11 kg / 50000 k)	1
	TKG 220 g to 250 g (11 kg - 12,5 kg / 50000 k)	2
	TKG 250 g to 280 g (12,5 kg - 14 kg / 50000 k)	3
	TKG 280 g to 320 g (14 kg - 16 kg / 50000 k)	4
	TKG more than 320 g	5
	Singling disc natural	
	TKG more than 340 g	3
Beans:	Singling disc red 45/6	
	TKG less than 400 g	5
	Singling disc grey 45/5	
	TKG more than 400 g	5
Sunflowers:	Singling disc brown 30/25	1
Soya beans:	Singling disc orange 45/4	3
Cotton:	Singling disc light blue 45/3,2	3

Example:

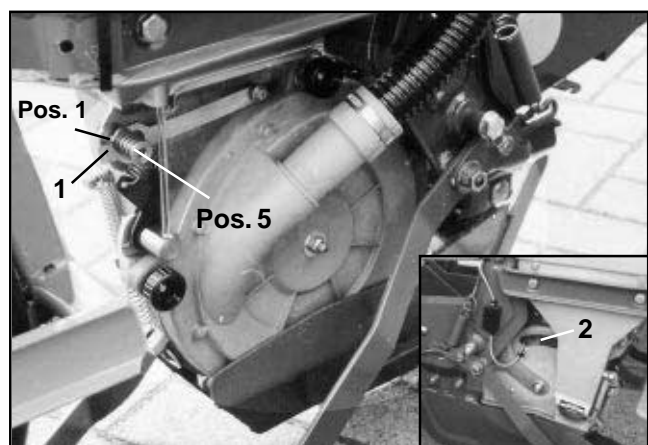
Seed type: Corn type Felix
Thousand seed weight: 210 g
Singling disc green with 30 holes
Position of stripper (8.17/1): position "1"



For seed singling purposes, check the new stripper position for double or faulty settings on the field. Someone may either follow the machine to observe the singling operation through the inspection window (8.17/2) of the seed housing, or a section of the field may be set aside to check seed distances.



If double or faulty settings are observed, change the stripper position.



8.17

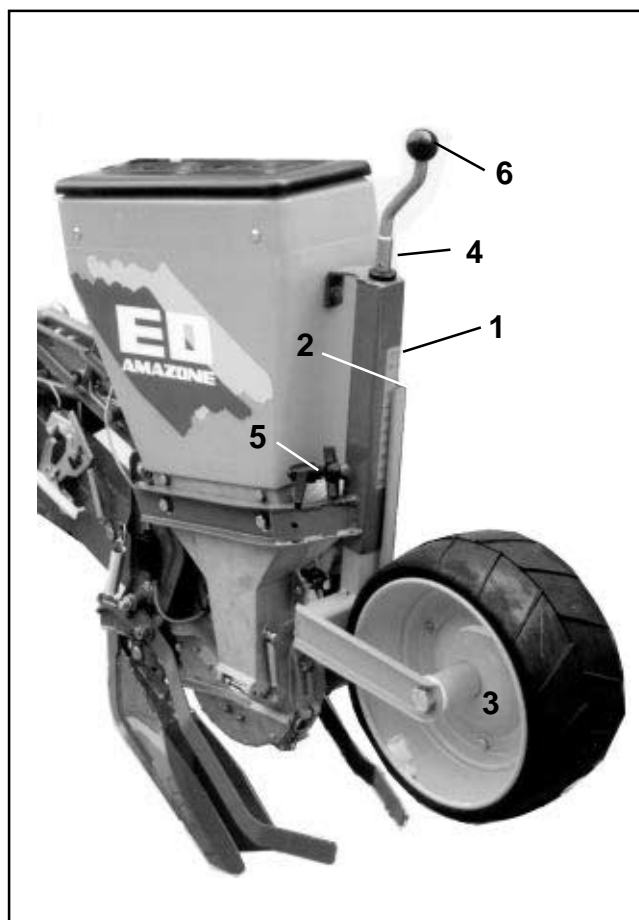


Fig. 8.18

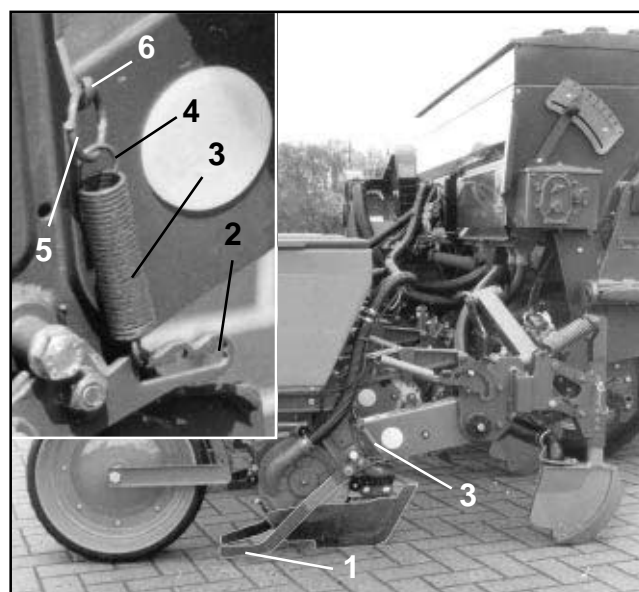


Fig. 8.19

8.5 Setting depositing depth

The depositing depth on the standard drill coulter is progressively adjustable from 0 - 8 cm and from 0 - 12 cm for the beans coulter (special fitting). The figures from 0 - 100 on the scale indicate a specific depositing depth as shown on the reading strip (8.18/2).

Set the depositing depth for the pressure roller (8.18/3) with the aid of the spindle (8.18/4) as shown below:

- Release locking screw (8.18/5).
- Turn the spindle by means of the handcrank (8.18/6) and set the required depositing depth.
- Secure the spindle by tightening the locking screw and wing nut.



Check the depositing depth of the seed since the pressure rollers dig into the earth at various depths according to the soil type. Deposit a few seeds in the earth at a distance of a few metres and check the depositing depth by carefully exposing the seed.

- Change depositing depth if necessary.

8.6 Setting furrow coverer

The furrow coverers (8.19/1) should operate flat on the ground. Their purpose is to cover the seed furrow with loose earth.

The contact pressure of the coverer can be changed by moving the tension point (8.19/2) of the spring (8.19/3) on the coverer (the position indicated in Fig 8.19 shows the lowest contact pressure). If the contact pressure is still insufficient it may be increased by attaching the spring eyelet (8.19/4) instead of the ring (8.19/5) to the hook (8.19/6).

8.7 Setting low air pressure

The low air pressure created by the suction fan is dependent on the output speed of the tractor power take-off shaft. The tractor power take-off speed, on the other hand, is dependent on the model type.



Set the tractor power take-off speed to the point where the indicator (8.20/1) of the manometer (8.20/2) remains within the green area (8.20/3) (65 - 80 mbar) during the sowing operation.

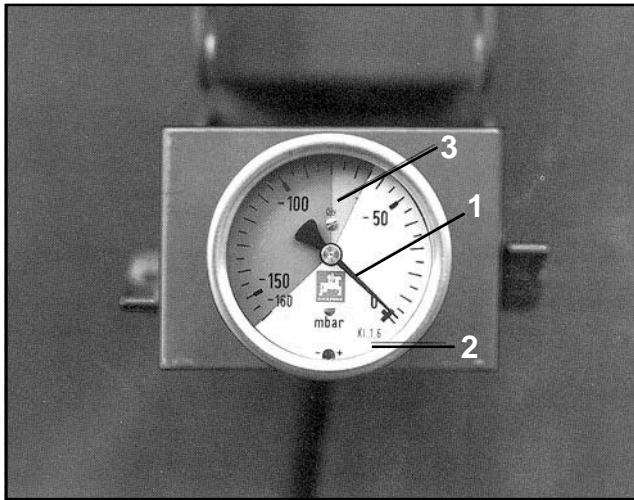


Fig. 8.20



Exceeding the maximum permissible power take-off speed leads to increased wear on the suction fan. At the same time this may lead to undesired double seeding.



Falling below the power take-off range indicated may lead to inaccurate seeding. However when turning on a headland the power take-off speed may be reduced to the minimum power take-off speed without spilling the singled seeds from the singling disc. At this speed the suction pressure falls from 35 to 40 mbar.



When using the red singling disc (special fitting for field beans), set the power take-off speed to the point where the indicator (8.20/1) stands just in front of the red area.

- a) Standard model for connection to the 1000 rpm tractor power take-off shaft (see Chapter 4.2).

The required low air pressure of 65 to 80 mbar is obtained within the power take-off speed range of 950 to 1050 rpm.



Maximum permissible power take-off speed 1100 rpm.



Minimum power take-off speed on headlands 690 to 722 rpm.

- b) Model with connection to 700 rpm tractor power take-off shaft (reduced tractor power take-off speed) (see Chapter 4.2).

The required low air pressure of 65 to 80 mbar is obtained within the power take-off speed range of 660 to 740 rpm.



Maximum permissible power take-off speed 800 rpm.



Minimum power take-off speed on headlands 485 to 505 rpm.

- c) Model with connection to 540 rpm tractor power take-off shaft (see Chapter 4.2).

The required low air pressure of 65 to 80 mbar is obtained within the power take-off speed range of 510 to 570 rpm.



Maximum permissible power take-off speed 600 rpm.



Minimum power take-off speed on headlands 375 to 390 rpm.

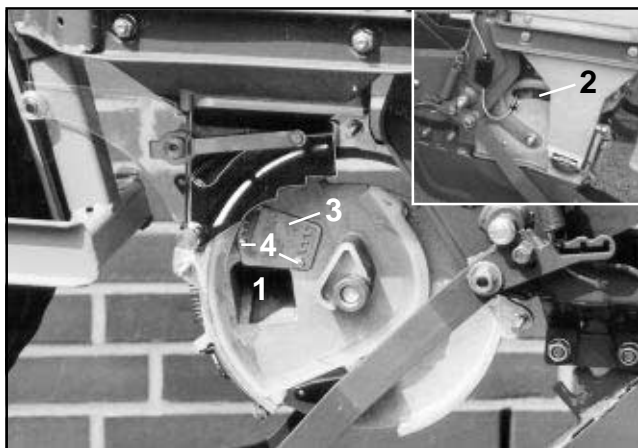


Fig. 8.21

8.8 Modifying seed delivery cross-section for seed housing filled with excess seed

The seed delivery opening cross-section (8.12/1) leading from the seed hopper to the seed housing is factory-set to the largest opening possible. All the required seed is fed from the seed hopper to the singling discs through this opening.

If the seed is visible at the inspection window (8.21/2) excess seed is being fed into the seed housing. This may occur if:

- the seed has particularly good free flowing properties (very smooth, even surface)
- the ED is used in combination with a vibrating harrow.

In these circumstances the seed housing is filled with excess seed so that it overflows spilling the seed out uncontrollably.

In this case reduce the size of the seed delivery cross-section from the seed housing with the aid of a reducing flap (8.21/3) as follows:

- Remove the suction cover and singling disc (see Chapter 5.1).
- Loosen the screws (8.21/4) in the reducing flap.
- Reduce the size of the seed delivery cross-section with the aid of the reducing flap.
- Tighten the screws on the reducing flap.
- Assemble the singling disc and the suction cover as described in Chapter 5.1.

8.9 Overload device to interrupt the sowing unit operating mechanism

During overload the shearing bolt (8.22/1) on the shearing bolt carrier (8.22/1) shears off and interrupts the power transmission from the central operating mechanism to the singling disc. The retaining plate (8.22/2) of the shearing bolt is now in the upper position. The gear wheels which are normally linked are separated as a result of one toothed wheel being pivoted on rocker.

Restore the operating mechanism as follows:

- Raise the sowing unit and turn the singling disc from below by means of the drill coulters. The singling disc should rotate by hand.

If the singling disc does not rotate:

- Empty the seed hopper (see Chapter 9.2).
- Remove the suction cover and singling disc to open the seed housing (see Chapter 5.1).
- Rectify the fault causing the singling disc to jam.
- Assemble the singling disc and suction cover.
- Remove the remains of the shearing bolt.
- Release the shearing bolt carrier (8.22/1) from the retaining plate (8.22/2) and insert a new shearing bolt to that the retaining plate is locked in position again (Fig 8.22).



Do not use any other type of shearing bolt (eg, nails or similar items). The shearing bolts are designed for a specific overload, therefore use original AMAZONE replacement shearing bolts only!



If the sowing units are not fitted with an electrical watchdog timer (special fitting), check the operating mechanism of the singling discs regularly.

8.10 Ejector

The spring-loaded ejector (8.23/1) is connected to the low air pressure flow interruption in the seed housing. Its purpose is to release any seeds lodged in the holes of the singling disc for re-sowing.



If the ejector shows heavy signs of wear to the extent that the body of the ejector itself is worn, replace with a new one.

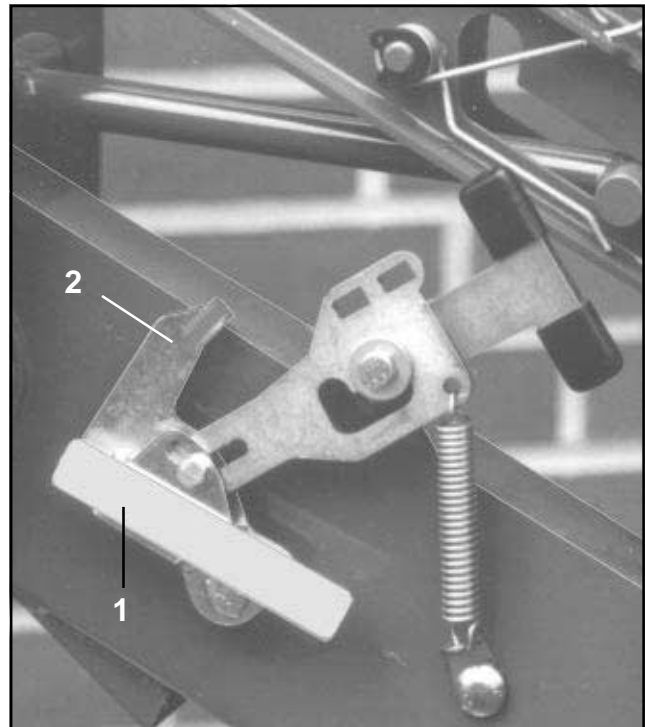


Fig. 8.22



Fig. 8.23

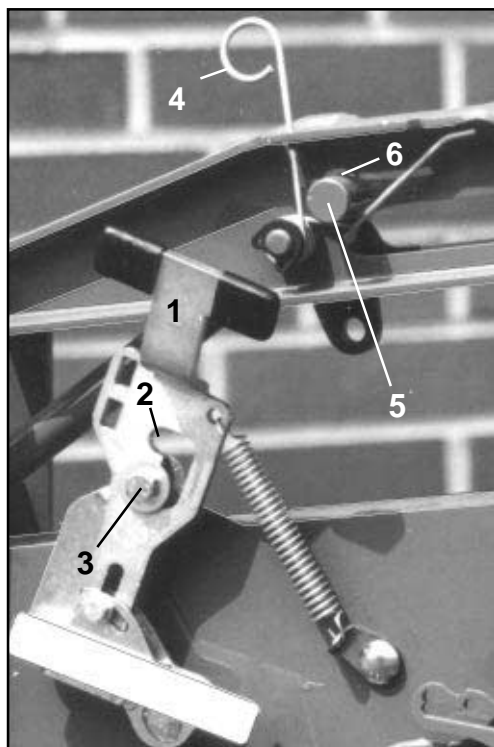


Fig. 9.1

9.0 After use

9.1 Raising sowing units and interrupting power transmission

- To disconnect the power transmission, shift the hand lever (9.1/1) from the upper slot (9.1/2), pull up and engage screw (9.1/3) in lower slot of hand lever (Fig 9.1).
- Load the leg spring (9.1/4) as shown.
- Raise sowing unit at the rear until the bolt (9.1/5) locks automatically in the slot (9.1/6).



Always disconnect the power transmission after use to prevent the singling disc rotating after the sowing unit has been raised..

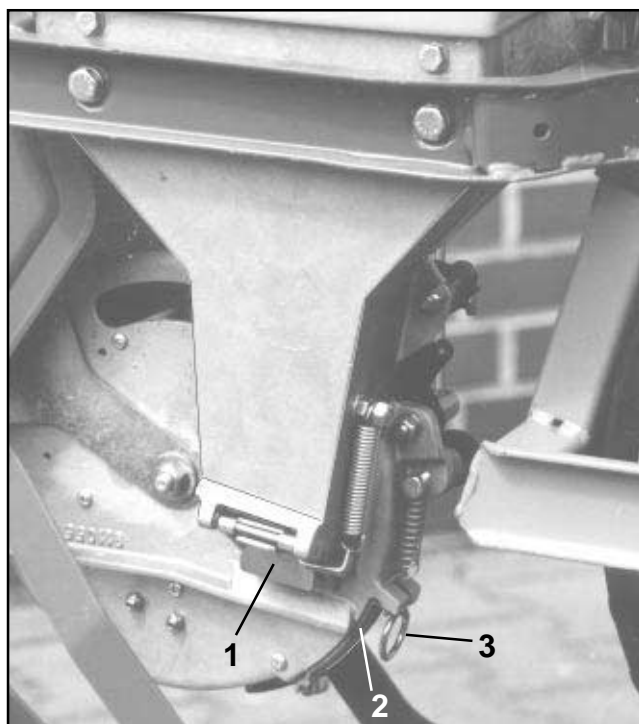


Fig. 9.2

9.2 Emptying seed hoppers

Empty the seed hoppers rapidly by opening the spring-loaded flap (9.2/1).

The seed housing is emptied via the discharge flap (9.2/2). For this purpose release the retaining spring (9.2/3) and open the flap.



After emptying close the discharge flap properly.



Assemble the retaining spring correctly!

If the machine is subject to long periods of disuse:

- Empty the seed hopper completely to prevent any risk of germination.
- Open the discharge flap on the seed housing to prevent the entry of mice which may otherwise eat plastic components.

9.3 Cleaning the machine

The machine may be cleaned with a water jet or a high-pressure cleaner.



If you clean the seed hopper using compressed air, please remember that scouring agent dust is poisonous. Do not inhale the dust!

10.0 Commissioning fertilizer drill

10.1 Filling fertilizer hopper



Before filling the fertilizer hopper connect the seed spacing drill to the tractor.

- Open the fertilizer hopper lid (10.1/1). The cover is automatically locked when open to prevent it slamming shut during high winds or under other influences.
- Fill the fertilizer hopper from the rear. To close the fertilizer hopper lid lift the lock (10.1/2) with one hand and close the lid with your free hand.



Fig. 10.1

10.2 Raise fertilizer screen

- Raise the fertilizer screen (10.2/1) with the aid of the handles and lock in place with the locking bracket (10.2/2).



If required, when raised the fertilizer screen may be removed from the rear.



Keep hands away from the fertilizer hopper. There is a risk of injury from the rotating agitator shaft!

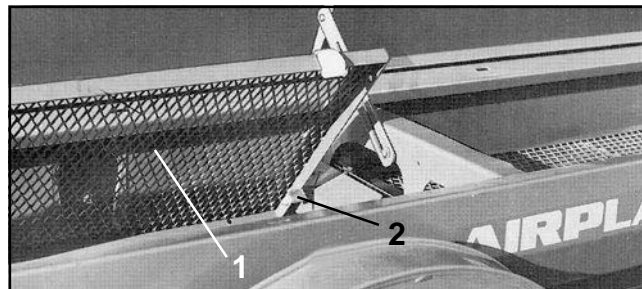


Fig. 10.2

10.3 Metering wheel drive

The metering wheels (10.3/2) on the metering shaft (10.3/1), which are driven by the impeller shaft (10.3/3), chain drive (10.3/4) and adjusting gearbox (10.3/5), control the fertilizer delivery output.

10.4 Setting fertilizer delivery output

The gear lever (10.3/6) of the adjusting gearbox controls the speed of the metering shaft which in turn adjusts the fertilizer delivery output. Use the fertilizer distribution table (10.3/7) to adjust the output. To adjust the fertilizer delivery output, follow three different steps:

- set the gearbox lever
- set the stop valves
- set the bottom flaps

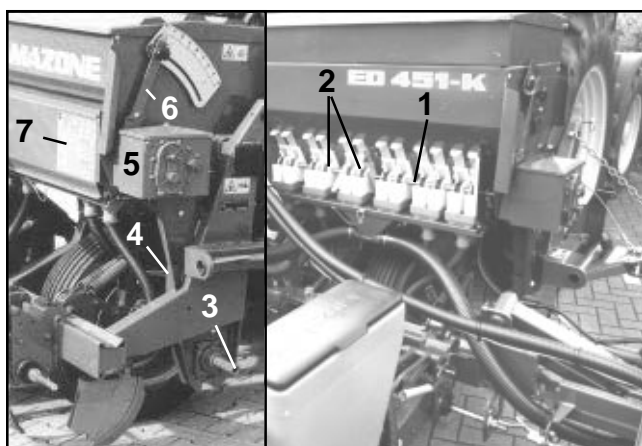


Fig. 10.3

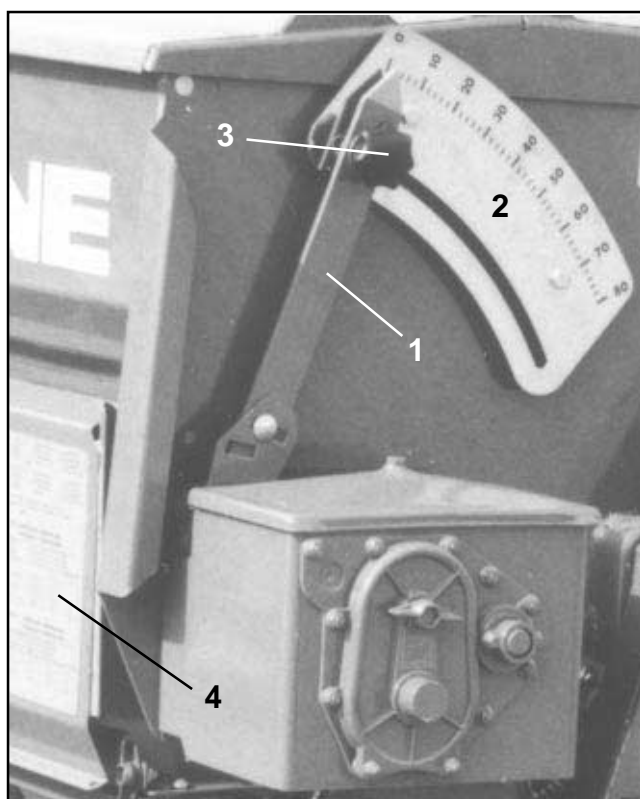


Fig. 10.4

10.4.1 Setting gear lever

The fertilizer delivery output can be changed by adjusting the gear lever (10.4/1). The higher the figure on the scale (10.4/2), the greater the output.

Adjust the gearbox as follows:

- Loosen the knob (10.4/3) by turning it to the left.
- Move the gear lever down (towards the highest figure on the scale) and shift from below to the required position as indicated in the fertilizer distribution table.
- Tighten the knob.



The figures indicated in the fertilizer distribution table are intended as a guide only. Deviations may occur as a result of seed size, type and specific weight. A truing test is advisable in each case.

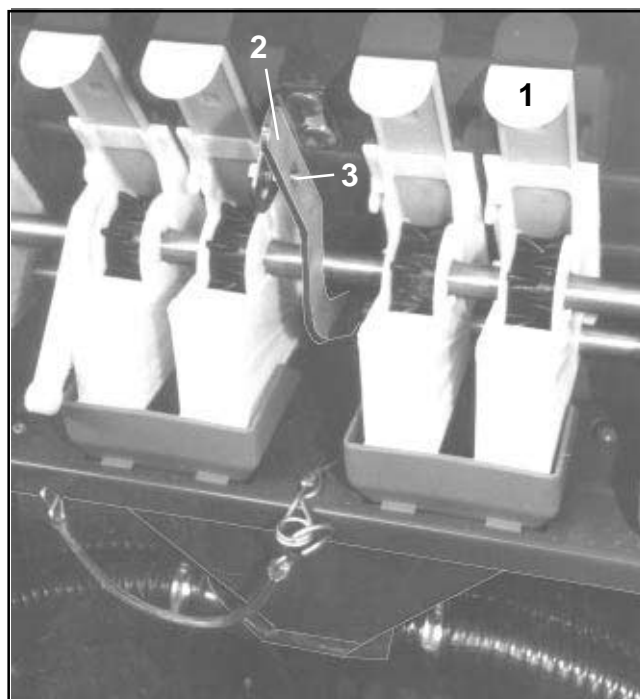


Fig. 10.5

10.4.2 Setting stop valves

The stop valves (10.5/1) may be locked in three different positions:

"closed" "3/4 open" "open"



The stop valves should all occupy the "3/4 open" position.

10.4.3 Setting bottom flaps

When metering the fertilizer, the lever (10.5/2) is locked on to the bolt (10.5/3).

To clean the machine open the bottom flaps with the lever (10.5/2).

10.5 Truing test to check fertilizer delivery output

During the truing test the impeller shaft (10.6/1) is rotated clockwise with the aid of the crank (10.6/2) and the test run on the field is checked. The fertilizer collected from the individual coulters is checked against the required amount of fertilizer. The collected fertilizer should equate to 1/10 or 1/40 of the fertilizer delivered.

Carry out the truing test as follows:

- Set stop valve to "3/4 open".
- Check whether both bottom flaps are engaged.
- Set the gear lever with the aid of the fertilizer distribution table (see Chapter 10.4).



The figures indicated in the fertilizer distribution table apply to a seed drill working width of 3 m and 4.5 m respectively.

- Insert the truing crank (10.6/1) and carry out a specified number of crank turns according to the table below taking into account the working width and tyres.

Bereifung Tyres banden pneumatiques	Kurbelumdrehungen am Rad - Arbeitsbreite Crank turns at the wheel - working width omwentelingen aan het wiel - werkbreedte nombre de tours de manivelle à la roue - largeur de travail	3,0 m	4,5 m	6,0 m
6.00-16	1/10 ha	159	--	--
	1/40 ha	39,8	--	--
10.07/75-15 31x15,5/15	1/10 ha	147	98	74
	1/40 ha	37,8	24,5	18,5

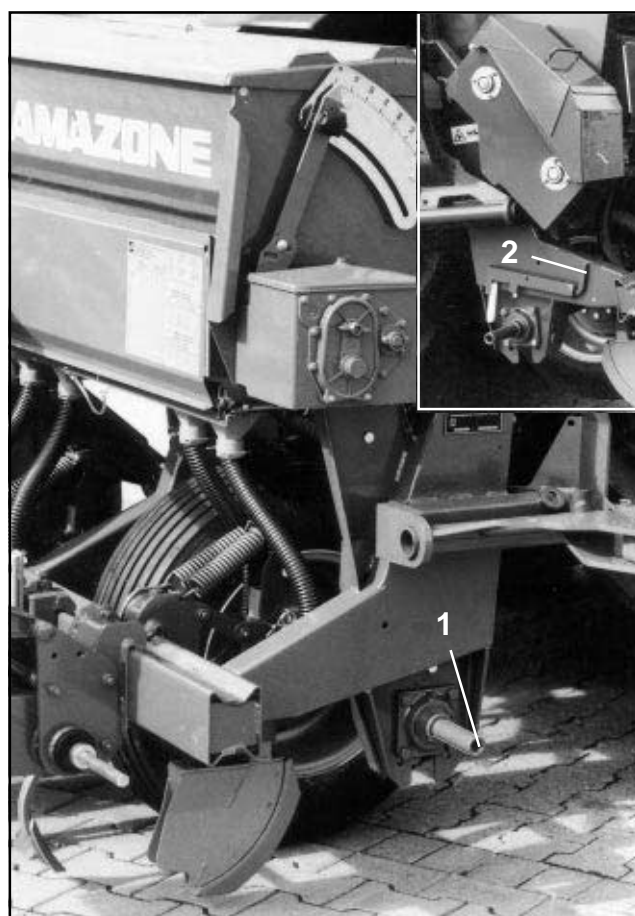


Fig. 10.6

a) Fertilizer collected from all the coulters:

- Weigh the fertilizer [kg] and multiply by factor "10" (1/10 ha) or factor "40" (1/40). The figure obtained equates to the fertilizer delivery output in [kg/ha].

b) Fertilizer collected from one coulter only:

- Close stop valves of other metering housing.
- Weigh the collected fertilizer [kg] and multiply by the number of coulters and by the factor "10" (1/10 ha) or "40" (1/40). The figure obtained equates to the fertilizer delivery output in [kg/ha].

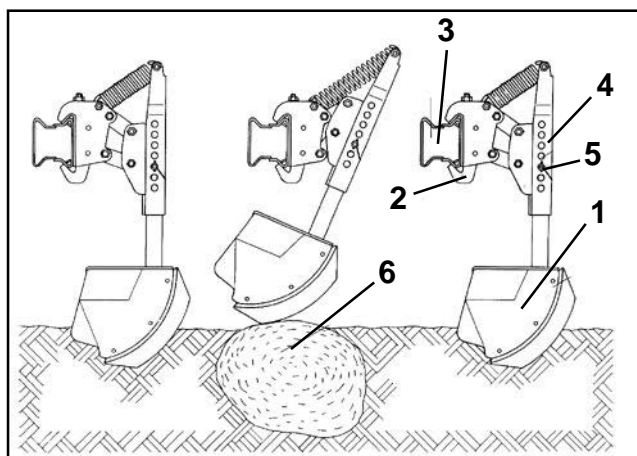


Fig. 10.7

10.6 Setting fertilizer coulters

The fertilizer coulters (10.7/1) are mounted to the sectional bar (10.7/3) with the aid of support clamps (10.7/2). The fertilizer coulters are factory-set at a distance of 6 cm to the drill coulters of the sowing unit. As for the sowing units, this distance may be adjusted progressively (see Chapter 6.4).

The depositing depth of the fertilizer may be changed by moving the depth adjuster (10.7/4) on the fertilizer coulters. Secure the setting for the fertilizer coulters with the aid of a socket pin (10.7/5).



Setting the depositing depth of the fertilizer coulters involves working below and between the raised machine. There is a danger from squeeze points for all body parts. Make sure that the raised machine is safely secured against accidental lowering!

If the fertilizer coulters meet any obstacles (10.7/6) in the soil it avoids the obstacle by moving behind, above or around it.

Two fertilizer hoses lead to each fertilizer coulters.



Make sure that the hoses do not sag and that the hoses do not get blocked up with fertilizer. Shorten hoses if necessary.

Only one hose leads to each outer fertilizer coulters on the ED 451 and ED 451-K.

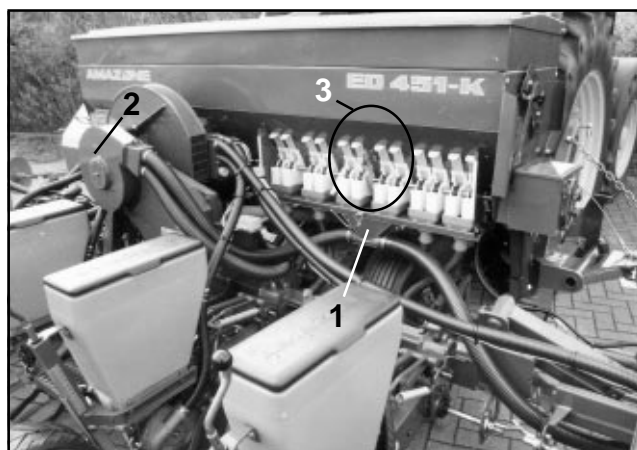


Fig. 10.8

10.7 Fertilizer delivery to outer fertilizer coulters in ED 451 and ED 451-K

Fertilizer is delivered to the outer fertilizer coulters by means of compressed air. Metered fertilizer enters the injector (10.8/1) where it is fed to the outer fertilizer coulters by the compressed air produced by the compressed air fan (10.8/2).

10.8 Reduced working width by lifting outer sowing units on ED 451-K with fertilizer drill

- Lift outer sowing units. The operating mechanism for the singling discs is switched off automatically.
- Close the stop valves (10.8/3) of the outer fertilizer coulters.



If the stop valves of the metering wheels for the outer fertilizer coulters are not closed, fertilizer is spilled on to the soil surface.

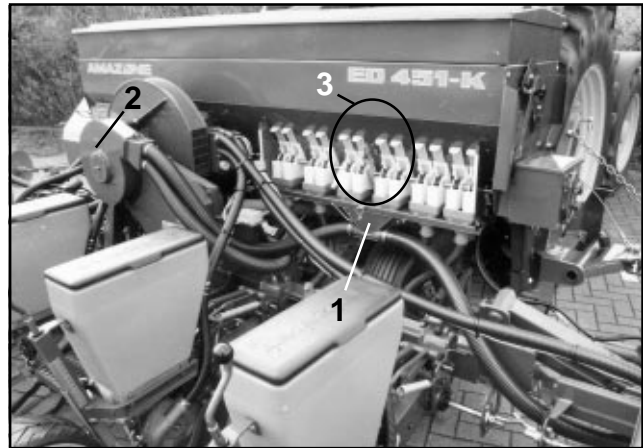


Fig. 10.8

10.9 After use - emptying fertilizer hopper (for rapid fertilizer evacuation see special fitting)

- Place a suitable container beneath the fertilizer coulters to empty the fertilizer hopper.
- Open all the stop valves (10.9/1), release the bottom flap lever (10.9/2) and move it back and forth until the bottom flaps are fully open.

- After complete evacuation of fertilizer hopper on ED 451 and ED 451-K:

- Turn on the fan briefly thereby emptying the hoses leading to the outer fertilizer coulters completely.
- Clean the fertilizer hopper and coulter thoroughly with water.



Make absolutely sure that the machine is entirely free of any fertilizer or water and fertilizer mixture. If any damp fertilizer is left behind, when it dries it may form lumps or lead to a complete blockage next time the machine is used causing damage to rotating parts.

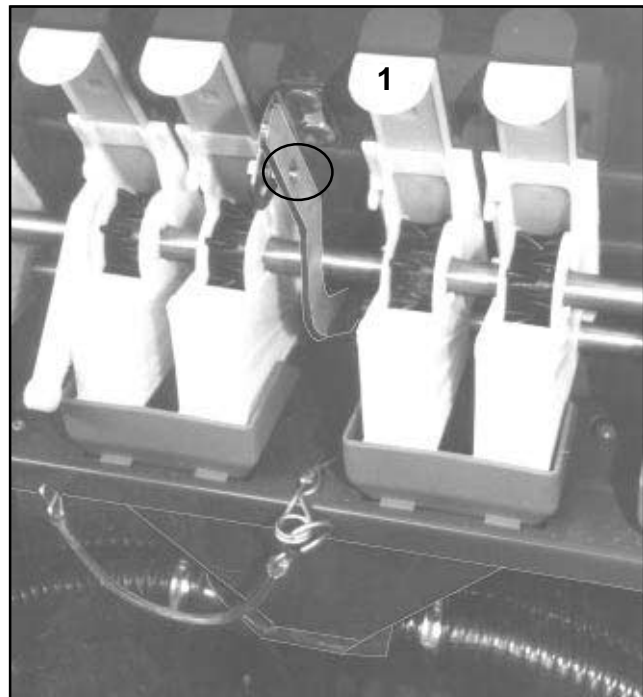


Fig. 10.9

11.0 Servicing, repair and maintenance



See Chapter 3.4 for servicing, repair and maintenance.

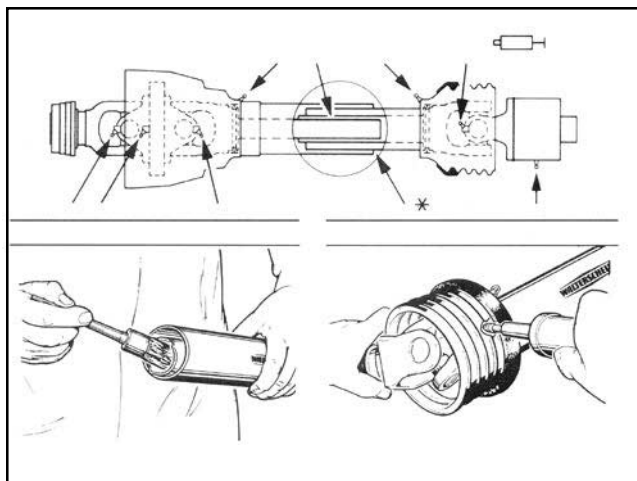


Fig. 11.1

11.1 Threaded joints



Check all threaded joints after the first 2 operating hours and every 100 operating hours subsequently. Tighten if necessary.

11.2 Cardan shaft

Lubricate with brand-name grease before handling the machine and every 8 operating hours subsequently (Fig. 11.1). After long periods of disuse, clean and lubricate the cardan shaft.



Grease the pipes in winter to prevent freezing.

11.3 Multiple ribbed belt for fan drive unit

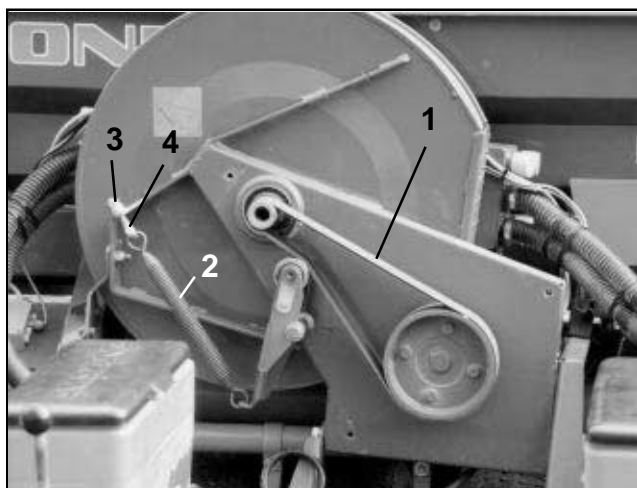


Fig. 11.2

Proper tensioning of the multiple ribbed belt (11.2/1) is essential for its service life. The elongation of the belt is determined by the performance of the tractor power take-off shaft.



Slow coupling of the tractor power take-off shaft increases the service life of the belt.



The prescribed belt tensioning is obtained when the tension spring (11.2/2) measures 260-5 mm in length.



Correct belt tensioning reduces premature wear and tear.

Tension the multiple ribbed belt as follows:

- Loosen the locknuts (11.2/3) on the tensioning bolt (11.2/4).
- Set the tension spring length to 260 mm and re-tighten locknuts.



Check the belt after the first 10 hours and at intervals of 50 operating hours subsequently. Tighten if necessary.

To check multiple ribbed belt:

- Remove case (11.3/1) and check belt for any signs of wear.



Re-assemble case correctly!

11.4 Tyre pressure



Check the tyre air pressure at regular intervals.

The tyres are factory-set at the following air pressure levels:

Tyres 6.00 - 16	1.2 bar
Tyres 10.0/75 - 15	0.8 bar
Terra tyres (special fitting)	2.5 bar

11.5 Chain drive

The chain drives on the ED 301, ED 451 and ED 451-K are fitted with roller chains.



After long periods of disuse remove roller chains, wash in kerosene and then dip into preheated grease or oil. Do not lubricate the chain during operation!



Check chain drive after 10 hours of operation and thereafter at intervals of 100 operating hours. Regulate the tension if necessary. If the chain cannot be tensioned any more, reduce to size.

The machines are fitted with the following three drive chains:

1. The drive chain (11.4/1) is connected from the impeller shaft to the gearbox input shaft on the variable speed gear.

The chain is tensioned with the aid of a spring-loaded chain adjuster. Remove the case to check the chain tension.



The reinforced design of the chain and its closing link provide increased breaking force. When replacing the closing link or the complete chain use original AMAZONE replacement parts only.

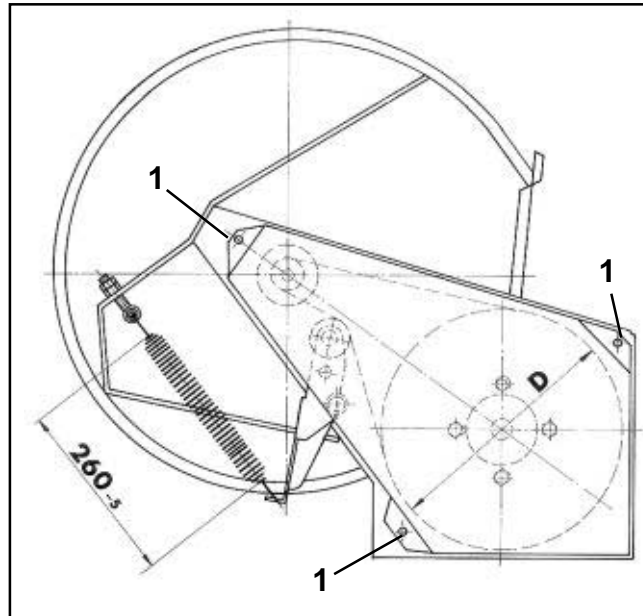


Fig. 11.3

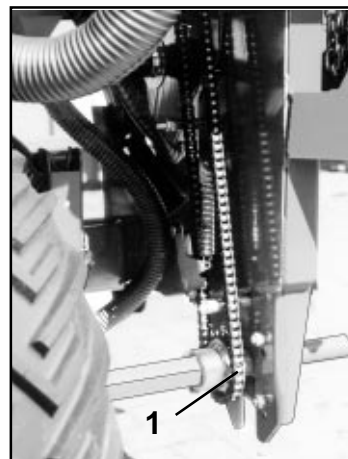


Fig. 11.4

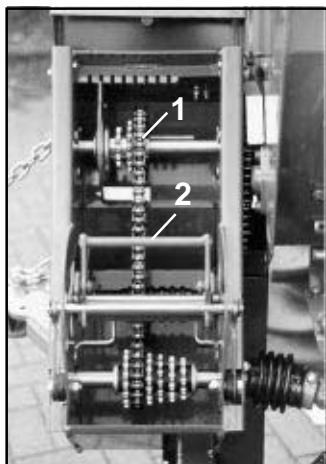


Fig. 11.5

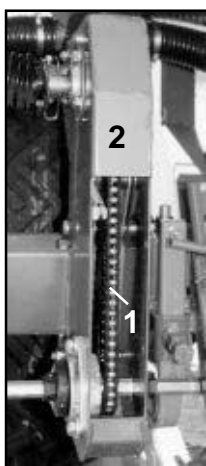


Fig. 11.6

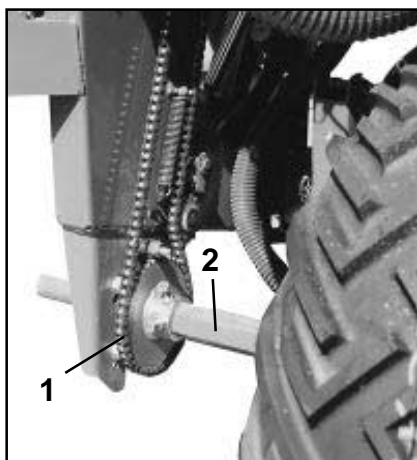


Fig. 11.7

2. Shifting chain (11.5/1) from variable speed gear.

This chain is tensioned with the aid of the spring-loaded chain tensioning unit (11.5/2).



The reinforced design of the shifting chain and its closing link provide increased breaking force. When replacing the closing link or the complete chain use original AMAZONE replacement parts only.

3. Drive chain (11.6/1) of the sowing unit connecting the shaft on the gear output of the secondary transmission (11.6/2) to the sowing shaft (hexagon shaft).

This chain is tensioned with the aid of the spring-loaded chain tensioning unit.



The reinforced design of this chain and its closing link provide increased breaking force. When replacing the closing link or the complete chain use original AMAZONE replacement parts only.

The AMAZONE ED 301, 451 or 451-K equipped with an additional drive chain for the fertilizer drill:

4. The drive chain (11.7/1) connects the drive wheel shaft (11.7/2) to the adjusting gear which controls the fertilizer delivery output.

This chain is fitted with a spring-loaded chain adjuster. To adjust the tension remove the chain case. If the chain adjuster is no longer effective, reduce the length of the chain.

11.6 Singling discs and vacuuming

The singling disc and the vacuum (11.8/2) in the seed housing are produced from two different high-quality plastics. The seed housing seal (11.8/3) consists of foam material.

The vacuum acts as a seal between the singling disc and the suction cover (11.8/4) whilst the seed housing seal closes the singling disc securely to the seed housing.

The singling discs, vacuum and seed housing are subject to natural wear and tear.

According to the degree of use and operating conditions, wearing-in grooves form in the singling discs.



If the wearing-in grooves show a depth of 1.5 - 2 mm, replace the singling discs as a proper seal can no longer be guaranteed.

Similarly, replace the seed housing seal (11.8/3) if damaged.



To ensure proper operation of the singling components, check the singling unit after every 50 hours of operation. See Chapter 5.1.

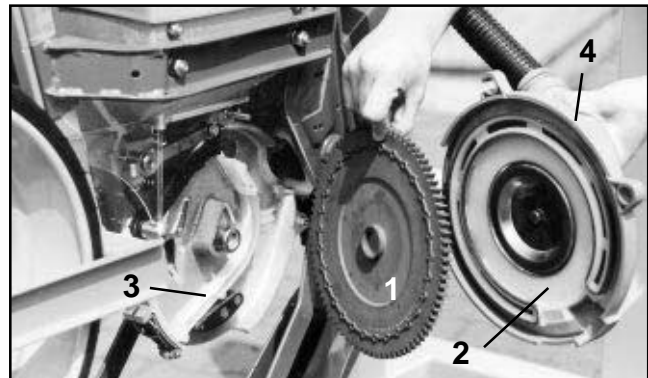


Fig. 11.8

11.7 Oil level in adjusting gear for fertilizer delivery output

Check the oil level at the oil inspection window on the adjusting gear (11.9/1). An oil change is not required. To refill, unscrew cover and use hydraulic oil WTL 16.5 cSt/50°C or engine oil SAE 10 W.

Filling capacity is 1.8 l.

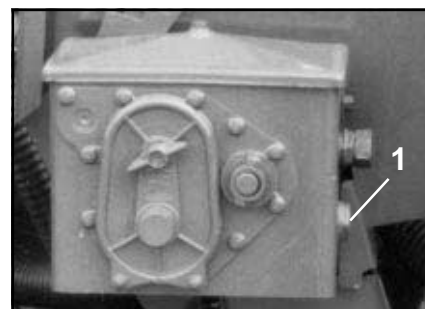


Fig. 11.9

11.8 Replacing coultter points in sowing and fertilizer coultters

The coultter points (11.10/1 or 11.10/2) of the sowing and fertilizer coultters (11.10/3 or 11.10/4) are made of interchangeable chilled cast iron points.

If any signs of wear and tear appear, replace with new chilled cast iron points:

Sowing drill coultter:

- Remove riveted joints.
- Replace old points with new chilled cast iron points.
- Rivet the points back on.

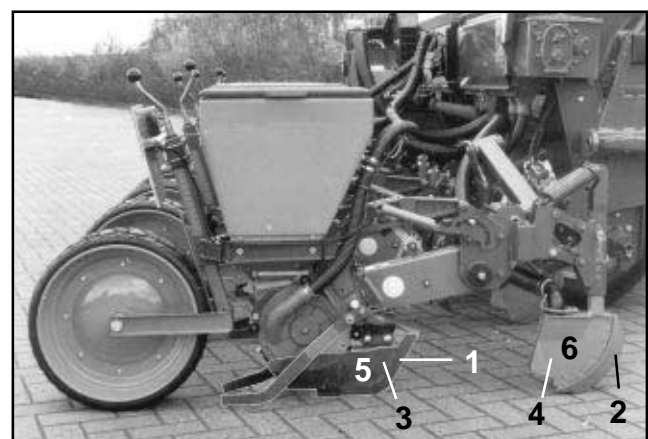


Fig. 11.10

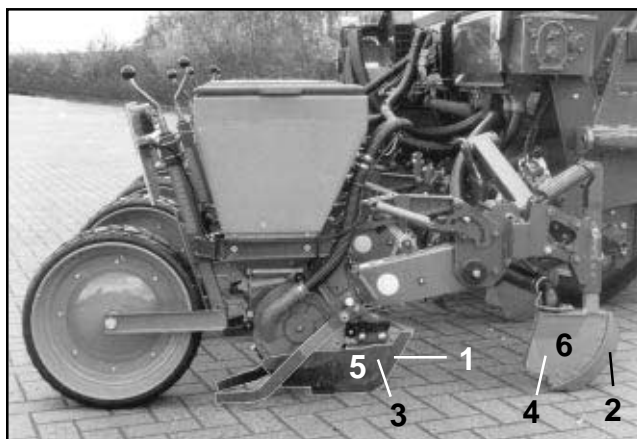


Fig. 11.10

Fertilizer drill coulters:

- After removing the riveted joints, turn the points back to front before replacing with new chilled cast iron points.
- Rivet the chilled cast iron points back on.



Check the sowing and fertilizer coulters every 50 operating hours for wear and tear. If the points show any signs of wear and tear, either replace or turn back to front.



Replace or turn the chilled cast iron points back to front before the side plates (11.10/5 or 11.10/6) on the sowing and fertilizer coulters show any sign of ageing.

11.9 Cleaning suction fan impeller

In certain circumstances the drawing in of scouring agents can lead to deposits on the suction fan impeller. This imbalance can lead to uneven running of the fan impeller.

If the fan impeller starts running unevenly, switch on the fan and direct a jet of water into the suction area of the fan. This will remove any deposits from the impeller.



The water is extracted from the fan by centrifugal force.

11.10 Servicing table

Component	Servicing interval [hrs]							
	First servicing after			Additional servicing after				
	2	10	50	8	25	50	100	
Threaded joints	x							x
Cardan shaft				x				
Multiple ribbed belt		x				x		
Chain drives		x						x
Singling discs and foam seal		x			x			
Vacuum			x			x		
Coulter points on sowing and fertilizer coulters			x			x		
Grease bearings on drive shafts					x			

12.0 Special fittings

All the parts and equipment listed under this title are not included as standard fittings. However they can be supplied by or ordered from AMAZONE ED and fitted subsequently. All the assembly holes have already been provided in the basic machine.

12.1 Singling discs

30/5 green (for corn (standard)), order no 910 777

30/5.8 natural (for corn with high TKG and high speeds), order no 910 790

45/6 red (for field beans), order no 910 792

45/5 dark grey (for beans and peas), order no 910 793

45/4 orange (for soya beans), order no 910 791

45/2.5 black (for small beans), order no 910 795

30/2.5 brown (for sunflowers), order no 910 794

45/3.2 light blue (for cotton), order no 913 687

12.2 Hydraulic switch unit for track indicator with connector, order no 913 175

(in 4.50 m machines used for marking tractor wheel track only not tractor centre)

To activate the hydraulic switch unit (12.1/1), connect the hydraulic cylinder (12.1/2) to the single-acting control valve of the tractor.

To switch the track indicator over, turn the tractor control valve to the "raise" position. During turning manoeuvres both track indicators are then lifted up. After turning manoeuvres return the control valve back to the "lower" position and the formally inactive track indicator disc will automatically be lowered.



Squeeze point!

Standing near switch unit and the track indicators is prohibited when operating the switch unit. There is a risk of injury from moving parts.

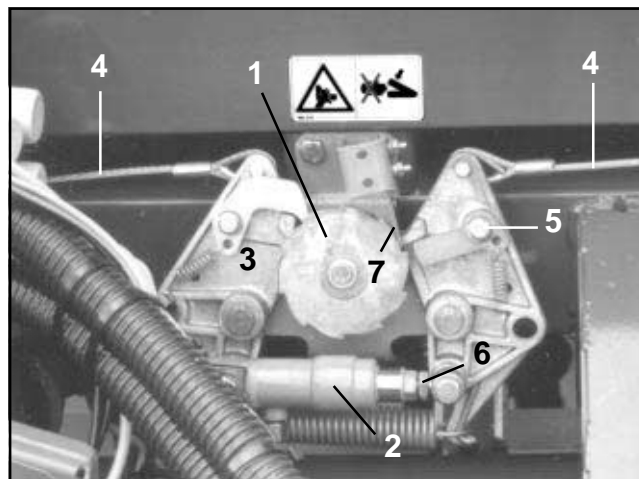


Fig. 12.1

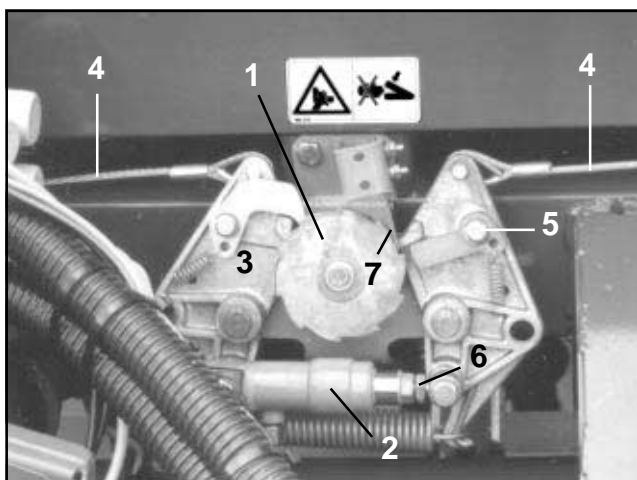


Fig. 12.1

12.2.1 Setting switch unit for track indicator

Mount the AMAZONE ED to the tractor. When the machine is disconnected, and the left track indicator is lowered with the aid of the left plugboard (12.1/3). Secure the wire cable (12.1/4) with the aid of the chain on the radial arm of the track indicator so that the cable is suspended slightly as soon as the track indicator disc is positioned on the wheel tread. This limits the working depth of the track indicator from between 60 to 80 mm.

When the automatic switch unit is activated the left plugboard (12.1/3) swings inwards and the right plugboard swings outwards. Fasten the right end of the chain to the right track indicator as described above. See Chapter 6.3.3.

When the seed spacing drill is raised, check to ensure that both track indicators are lifted sufficiently high. If this is not the case, adjust the chain length on the radial arm of the track indicator.

Secure the wire cable (12.1/4) to the bolt (12.1/5) on the ED 451 and ED 451-K. If the track indicator discs dig too deeply into the soil the indicators may become damaged.

12.2.2 Resetting hydraulic switch unit

The switch unit is factory-set to ensure trouble-free operation. After new machines have been run in, under certain circumstances it may be necessary to adjust the switch unit slightly if the switching is no longer regular or inaccurate.

Adjust the unit as follows:

- Apply pressure oil to the hydraulic cylinder (12.1/2).
- Remove locknut (12.1/6) from U-bolt.
- Turn the piston of the hydraulic cylinder with an open-ended spanner until the leaf spring on the switch unit audibly locks into place and there is a clearance of 1 to 2 mm between the spring and the tooth.
- Carry out a trial operation to check whether the switch unit is properly adjusted.
- Tighten the locknut on the U-bolt of the hydraulic cylinder.

12.3 Vertical, hydraulically activated raising of track indicator, order no 913 177

To raise the track indicator connect it to two single-acting or one double-acting control valve on the tractor.

The actuator (12.2/1) has a dual purpose: to switch the track indicator over on the soil and to raise the track indicator. By raising the track indicator, the large machine width of the seed spacing drill which is caused by the wide projection of the track indicator, is reduced in size in a few moments. In this way obstacles can be easily avoided without the need for the tractor operator to leave the cab.

After unlocking the track indicator from its transport position, turn the control valve on the tractor to "unload" and a track indicator will be lowered to the operating position. If the track indicator is on the "wrong side", turn the control valve on the tractor to the "pressure" position and change the track indicator position. The lowered track indicator is then raised and the remaining track indicator is lowered by turning the control valve to "unload". During turning manoeuvres both track indicators are raised. After turning, set the control valve to "unload" so that the correct track indicator is automatically lowered.

When raised, the position of the track indicators can be adjusted with a threaded device on the hydraulic cylinder.

When lowered, the track indicator position can be adjusted with the aid of the chain on the radial arm.

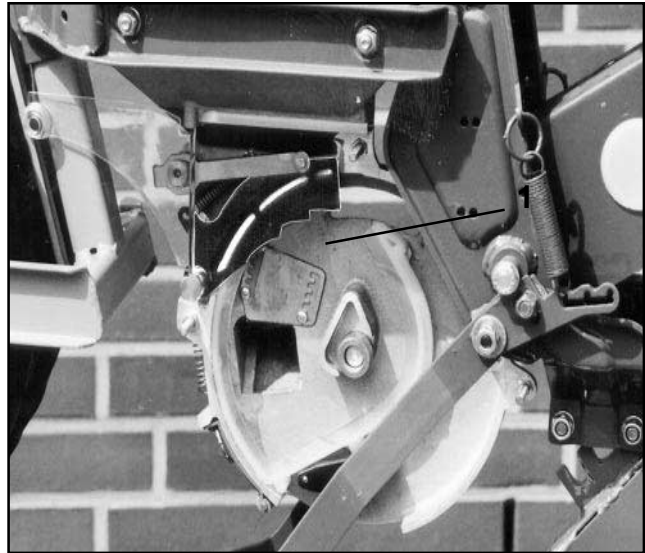


Fig. 12.2

12.4 Drive for power take-off 700 rpm, order no 425 400

See Chapters 4.2 and 8.7.

12.5 Drive for power take-off 540 rpm, order no 914 260

See Chapters 4.2 and 8.7.

12.6 Drive for power take-off 1000 rpm, order no 914 261 (standard)

See Chapters 4.2 and 8.7.

12.7 Drill coulter for beans, order no 401 800

(Recommended minimum depositing depth: 7 cm)

With the beans coulter seeds may be deposited at a greater depth in the seedbed. The depositing depth can be set anywhere between 0 to 12 cm. See Chapter 8.5.

12.8 Free-running cardan shaft, order no 135 301

See Chapter 6.2.

12.9 4 spring-mounted track looseners, order no 913 134

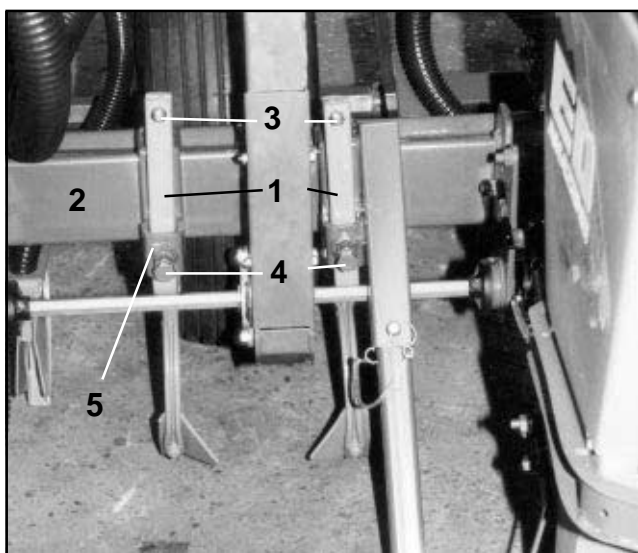


Fig. 12.3

In addition to loosening the soil, the main purpose of the track looseners (12.3/1) is to cover the tractor tracks. Mount the track looseners as shown in Fig 12.3 so that they are positioned approximately 5 cm right and left of the tractor track in the loose earth to "plough" the tractor track "closed". This is the best means of levelling the track.

Mount the track looseners to the frame (12.3/2) of the seed spacing drill.

The track looseners can be moved along the entire length of the frame. The locking screw (12.3/3) prevents the track loosener from falling off if the fastening screws (12.3/4) become loose. The latter cannot fall through the retaining bracket (12.3/5) which is held in place by the locking screw.

12.10 Terra tyres 31 x 15.5/15, order no 366 800 (profile XT II 792 mm AE, 368 mm wide)

Terra tyres are particularly suitable for light soils as the machine weight is distributed over a large contact area. **Recommended tyre pressure: 0.5 bar.**

12.11 Spring pressure adjustment of sowing units (per coulter), order no 911 546

The spring pressure adjustment of the sowing units produces an additional loading or unloading effect on the sowing units. This is specially recommended for mulch seed and for deep depositing depths.

The detent lever (12.4/1) and the tension spring (12.4/2) are used for loading and unloading the sowing units in 2 positions.

If the detent lever is locked in position I or II (neutral), the coulter is pressed into the soil with the dead weight of the sowing unit. **If the dead weight of the sowing unit is insufficient** to press the coulter into the soil to the required depth, eg, in heavy soils, **move the detent lever (12.4/1) to provide an additional coulter load so that it locks into positions III or IV.**

If the coulter digs too deep into the soil through the dead weight, move the spring to the bottom lug to unload the weight and lock the detent lever in positions I or II. Use positions III and IV to make the spring neutral.

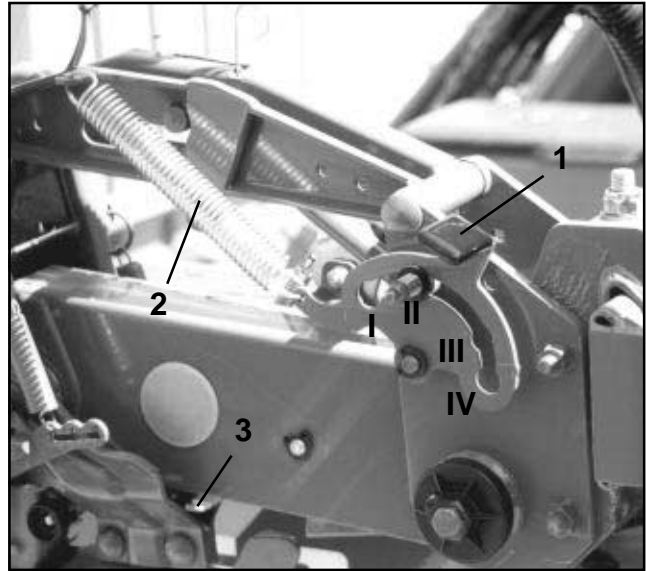


Fig. 12.4

12.12 Loading platform, order no 913 408

A loading platform (12.5/1) can be mounted to the rear of the ED seed spacing drill to make filling the fertilizer hopper simpler.



The loading platform should be used to fill the machine only. Standing on the platform whilst the vehicle is in motion is prohibited!

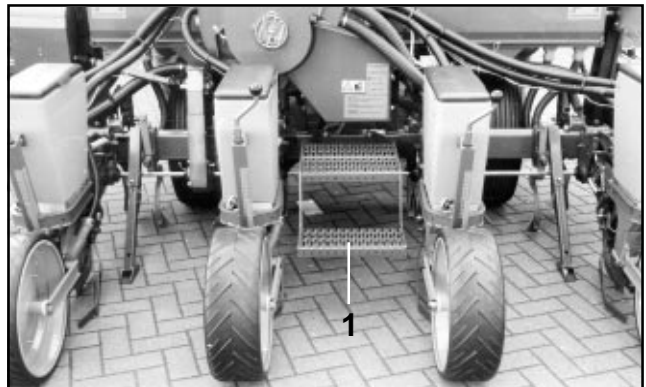


Fig. 12.5

12.13 Wheel stripper (set), order no 913553

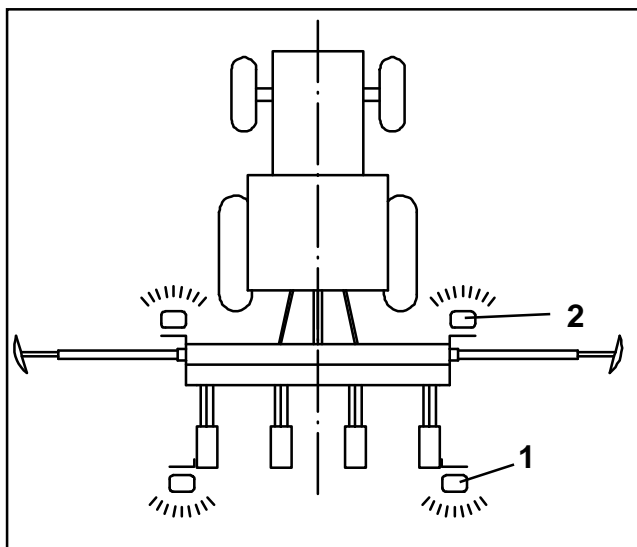


Fig. 12.6

12.14 Rear lighting, order no 431 400

The lighting system (12.6/1) can be retrofitted and consists of a right and left lighting set, a socket outlet with flex, parking lights to DIN 11030, licence plate bracket and connecting cable.

12.15 Front side lights, order no 158 301

The front side lights (12.6/2) can be retrofitted and consist of 2 lights, right and left, parking lights to DIN 11030 and a plug.

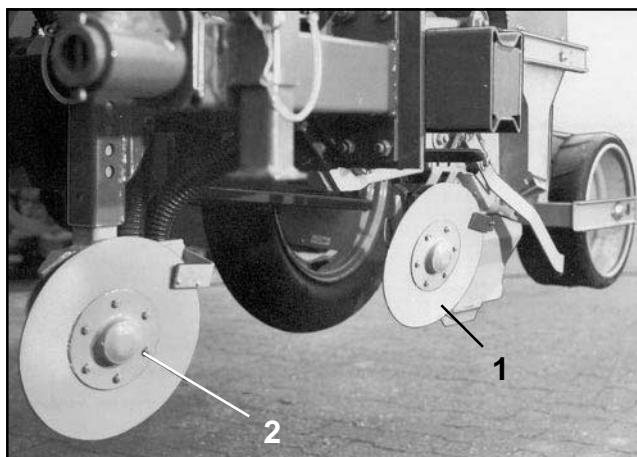


Fig. 12.7

12.16 Mulch seed fittings (per coulters), order no 913 404

For a 4 row machine, 2 right and 2 left fittings are required. When retrofitting, the standard coulters are exchanged for a unit consisting of a coulters, cleaning disc (12.7/1) and cover.

12.17 Fertilizer coulters for mulch seed

For a 4 row machine, 2 right and 2 left fittings are required. When retrofitting, the standard fertilizer coulters are exchanged for a unit consisting of a fertilizer coulters and cleaning disc (12.7/2).

Fertilizer coulters for mulch seed, right, order no 913 405.

Fertilizer coulters for mulch seed, left, order no 913 406.

12.18 Rapid fertilizer evacuation, order no 913 535

The rapid evacuation of the fertilizer hopper is facilitated by two hoses which are attached right and left to the bottom of the fertilizer hopper. With the aid of these hoses any fertilizer remaining in the hopper can be easily evacuated into a collecting basin below.

Operating procedure for evacuating fertilizer hopper from right and left:

- Place a sufficiently large collecting basin below the ED.
- Remove the locking bolt (12.8/1) from the hose retaining plate.
- Pull the hose out sideways out of the retaining plate and hold it directly over the collecting basin until the hopper is empty.
- To empty the fertilizer hopper completely, see Chapter 10.9.
- Push the hose back sideways onto the retaining plate.
- Insert locking bolt in retaining plate.

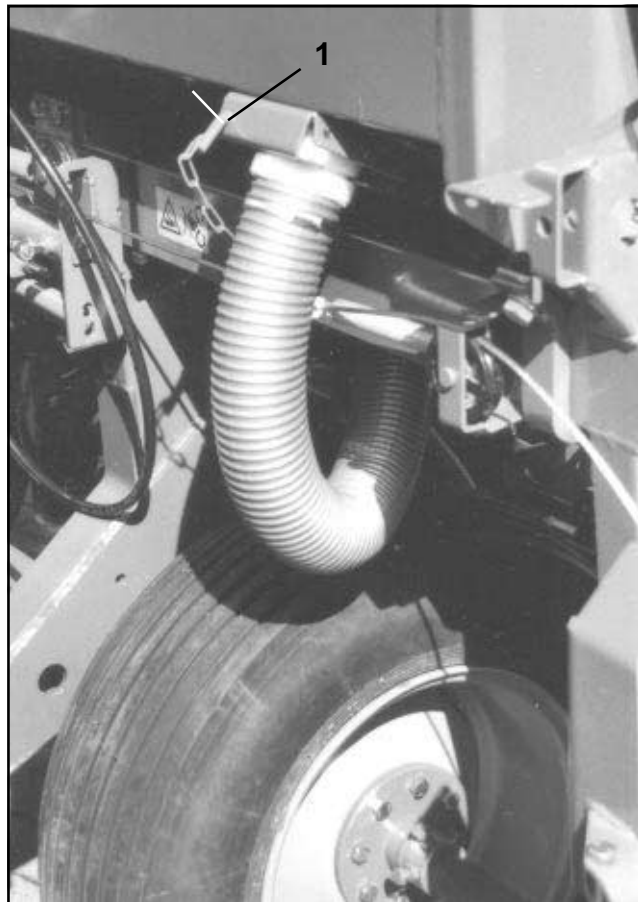


Fig. 12.8

12.19 ED fertilizer filling tube, order no 913 407

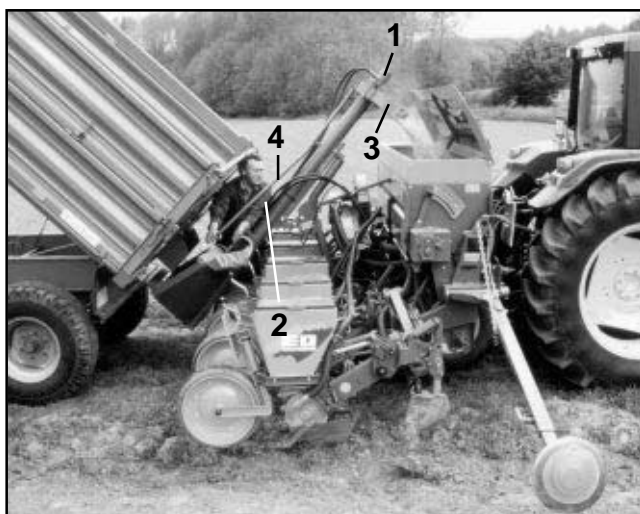


Fig. 12.9

The filling tube is operated by means of the hydraulic motor (12.9/1). For this purpose a double-acting control valve is required on the tractor. The maximum volume of oil of 25 l/min is obtained when the power control valve (12.9/2) is fully open. At a volume of oil of 25 l/min the speed of the tube is 500 rpm. The hydraulic motor speed (tube speed) may be adjusted with the aid of the power control valve.



The hydraulic system is fitted with non-return valves in the hydraulic lines or a single-acting hydraulic connector (zinc coloured) for protection.



For tractors with one oil circuit only, the hydraulic motor and the three-point hydraulic system cannot be run in parallel. Switch off the hydraulic motor to remove from AMAZONE ED.



Tractors fitted with a constant pressure hydraulic system (eg, John Deere) are not designed to operate on engine oil. Follow the manufacturer's recommendations and contact AMAZONEN-WERKE for further information.



The filling height of the hopper can be adjusted by changing the filling tube bracket near the punch profile.

The hydraulic tilting mechanism for the filling tube lowers the tube to the filling position (filling height 50 cm) and raises it into the transport position to obtain maximum ground clearance during sowing operations. The hydraulic motor and the hydraulic tilting mechanism are coupled together.

Operating the filling tube:

- Connect the hydraulic lines to the tractor.
- Open the stop valve.
- Turn the control valve to "lift" - this engages the filling tube which is lowered down to the ground.
- Move backwards, eg, towards a coupling, and lower the ED.
- Fill the tube via the hopper and the in-built screen.
- To ensure even distribution of the fertilizer in the hopper move the swivel head (12.9/3) with the aid of the bar (12.9/4).
- Empty filling tube completely.
- Move control valve to "lower" and raise the filling tube to the transport position with the hydraulic cylinder.
- Close stop valve thereby locking the tilting mechanism.



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