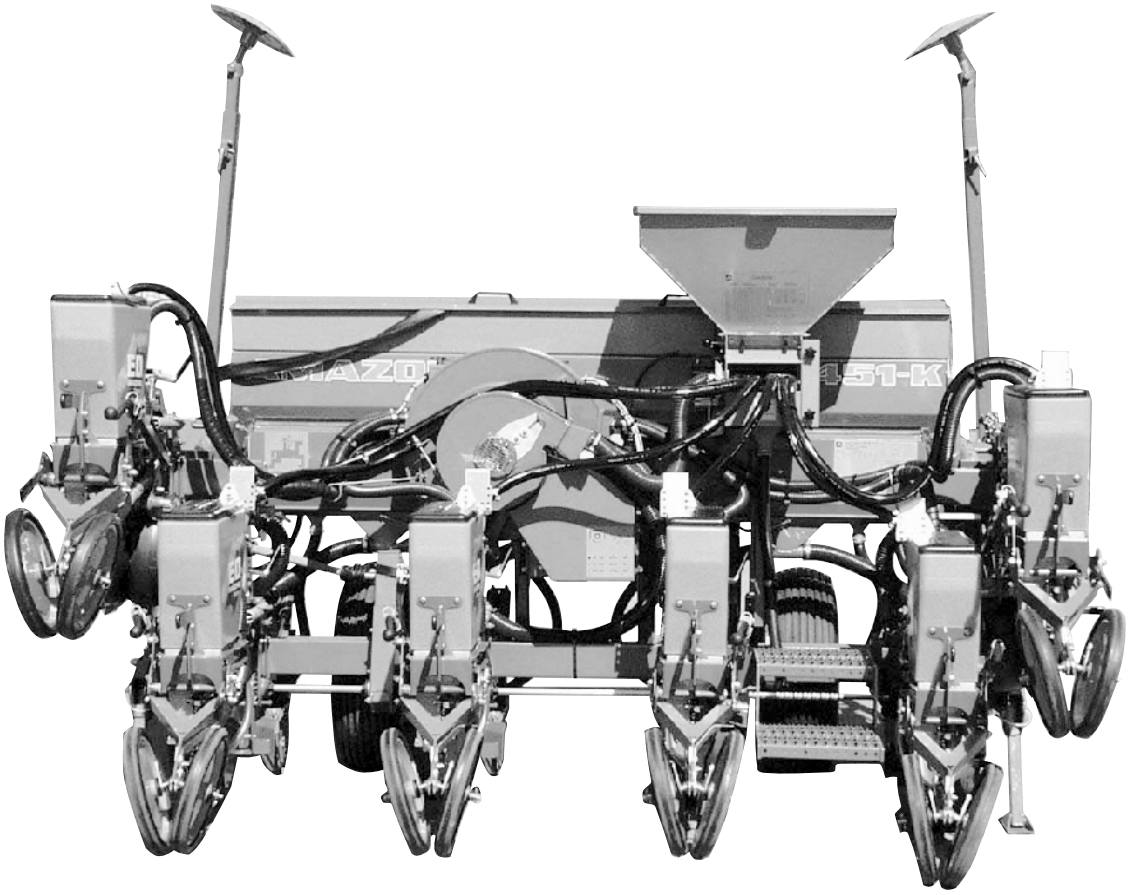
Instruction manual

Pneumatic

Micro granular-spreader PM

for ED 01



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⚠ **Before starting to operate, please carefully read and adhere to this instruction manual and safety!**

AMAZONE

Preface

Dear customer,

The pneumatic micro granular spreaders PM for ED 01 are machines from the comprehensive variety of agricultural machinery of high quality manufactured by AMAZONEN-WERKE, H. Dreyer GmbH & Co. KG.

To make fullest use of your new machine, please carefully read and adhere to this instruction manual before starting any operation.

This instruction manual contains important hints to operate the machine safe, appropriate and economical. Observing these hints helps to avoid danger and to reduce repair costs and failure periods and to increase the reliability and life span of the implement.

Please ensure that this instruction manual has been made available to the operator before starting to operate the machine.

The instruction manual must always be at hand where the machine is operated.

AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

1.0 Details about the machine

1.1 Declined use of the machine

The pneumatic micro granular spreader PM (System Sepeba) is suited for the transport and the application of plant protective agents, e.g. insecticides, herbicides and helicides (slug pellet).

The pneumatic micro granular spreader PM fulfils the requirements according to § 24 of the plant protective legislation as stipulated according to § 30 para. 1 No. 1 letter a by § 4 para. 1 with annex 1 of the plant protective decree from 28th July, 1987.

The pneumatic micro granular spreader PM corresponds to the state of art and has been designed in such a way that

- its dedicated and appropriate use when applying plant protective agents will not have any harmful affects on the health of human beings, animals and on ground water.
- it does not cause any dangerous affects, especially not on the ecosystem.

1.2 Manufacturer

AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

Postfach 51**,** D-49202 Hasbergen-Gaste / Germany

1.3 Conformity declaration

The micro granular spreader (System Sepeba) fulfils the requirements of the EC guide line Machine 89/392/EWG and the additional guide lines.

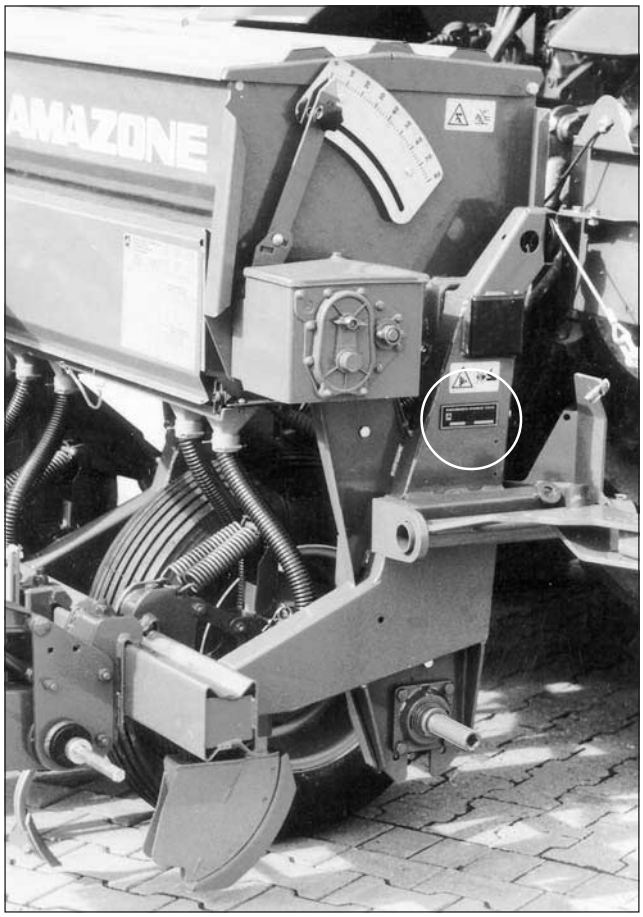
1.4 Details when making enquiries and ordering

When ordering special options and spare parts, please always indicate the type and serial number of your machine..

The safety requirements will only be fulfilled if in case of repair original AMAZONE spare parts will be used. No liability will be accepted by AMAZONE for consequential losses or resulting damage if other than AMAZONE spare parts will be used!

1.5 Identification

Type plate on the machine.



The entire identivication – type plate - is of documentary value and may not be changed or disguised!

1.6 Declined use

The pneumatic micro granular spreader PM (System Sepeba) is a component of the AMAZONE Airplanters ED 301, ED 451 as well as ED 451-k and has exclusively been designed for the usual operation in agriculture. The pneumatic micro granular spreader PM is suited for the application of plant protective agents as insecticides, herbicides and helicides (slug pellets).

Any other use is no longer considered as declined use. The manufacturer does not accept any responsibility for damage resulting from This. Therefore, the operator himself carries the full risk.

Under declined use also the adhering to the manufacturer's prescribed operation-, maintenance- and repair conditions as well as the exclusive use of **original AMAZONE spare parts** is to be understood.

The pneumatic micro granular spreader PM may only be operated, maintained and repaired by such persons who have been made acquainted with it and who have been advised about the dangers.

All applicable accident preventive advise as well as any further generally accepted safety-, working-, medical- and road-traffic rules and any safety advice on the machine's labels should be adhered to.

Any damage resulting from arbitrary changes on the machine rule out the responsibility of the manufacturer.

AMAZONE machines have been manufactured with great care, however, even in case of declined use, certain deviations from the application rate or even a total failure cannot totally be excluded. These deviations may be caused e. g. by:

- Varying composition of the plant protective agent (e. g. grain size distribution, specific density, humidity, geometrical shapes, dressing, sealing).
- Blocking or bridging (e.g. by foreign particles, bag residue, etc.).
- Undulated terrain.
- Wear of wearing parts (e.g. metering unit . . .).
- Damage by external influence.
- Incorrect drive RPM and travelling speed.
- Incorrect setting of the machine (incorrect mounting).

Therefore, check before any use and also during operation your machine for the proper function and sufficient application rate accuracy.

Claims regarding damage not having occured on the pneumatic micro granular spreader PM itself would be rejected. This also applies to damage due to spreading errors. Modifications made to the pneumatic micro granular spreader PM by the owner/user may result in consecutive damage and the manufacturer does not accept liability for such damage.

1.7 Declined equipment of the plant protective implement

The declined equipment of the pneumatic micro granular spreader PM results from the combination of

- Base implement including metering device with drive unit,
- Metering shaft consisting of individual metering wheels, placed side by side,
- Switching off for micro granular spreader,
- granule placement and
- loading board.

Individual types resulting from the combination of these individual component assemblies (modular design) are listed in the combination matrix (para. 6). The individual types fulfil the requirements of the Biological Federal Office.

2.0 Safety

In this instruction manual you will find basic hints which must be adhered to when fitting and operating your machine and when carrying out maintenance work. Please ensure that this instruction manual has been read by the operator before he starts to operate the machine.

Strictly adhere to all safety advice given in this instruction manual.

2.1 Danger when not adhering to the safety advice

Not adhering to the safety advice

- may result in endangering persons, also the environment and the machine itself.
- may result in the loss of any claim for damage.

Not paying attention to the safety advice may cause the following risks:

- Danger for persons by not secured operational areas.
- Failure of important functions of the machine.
- Failure of prescribed measures for maintenance and repair.
- Danger for persons by mechanical or chemical affects.
- Danger to the environment by leaking hydraulic oil.

2.2 Operator qualification

The machine described in this instruction manual may only be operated, maintained and repaired by persons, who are acquainted with it and have been informed of the relevant dangers.

2.3 Symbols in this instruction manual

2.3.1 General danger symbol

The safety advice in this operation manual which may lead to a danger of persons when not being observed, are identified with the general danger symbol (Danger symbol according to DIN 4844-W9).

2.3.2 Attention symbol

The safety advice in this operation manual which may cause dangers for the machine and it's function when not being adhered to, are identified with the attention symbol.

2.3.3 Hint symbol

Hints regarding machine's specific functions, which have to be adhered to for a faultless function of the machine are identified with the hint symbol.

2.4 Warning pictographs and hint symbols on the machine

- The warning pictographs indicate dangerous points on the machine. observing these pictographs means safety to all persons using this machine. The warning pictographs are always used together with the operational safety symbols.
- The hint symbols mark machine's specific points which have to be observed to ensure correct function of the machine.
- Strictly adhere to all warning pictographs and hint symbols!
- Please make these explanations also available for other users!
- Please always keep all warning pictographs and hint signs clean and in redable condition!
  Please ask for replacement of damaged or missing warning signs from your dealer and attach them in the relevant place! (Picture No.: = Order-No.:)
- Fig. 2.1 shows the fixing points for the warning pictographs and hint signs. Please refer to the following pages for relevant explanations.

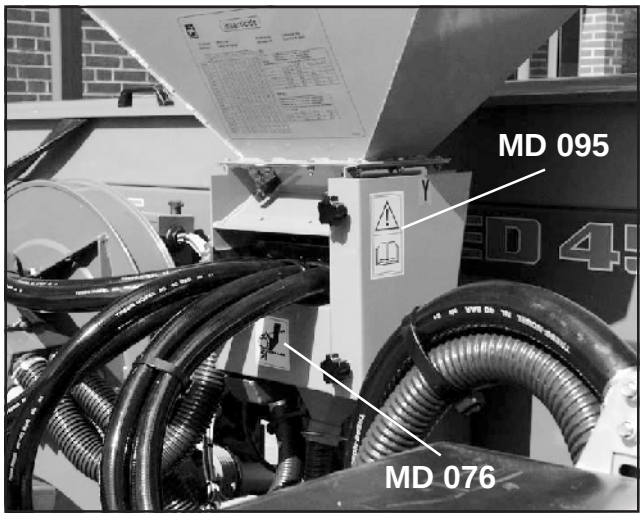
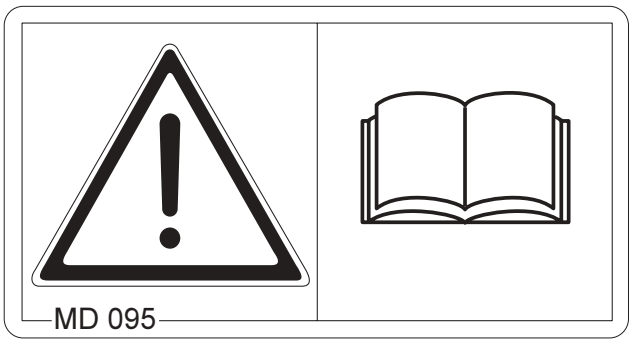


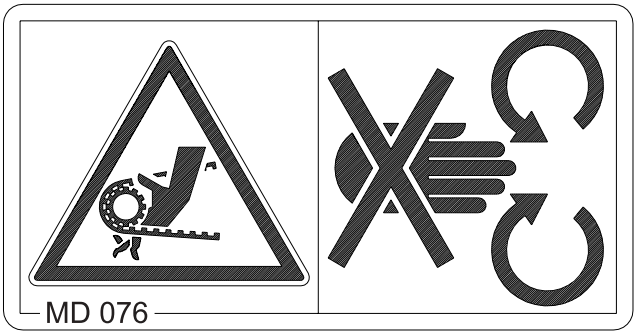
Fig. 2.1



Picture No.: **MD 095**

Explanation:

Before starting operation read and observe instruction manual and safety advice!



Picture No.: **MD 076**

Explanation:

Never open or remove the guards whilst the machine is running.

2.5 Safety conscious operation

Besides the safety advice in this operation manual the national, and generally valid operation safety and accident prevention descriptions of the authorised trade association are binding, especially UVV 3.1, UVV 3.2 and UVV 3.4.

The safety advice indicated on the machine's stickers must be observed.

When travelling on public roads observe the traffic regulations in force in your country.

2.6 Safety advice for the operator

2.6.1 General safety and accident preventive advice

⚠ **Basic principle: Always check traffic and operational safety before putting the machine or the tractor into any operation!**

1. In conjunction with the recommendations in the operator's manual, observe any general safety and accident prevention laws in force!
2. The warning- and hint 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 familiarise 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 passangers 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 not be activated after making sure no-one is standing near the machine!
24. Squeeze and shear points are found on externally activated components (e.g. 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 markers 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 calibration test!
31. Use the loading platform for filling operations only. Passengers are not permitted to travel on the platform during operation!

2.6.2 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!

2.6.3 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 removedl!
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!

2.6.4 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 !
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, e. g. lifting instead of lowering, may cause accidents!
5. Before operating the implement for the first time and then at least once a year the hydraulic hoses must be checked for their operational safe condition by a skilled person. In case of damage and ageing replace the hydraulic hoses. The exchange hoses must correspond to the requirements of the implement manufacturer!
6. Use suitable tools when searching to 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.

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

1. Servicing, repair and cleaning operations together with rectification of operating defect 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 alsways 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))!
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!
13. Check air pressure regularly!
14. Replacement parts must comply with the manufacturer's technical requirements! Therefore, original replacement parts must be used!

2.6.6 Crop protective equipment in agriculture

1. Adhere to the recommendations of the crop agent manufacturer!
   - Protective clothing!
   - Warning hints!
   - Metering, using- and cleaning advice!
2. **Adhere to advice of the crop protection law!**
3. When filling the hopper do not exceed the nominal volume.

When handling crop protective agents always wear the correct protecxtive clothing as e. g. gloves, overall, protective glasses etc.

3.0 Description of product

For the AMAZONE Airplanter ED 01 pneumatic micro granular spreaders PM (3.1/1) (System Sepeba) are available for 4-, 5- and 6-row implements.

The metering unit (3.1/2) meters the plant protective agents from the storage hopper (3.1/3) into the individual injector sluices (3.2/1) which are arranged side by side. Here, the air stream provided by the blower fan (3.1/3) catches the metered crop protective agents and delivers them via hoses (3.2/2) to the specific placement position inside the sowing coulter. Insecticides are metered into the front area of the sowing coulter and helicides into the rear area.

A separation of crop protective agent / air mixture inside the cyclone (3.1/4) prevents the crop protective agents from being blown away from their placement position.

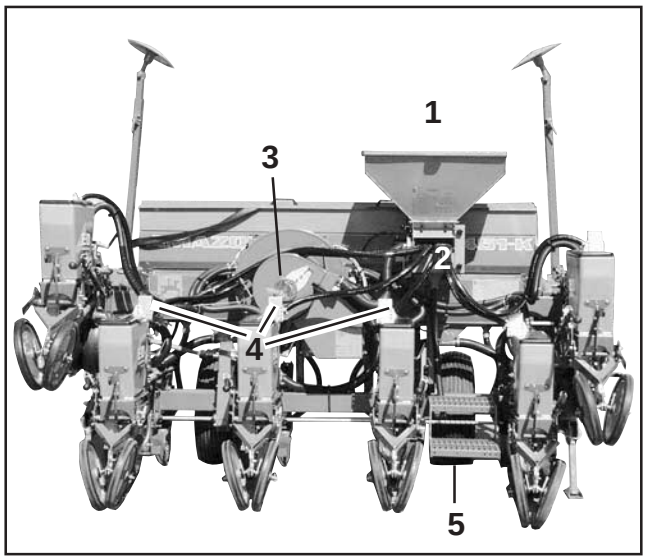


Fig. 3.1

3.1 Crop protective agent metering

The metering unit (3.1/2) consists of individual metering wheels, arranged side by side, and provides the crop protective agent metering. The metering unit consisting of one metering roller (3.3/1) is driven by the running wheel (3.1/5) of the Airplanter via

- the drive unit (3.3/2) and
- the transmission (3.3/5) consisting of exchange chain wheels (3.3/3 and 3.3/4).

The transmission adjusts the ratio for setting the various metering rates by exchanging the change-chains (3.3/3 and 3.3/4).

After slackening the fixing bolt (3.2/3) the metering unit can be pulled off the metering position to the rear and placed into the emptying position (Fig. 3.2) for the hopper.

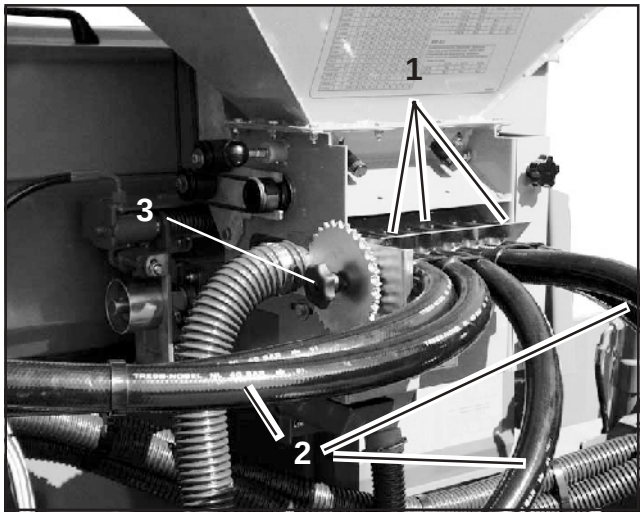


Fig. 3.2

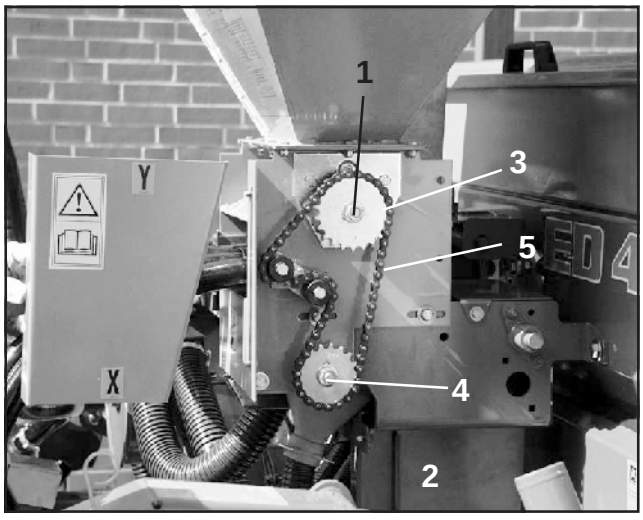


Fig. 3.3

The metering wheels (3.4/1) of the metering unit (3.4/2) for **insecticides** have a **width b = 5 mm** and a **depth t = 3** mm.

The metering wheels of the metering unit for **helicides** have a **width of b = 9 mm** and a **depth of t = 4 mm**.

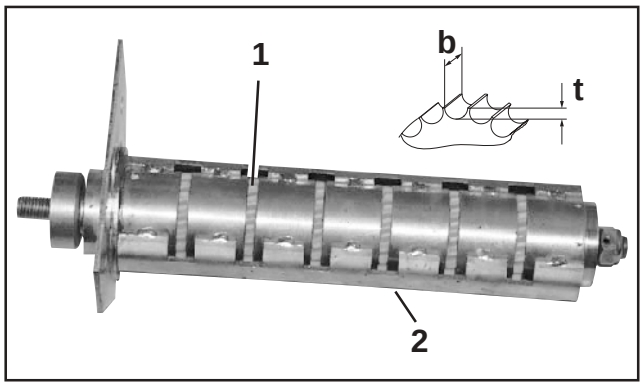


Fig. 3.4

3.2 Switching off the metering unit

The micro granular spreader is equipped with a switching off (3.5/1) for the metering unit. This switching off for the metering unit is coupled with the track marker folding and when the marker folding is actuated the drive of the metering unit is stopped, e. g. on the headlands, however also on any desired place in the field.

That means., 5 m before the Airplanter ED is lifted actuate the track marker folding to stop the drive for the metering unit. **This way, the crop protective metering is stopped and a not permitted crop protective agent placement on the soil surface is prevented.**

If the application of micro granular shall be stopped, i. e. the micro granular metering should be switched off entirely, first fold in both track markers and then shut the block tap (3.6/1) for the metering unit switching off (3.5/1). Then actuate the track marker folding again in the known manner.

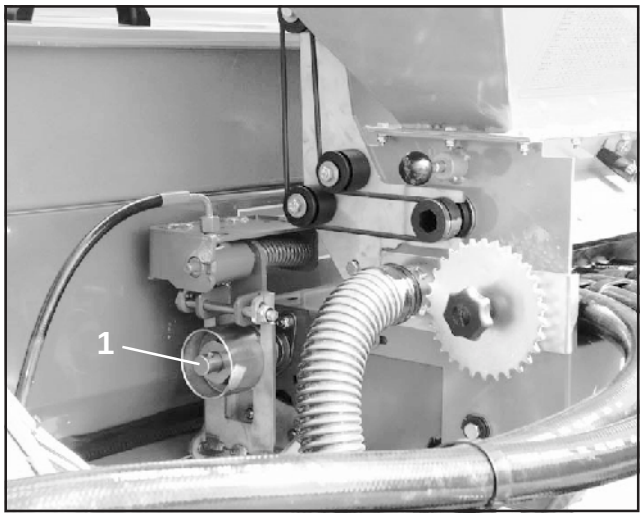


Fig. 3.5

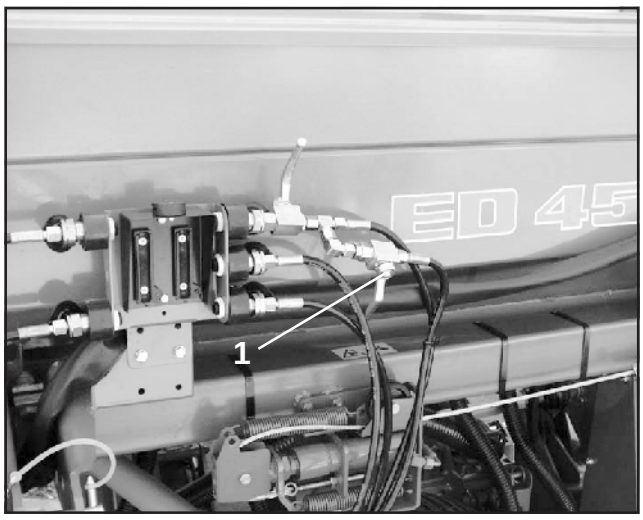


Fig. 3.6

4.0 Putting into operation

Besides the general valid safety advice in this instruction manual, please adhere to the advice of the agent manufacturer and the general precaution measures when handling crop protective agents.

Take the prescribed application rates for crop protective agents from the instructions for the crop protective agent.

Read the crop protective agent instructions and observe the precaution measures mentioned therein!

For a uniform crop protective agent metering ensure a minimum contents of 0.5 litres in the storage hopper.

The setting of the required metering rates for the crop protective agents is carried out according to the relevant setting chart for insecticides, herbicides or helicides and a calibration test.

Precondition for an appropriate application of the crop protective agent is

- **the proper function of the micro granular spreader and**
- **the correct determining and setting of the required application rates for the crop protective agents.**

4.1 Filling

Before filling the hopper mount the Airplanter on to the tractor and place it horizontally on to the ground.

When filling and emptying the storage hopper avoid inhaling the agent dust and a direct contact with your skin (wear protective gloves and protective clothing). Afterwards thoroughly wash your hands and all affected parts of your skin using water and soap.

The accurate determination of the required filling and topping up quantities helps to avoid unnecessary contact the crop protective agent.

Fill the hopper at an aerated place.

All micro granular is susceptible to humidity. When it rains, some rain drops in the hopper are sufficient to

- **choke the supply hoses,**
- **to damage the metering wheels and thus**
- **to alter the required spread rate.**

- Open the micro granular hopper lid.
- Check, whether
  - the metering unit is in metering position (Fig. 4.1) and whether the fixing bolt (4.1/1) has been tightened firmly.
  - the sieve insert (4.2/1) has properly been placed into the hopper.
  - the emptying shutter (4.1/2 or 4.2/2) is closed and bolted in this position.
- Fill the micro granular hopper (4.3/1) from the rear using the loading board (4.3/2).
- Shut the micro granular hopper lid.

The crop protective agent quantity can be read off the two scales (4.2/3). The scales have a graduation of 5 l and indicate the filling quantities from 5 litres up to 50 litres.

Fill the hopper with a maximum of 50 l crop protective agent to avoid a not permissible flow over of crop protective agents, e. g. in case of shaking of the entire implement.

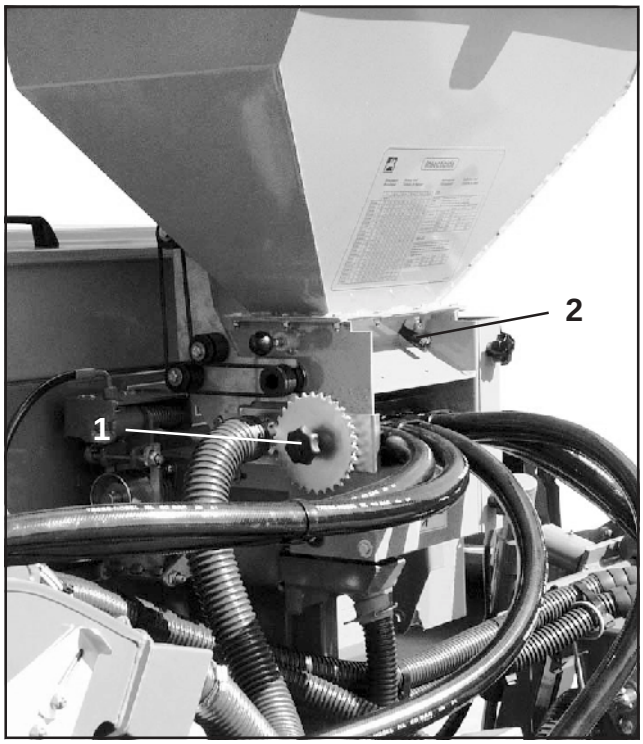


Fig. 4.1

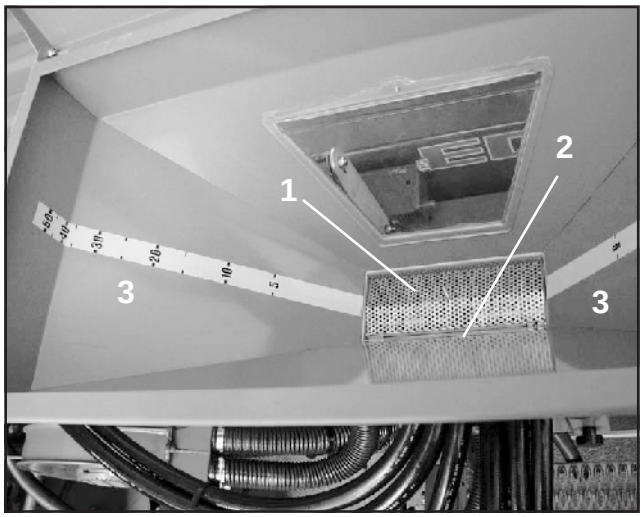


Fig. 4.2

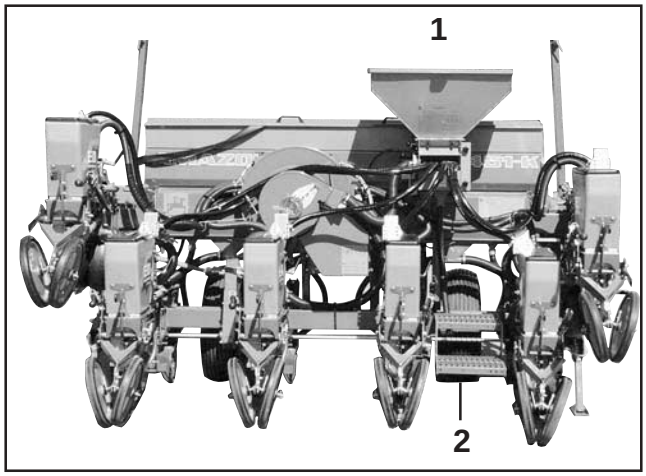


Fig. 4.3

4.2 Setting the application rate

The drive R.P.M. speed of the metering shaft determines the application rate of the crop protective agent.

The drive R.P.M.-speed of the metering shaft again depends on the transmission ratio between the counter shaft input- (4.4/1) and output shaft (4.4/2), i.e. of the chosen chain wheel pairing (x, y).

Take the **required chain wheel pairing (x, y)** from the setting chart. It is determined by the

- crop protective agent used,
- the desired application rate [kg/ha] and
- the prevailing row spacing R [cm] of the sowing units.

The chain wheel pairings indicated in the setting charts are just guide values. The flowing properties of the crop protective agent may change and thus require other chain wheel pairings. Therefore, always carry out a calibration check before starting to operate.

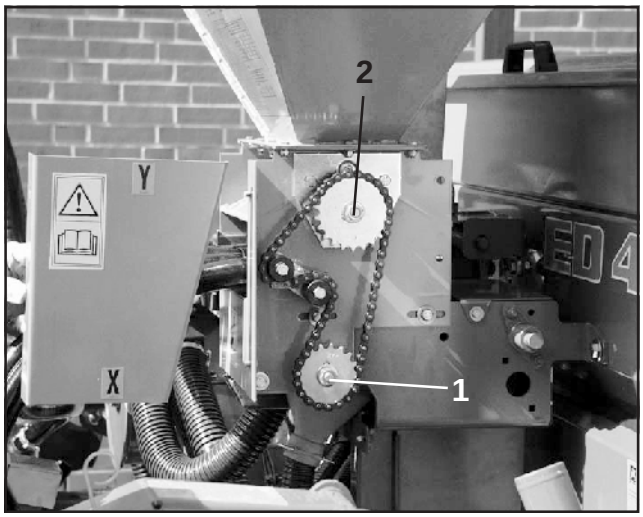


Fig. 4.4

Table 4.1 : Setting chart for Insecticides

Insecticide

Streutabelle / Strooitabel — **Setting chart / Tableau de réglage** (R) — **Abdrehprobe / Afdraaiproef** — **Calibraion test / Contrôle de débit**

	R =	45 cm		50 cm		60 cm		75 cm		80 cm	
	kg/ha	x	y	x	y	x	y	x	y	x	y
→ Carma	7,3	14	30	16	30	14	22	22	28	22	26
Carma	8,7	16	28	14	22	18	24	28	30	28	30
Carma	10	14	22	16	22	14	16	30	28	30	26
Counter	7,3	14	16	28	30	28	24	26	18	28	18
Counter	8,7	30	28	28	24	28	20	28	16	26	14
Counter	10	20	16	28	22	28	18	32	14	34	14
Curater	7,3	14	34	14	30	16	28	14	20	18	24
Curater	8,7	14	28	16	28	16	24	22	26	18	20
Curater	10	20	34	20	30	22	28	18	20	26	28
Deltanet	7,3	14	30	16	30	14	22	22	28	22	26
Deltanet	8,7	16	28	14	22	18	24	28	30	28	30
Dotan	4,4	14	28	16	28	16	24	14	18	18	20
Dotan	5,8	16	24	18	24	16	18	20	18	24	20
Geophos	8,7	22	26	28	30	18	16	28	20	24	16
Oncol	7,3	18	24	22	26	20	20	30	24	24	18
Oncol	8,7	22	24	20	20	22	18	24	16	26	16
Telmik M	7,3	26	28	30	28	20	16	28	18	30	18
Telmik M	11	30	28	24	20	20	14	28	16	30	14
Telmik G	11	24	28	30	28	16	14				
Telmik G	13	30	28	16	14	28	14				
Volaton	7,3	26	28	20	20	22	18	28	18	26	16

ED

Bereifung / Tyres / Banden / pneumatiques	Kurbelumdrehungen am Rad – Arbeitsbreite / Crank turns at the wheel – working widght / Omwentelingen aan het weil – werkbreedte / Nembre 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	159,5	---	---
	1/40 ha	39,8	---	---
10.0/75-15	1/10 ha	147,0	98,0	---
	1/40 ha	36,8	24,5	---
31x15,5x15	1/10 ha	136,0	90,7	64,3
	1/40 ha	34,0	22,7	16,1

RP-ED

Kurbelumdrehungen am Zwischentrieb – Arbeitsbreite / Crank turns at the intermediate drive – working widght / Omwentelingen aan de aamdryvimg– werkbreedte / Nombre de tours de manivelle à l'entraînement intermédiaire – largeur de travail			
	3,0 m	4,0 m	4,5 m
1/10 ha	192	144	128
1/40 ha	48,0	36,0	32,0

919797

Example:

Insecticide: **Carma** — row spacing R: **0,75 m**

desired application rate Q_{ge}: **7,3 kg/ha** — read off chain wheel pairing: **x = 22, y = 28**

Table 4.2 : Setting chart for Helicides

Helicide

Streutabelle
Strooitabel

Setting chart
Tableau de réglage

	R=	45 cm		50 cm		75 cm		80 cm	
	kg/ha	x	y	x	y	x	y	x	y
Mesurol	3 kg					14	28	16	30
Mesurol	5 kg	14	28	14	26	16	20	24	28
Metarex	5 kg	14	30	14	28	18	24	16	20
Metarex	7 kg	14	22	14	20	30	28	20	18
Skipper	5 kg	14	30	14	28	18	24	16	20
Skipper	8 kg	16	22	16	20	24	20	18	14
Helugec	5 kg	14	30	14	30	22	30	14	18
Helugec	8 kg	14	20	14	18	28	24	22	18
Clartex	6 kg	14	28	14	26	18	22	16	18
Clartex	8 kg	20	30	22	30	26	24	28	24

Abdrehprobe
Afdraaiproef

Calibraion test
Contrôle de débit

ED

Bereifung Tyres Banden pneumatiques	Kurbelumdrehungen am Rad – Arbeitsbreite Crank turns at the wheel – working widght Omwentelingen aan het weil – 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	159,5	---	---
	1/40 ha	39,8	---	---
10.0/75-15	1/10 ha	147,0	98,0	---
	1/40 ha	36,8	24,5	---
31x15,5x15	1/10 ha		---	64,3
	1/40 ha		---	16,1

RP-ED

Kurbelumdrehungen am Zwischentrieb – Arbeitsbreite Crank turns at the intermediate drive – working widght Omwentelingen aan de aamdryvimg– werkbreedte Nombre de tours de manivelle à l'entraînement intermédiaire – largeur de travail			
	3,0 m	4,0 m	4,5 m
1/10 ha	192	144	128
1/40 ha	48,0	36,0	32,0

919798

4.2.1 Conversion for application rates not mentioned in the setting charts

Table 4.3: Chain wheel pairings and their relevant ratios

Chain wheel pairing			Ratio i =
chain wheel x	chain wheel y		
28	30	=	0,93
26	28	=	0,93
24	26	=	0,92
22	24	=	0,92
20	22	=	0,91
18	20	=	0,90
16	18	=	0,89
14	16	=	0,88
26	30	=	0,87
24	28	=	0,86
22	26	=	0,85
20	24	=	0,83
18	22	=	0,82
16	20	=	0,80
24	30	=	0,80
22	28	=	0,79
14	18	=	0,78
20	26	=	0,77
18	24	=	0,75
22	30	=	0,73
16	22	=	0,73
20	28	=	0,71
14	20	=	0,70
18	26	=	0,69
16	24	=	0,67
20	30	=	0,67
18	28	=	0,64
14	22	=	0,64
16	26	=	0,62
18	30	=	0,60
14	24	=	0,58
16	28	=	0,57
14	26	=	0,54
16	30	=	0,53
14	28	=	0,50
14	30	=	0,47

Chain wheel pairing			Ratio i =
Chain wheel x	Chain wheel y		
30	28	=	1,07
28	26	=	1,08
26	24	=	1,08
24	22	=	1,09
22	20	=	1,10
20	18	=	1,11
18	16	=	1,13
16	14	=	1,14
30	26	=	1,15
28	24	=	1,17
26	22	=	1,18
24	20	=	1,20
22	18	=	1,22
20	16	=	1,25
30	24	=	1,25
28	22	=	1,27
18	14	=	1,29
26	20	=	1,30
24	18	=	1,33
30	22	=	1,36
22	16	=	1,38
28	20	=	1,40
20	14	=	1,43
26	18	=	1,44
24	16	=	1,50
30	20	=	1,50
28	18	=	1,56
22	14	=	1,57
26	16	=	1,63
30	18	=	1,67
24	14	=	1,71
28	16	=	1,75
26	14	=	1,86
30	16	=	1,88
28	14	=	2,00
30	14	=	2,14

If the desires application rate [kg/ha] has not been mentioned in the setting chart, determine the required chain wheel pairing with the aid of the indicated ratio..

Example:

Insecticide: **Carma**

desired application rate Q_{ge}: **5 kg/ha**

Row spacing: **75 cm**

indicated application rate Q_{an}: **7,3 kg/ha**

read off chain wheel pairing: **x = 22, y = 28**

take the transmission ratio for the indicated chain wheel pairing from table 4.3: **i_{an} = 0,79**

required chain wheel pairing: x = ?, y = ?

required ratio: i_{er} = ?

$$i_{er} = \frac{Q_{ge}}{Q_{an}} \times i_{an}$$

$$i_{er} = \frac{5}{7,3} \times 0,79 = 0,54$$

- In Table 4.2 in column **ratio i** find the value **0,54** and read off here the required chain wheel pairing **x = 14** and **y = 26** .

If the value for the required transmission ratio is not mentioned look for a value next to it

- Create the determined chain wheel pairing on the transmission and check this setting by a calibration test.

4.3 Exchange of chain wheels on the

Example:

fitted chain wheel pairing: **x = 22, y = 28**

required chain wheel pairing: **x = 14, Y = 26**

- Slacken thumb nut (4.4/1) and remove chain guard (4.4/2).
- Slacken bolt (4.5/1) to release the chain tensioner (4.5/2).
- Remove chain (4.5/3).
- Slacken bolts (4.5/4) and/or (4.5/5) and remove chain wheels (4.5/6) and (4.5/7).
- Choose the required chain wheels – for this example chain wheels with 14 and 26 teeth – among the chain wheel set (4.5/8).
- Add the removed chain wheels to the chain wheel set and secure.
- Attach the chain wheel with 14 teeth to the input shaft x, the chain wheel with 26 teeth to the output shaft y and secure.
- Insert the chain.
- Tension the chain with the aid of the chain tensioner.
- Mount chain guard.

As the information for the chain wheel pairings are guide values only, carry out a calibration test

Fig. 4.4

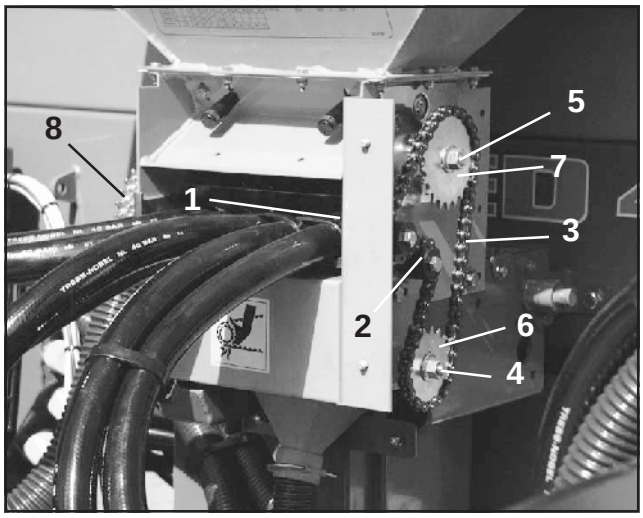


Fig. 4.5

4.4 Calibration test to check the pre-set application rate

When carrying out the calibration test

- the shaft (4.6/1) of the running wheels is turned in clockwise direction with the aid of the calibration crank (4.6/2) and this way the driving in the field is simulated.
- the application rate is collected and it is checked whether the desired and the actual application rate coincide.

The collected application rate corresponds to the application rate spread on an area of 1/10 or 1/40 ha.

We recommend to calibrate on 1/10 ha, as this provides more accurate values.

The calibration test is carried out as follows:

- Raise the implement so that the driving wheels do not touch the ground any more.
- Slacken thumb bolt (4.7/1) and pull out the metering unit (4.7/2) to the rear until its stop.
- Place the collection tray (4.8/1) underneath the outlet (4.8/2).
- Insert the calibration crank into the shaft (4.6/1).

You will find the calibration crank in the retainer (4.6/3) on the left hand side of the machine, seen in driving direction.

- According to the following table carry out a number of crank turns depending on working width and tyre type, e. g. for 4.5 m working width and tyres 100.0/75-15 98 crank turns are required.

Table 4.2: Crank turns for calibration test

Crank turns on the wheel				
Working width		3,0 m	4,5 m	6,0 m
Tyres				
6.00-16	1/10 ha	159,0	---	---
	1/40 ha	39,8	---	---
10.0/75-15	1/10 ha	147,0	98,0	---
	1/40 ha	36,8	24,5	---
31x15,5x15	1/10 ha	136,0	90,7	64,3
	1/40 ha	34,0	22,7	16,1

The values stated in table "crank turns for calibration test" are valid for the working widths 3,0 m, 4,5 m and 6,0 m. For other working widths, please convert the required crank turns.

Fig. 4.6

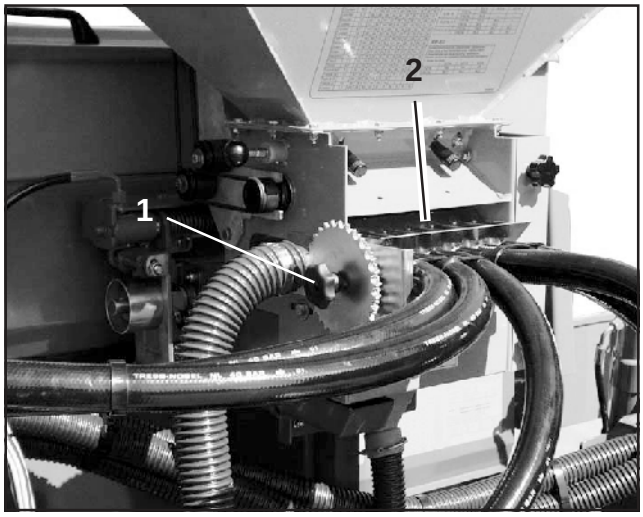


Fig. 4.7

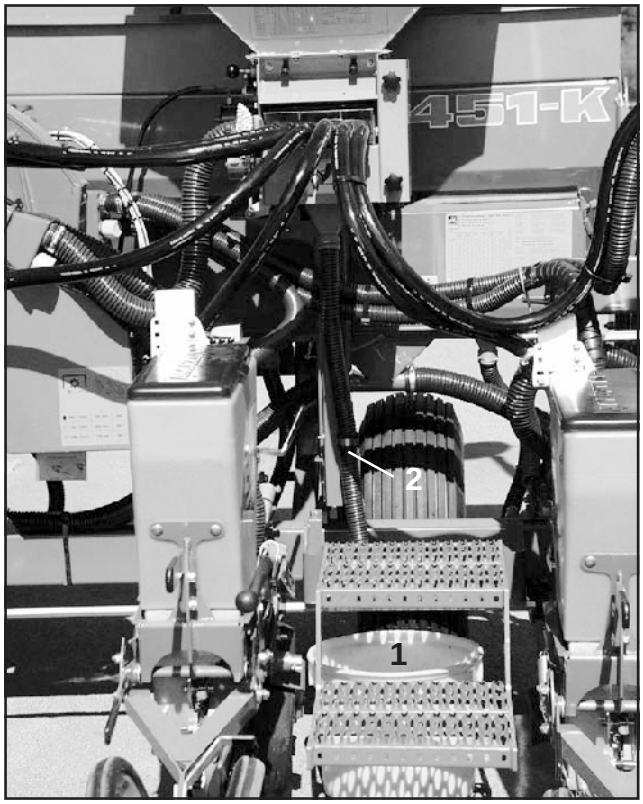


Fig. 4.7

- Weight the collected application rate [kg] and multiply by factor **"10"** (1/10 ha) or **"40"** (1/40). The resulting application rate corresponds to the application rate [kg/ha].
- Pour the collected application rate back into the hopper.
- If the collected and the wanted crop protective agent quantity
  - **coincide**, push in the metering unit again until its stop, tighten thumb nut and start sowing operation.
  - **do not coincide**, calculate a new transmission ratio and repeat the calibration test.

4.4.1 Collected and wanted application rate do not coincide

Example:

Insecticide: **Carma**

Working width 6 x 75 cm: **4,50 m**

desired application rate Q_{ge}: **7,3 kg/ha**

collected application rate Q_{auf}: **6,2 kg/ha**

chosen chain wheel pairing: **x = 22, y = 28**

read off table 4.2 the transmission ratio for the indicated chain wheel pairing: **i_{an} = 0,79**

required chain wheel pairing: x = ?, y = ?

required transmission ratio i_{er} = ?

Determine the new chain wheel pairing as follows:

$$i_{er} = \frac{Q_{ge}}{Q_{auf}} \times i_{an}$$

$$i_{er} = \frac{7,3}{6,2} \times 0,79 = 0,93$$

- Find in table 4.2 in column **transmission ratio i** the value **0,93** and read off here the required chain wheel pairing **x = 28** and **y = 30**.

4.4.2 Conversion of the crank turns for other working widths:

Example:

standard working width: 4,50 m
actual working width : 4,20 m
tyres: 10.0/75-15
crank turns : 98,0 for 1/10 ha

crank. (actual) = crank. (table 4.2) x conversion factor

$$\text{Conversion factor} = \frac{\text{standard working width [m]}}{\text{actual working width [m]}}$$

$$\frac{4,50\ [m]}{4,20\ [m]} = 1,07$$

crank. (actual) = 98,0 x 1,07 = 105

4.4.3 Calibration test for granulates which are not mentioned in the setting charts

Example:

working width: 4,50 m
tyres: 10.0/75-15
crank turns: 98,0 for 1/10 ha
required chain wheel pairing: ?

- Choose on the metering unit a simple transmission ratio, e. g.

  i **= 2**,
  chain wheel pairing x = 14 and y = 28.
- Carry out a calibration test for 1/10 ha.
- Weigh the collected application rate [kg] and multiply by factor **"10"** (1/10 ha). The resulting application rate corresponds to the application rate in [kg/ha].
- Pour the collected application rate back into the hopper.
- Calculate the required transmission ratio for the desired application rate and with this value determine the required chain wheel pairing.

$$i_{er} = \frac{Q_{ge}}{Q_{auf}} \times i_{an}$$

4.5 Special hints for the use of the micro granular

4.5.1 Working on the head lands

5 m before lifting the Airplanter ED actuate the track marker folding and thus switch off the drive for the metering unit. This way, the crop protective metering is stopped and prevents an inadmissible placement of crop protective agent on the soil surface.

If the application of micro granular shall be interrupted, e. g. the micro granular metering is entirely stopped, first fold in both track markers and then shut the block tap (4.9/1) für for the metering unit switching off (4.10/1). Then again actuate the track marker folding in the known way.

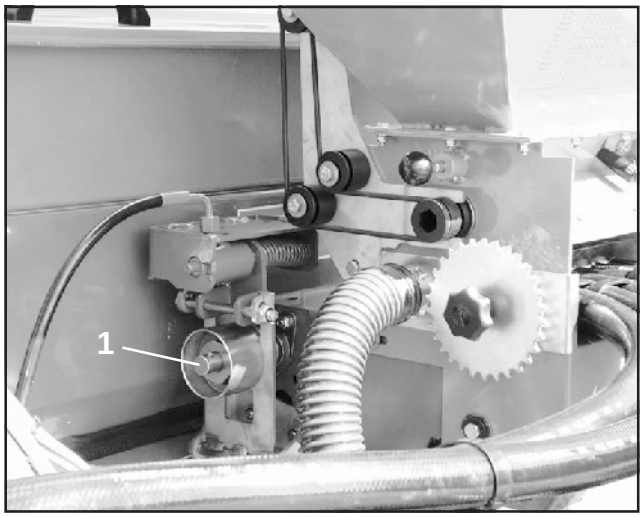


Fig. 4.9

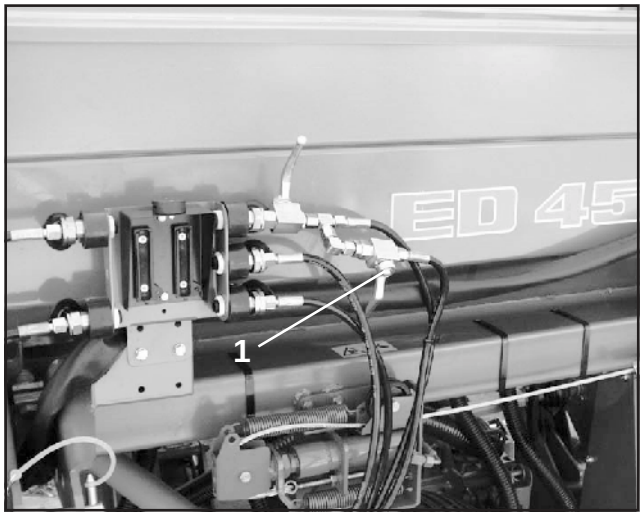


Fig. 4.10

4.5.2 Working width upwards folded track markers on both sides, e. g. last bout on the field's side

- Secure the folded upwards track markers in transport position by using clip pins. Then switch on and off the metering unit by actuating the track marker folding.

Monitore the switching on and off of the metering unit via the drive control (4.11/1). If the metering unit is switched on, the drive control rotates.

Fig. 4.11

4.5.3 Filling level check

The filling level inside the hopper (4.11/3) can be watched via the sight window (4.11/2) from the tractor seat.

5.0 Emptying the hopper

- Slacken thumb nut (5.1/1) and pull out the metering unit (5.1/2) until its stop to the rear n.
- Place the collecting tray (5.2/1) underneath the outlet (5.2/2).
- Slacken fixing bolts (5.1/3), push the emptying shutter upwards and open it this way.

⚠ **When filling and emptying the storage hopper do not inhale the agent's dust and avoid contact with your skin (wear protective gloves and appropriate protective clothing). After application clean your hands and all affected parts of your skin thoroughly with water and soap.**

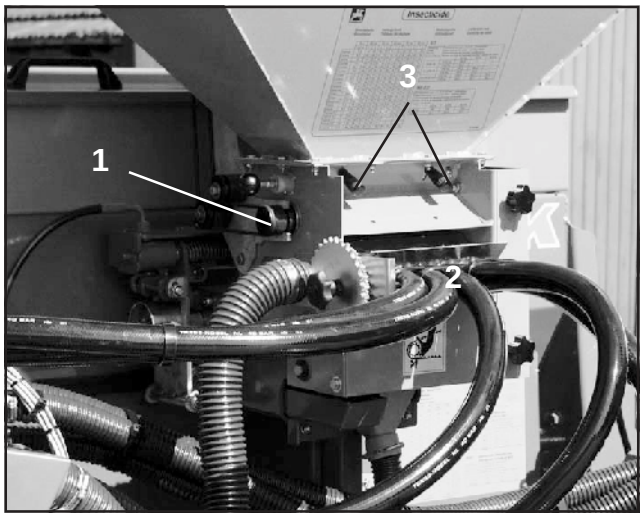


Fig. 5.1

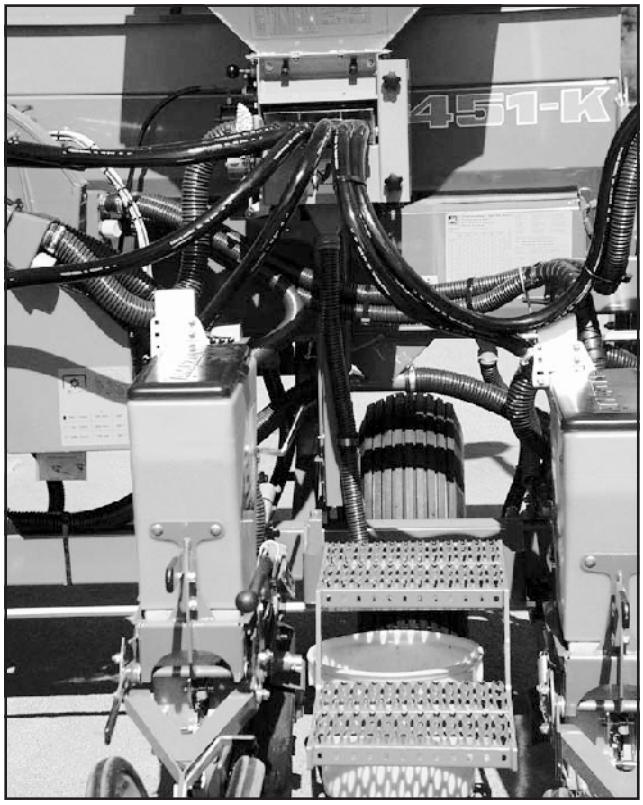


Fig. 5.2

6.0 Combination matrix of pneumatic micrograniular-spreader PM Mounting unit for Amazone Airplanters ED 01

Pneumatic micro granular spreader PM	for Insecticide PM-IN	Pneumatic micro granular spreader PM	for helicides (slug pellets) PM-HL	Hopper	Metering unit				Placement in the soil	
					Type	Number			at the front	at the rear
				50L	metering wheels	4	5	6	of the sowing coulter	of the sowing coulter
PM-IN1/4				X	X	X			X	
PM-IN1/5				X	X		X		X	
PM-IN1/6				X	X			X	X	
		PM-HL1/4		X	X	X				X
		PM-HL1/5		X	X		X			X
		PM-HL1/6		X	X			X		X

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