

OPERATING MANUAL

MONSUN

MC | ME



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INTRODUCTION

Get acquainted with the contents of this operating manual before putting the machine into operation or before its installation. In any case, read the safety instructions in the "Safety" chapter and follow the warning notices in individual chapters. Thus you achieve optimum work results and safe working.

The manufacturer Farnet a.s. Ceska Skalice cannot accept any liability for damage or malfunctions caused by non-compliance with the instructions given in this manual.

All persons who will operate the machine or perform following actions shall read and observe the operating manual:

- operation / including preparation, troubleshooting during operation, maintenance/
- service works and inspections
- transport

With regard to technical innovations we reserve the right to make changes to the technical data stated in this operating manual.

Regulations governing the guarantee

1. Our products are covered with 24 month guarantee or with 800 hectares being sown with the machine, starting on the date of the machine delivery to the user.

The guarantee does not cover:

- spare parts subject to wear,
 - any occurrence of intentional damage,
 - damage caused by unprofessional operation of the machine, or non-compliance with the operating manual,
 - mechanical damage during transport.
2. Claims to warranty repair can only be made if the device has not been modified by the user or another person. In order to acknowledge the warranty, the nameplate on the control unit of electronic device must not be damaged.
3. During the warranty period, the supplier - manufacturer will remove for free the defects and malfunctions caused by defective material, or defective assembly provided the following conditions are met:
- the user of the machine shall notify the supplier - manufacturer in writing of the occurrence and scope of defects and malfunctions. Based on the written notification the supplier - manufacturer shall provide the defect removal.
4. When claiming the warranty it is necessary to submit the confirmed warranty card and the serial number on the warranty card must agree with the serial number of the seed drill.
5. The warranty period is prolonged with the repair duration.

Regular training

Instruct workers regularly, or at least once per year, on basic rules of conduct to handle the machine in maximum safety.

Training

A professional dealer will train you in operation, safe use and basic machine service. Commissioning the machine without training is prohibited!

Symbols

To make the text more comprehensible, various symbols are used in it, such as:

- ▶ A triangle indicates actions that need to be performed.
- An arrow points to another place in the text.
- + A plus sign indicates that this is a special accessory that is not included in the standard version.

Pictograms

In addition to standard symbols the text shows pictograms that can help you find places in the text or they otherwise specify the text.



The warning triangle alerts to safety instructions, non-observance of which may cause serious effects as there is a risk of middle, heavy or fatal injury. The chapter Safety also provides safety instructions that cannot be assigned to any other activity, but that safely and consciously support actions in various situations.



This symbol includes instructions regarding the machine, non-observance of which can cause serious defects in function or damage to the machine.



This symbol shows tips and warnings for operators.



This symbol shows tips for assembly or service operations.

Basic equipment of operator and setting of the machine

The basic equipment of the seed drill includes:

- bag for seed capturing,
- key for pressure setting,
- key of the dispenser,
- light connecting cable,
- catalogue of spare parts,
- operating manual.

SAFETY

Following safety instructions are valid for all chapters in the operating manual.

Follow the safety instructions in the interest of:

- your safety,
- safety of others,
- safety of machines.

When using agricultural machines many risky situations can occur if they are mishandled. For this reasons always work carefully with the machine and never under time pressure.

As an employer, regularly inform the persons who work with the machine on these safety regulations in accordance with legal regulations.

Warning labels

Warning labels are fixed on the machine to ensure your safety. The labels must not be removed. If the labels become illegible or they peel off, you can order new labels and stick them on necessary places.



Read and follow the operating manual.

Commissioning is only allowed if the operating manual have been read before it. This is namely valid for safety instructions.



Transport of persons on the machine is forbidden.

It is forbidden to transport persons or objects on the machine. Transport on the machine is life-threatening and strictly forbidden.



Do not remove protective equipment.

Never use the machine without protective equipment. Do not dismantle nor open the protective equipment.



Do not drive on the road with filled seed or fertilizer hopper.

It is forbidden to drive on the road with filled hopper. Such driving can cause an accident.



Beware of escaping hydraulic fluid.

Following relevant safety instructions in the operating manual.



Danger of entrapment

Gaps between machine parts can shrink. Avoid standing next to tilting machine parts.



Tightening of screws

All screw connections must be checked after the first operating hours and tightened if necessary. Vibrations can loosen the connections.



Do not stand within the reach of machine parts.

Take extra care when the machine folds and unfolds. There is a risk of injury from folding machine parts near the machine.



Do not lift the seed drill using mounting holes.

Mounting holes shall not be used for lifting the seed drill.

Connection

Increased risk of injury

There is an increased risk of injury when connecting the machine. For this reason it is necessary to:

- secure the tractor against its movement,
- to match the category of machine and tractor,
- that nobody is present between the tractor and the machine,
- control the three-point hitch carefully and slowly.

Failure to do so can result in serious or fatal incident.

Connect electric connections after the assembly.

When mounting the lights, the power supply must not be connected to the tractor. There is a risk of short circuit and damage to electronics.

Connect the hydraulics only when it is not under pressure.

Connect hydraulic hoses to the hydraulics of the tractor only when the hydraulic system of the tractor and the machine is not under pressure. Failure to observe this warning can cause unpredictable movements of the machine.

High pressure in the hydraulic system

The hydraulic system is under high pressure. Regularly check all pipes, hoses and connections for any leakage or damage. When checking the leakage use only suitable means. Immediately repair any damage. Escaping oil can cause a fire and has adverse environmental effects. In case of injury immediately seek the doctor.

Colour marking of hydraulic hoses

To avoid the confusion of hydraulic hoses, they are marked in colours. Erroneously connected hoses can cause unpredictable machine movements.

Driving on the road

Take care of the prescribed technical condition.

Provided the machine is used on public roads, it must observe valid regulations, as for example:

- mounting of lights, warning and protective equipment,
- observance of maximum allowed dimensions and weights,

The vehicle's driver and owner are responsible for the non-compliance with road traffic rules.

Closing the ball valves

Provided the hydraulic system is equipped with safety ball valves, they need to be closed when driving. Failure to observe this warning can cause an injury risk and a spontaneous movement of the machine or its parts.

Change of properties when driving and braking

Due to the connection of the machine the properties change when driving and braking. When turning it is necessary to regard the high center of gravity and the inertial force of the machine. Improper driving style can cause accidents.

Drive at reasonable speed.

Always adapt your driving speed to the condition of road. When driving too fast on an unsuitable road surface there is a risk of strong forces and overloading the machine. Failure to adapt the driving speed can cause damage to the machine and accidents.

Commissioning

Initial commissioning after training

The initial commissioning can be made only after training by sales employees, facility representatives or employees of the manufacturer. When commissioning without training any incorrect control of the machine can cause a damage to the machine or an accident.

Take care of the faultless technical condition.

Operate the machine only when it is in faultless technical condition. Before its use check all important parts and replace defective parts that can cause a damage or an injury.

Do not remove protective equipment.

Protective equipment must not be removed or disabled. Before the use check all protective equipment. Unprotected parts can cause serious or fatal injuries.

Checking the pressure in tires

Regularly check the air pressure in tires. Too high or too low pressure reduces the lifetime of tires. This can also cause undesirable work results and accidents when driving on the road.

Transport of persons is forbidden.

It is forbidden to transport persons or objects on the machine. Transport on the machine is life-threatening and strictly forbidden.

Machine height and street power lines

Provided the height of 4,00 m is exceeded in folding or unfolding, never unfold the machine under power lines. This can cause a contact of the machine and power lines. If this happen:

- never leave the cab of the tractor.
- do not touch metal parts of the tractor.
- do not create conductive connections to earth.

- warn persons not to approach the machine and the tractor.
- wait for the arrival of professional rescue team.

Never stand on the machine under power lines. The voltage can be transferred even without direct contact.

Checking the surroundings

Check the nearest surroundings of the machine before starting, unfolding and operation. Always pay attention to have a sufficient view. Do not drive the machine until there are no objects or people in its surroundings. Using the machine without checking the surroundings can cause accidents.

Tightening bolts and nuts

Regularly check tightening of bolts and nuts. Due to the use of the machine, the individual bolts may loosen unnoticed. Tighten bolts and nuts as needed.

Failure procedure

In case of a failure of a part of the machine, immediately stop and secure the machine. Immediately remove the failure or call the service. Continued use of the machine can cause its serious damage or accidents.

Disconnecting the machine

Increased risk of injury

There is an increased risk of injury when disconnecting the machine.

In order to avoid risky situations:

- secure the tractor against any movement,
- never stand between the tractor and the machine when disconnecting,
- control the three-point lifting device slowly and carefully.
- pay attention to flat and safe location of the machine,
- disconnect hydraulic hoses only when the hydraulic system is without any pressure.

Failure to observe these rules can result in serious or fatal incident.

Servicing and maintenance

Observe service and maintenance intervals

Observe prescribed check intervals as stated in the operating manual. Failure to do so can cause a damage to the machine, wrong work quality or accident.

Use original spare parts only.

Many parts have specific properties which are important for the machine stability and function. Only spare parts and accessories supplied by the manufacturer are tested and approved. Other products can impair the machine function or affect its safety. When using other than original spare parts the product warranty and responsibility of the manufacturer expires.

For all works related to the maintenance:

- switch off the input shaft of tractor,
- release the pressure from the hydraulic system,
- if possible, disconnect the tractor,
- pay attention to safe site of the machine, support it when needed,
- when leaving the machine, do not stand on the machine but use safe steps,
- secure the machine against movement,

- in no case touch the running V-belt.

Disconnection of the power supply

Before any work with electric equipment the power supply disconnection is necessary. Working on live equipment can cause an injury and damage the machine.

Replacement of hydraulic hoses

Hydraulic hoses shall be replaced every three years as they age without visible external damage. Damaged hoses can cause serious or fatal injuries.

Cleaning with high-pressure cleaner

The machine can be cleaned with water or vapor jet. Clean bearings, fans, signal distributors, plastic parts and hydraulic hoses under only light pressure to avoid their damage.

Disconnect the accumulator and the alternator before welding

Disconnect the accumulator and the alternator before electric welding. Thus any damage to electronic device can be avoided.

Tightening of bolt joints

After service and maintenance work tighten the loosened screws again. Untightened screw joints can cause injuries and material damage.

Checking the pressure in tires

The pressure in tires shall be regularly checked.

- 7.50x16 8PR - 4,5 bar
- 23x8.50-12 6PR - 3,5 bar
- 31x15.5-15 8PR- 3,1 bar

Other regulations

Compliance with regulations

In addition to these safety instructions follow also following regulations:

- *safety regulations,*
- *general rules of safety, health protection in work and road traffic,*
- *instructions in this operating manual,*
- *regulation for operation, maintenance and service.*

MACHINE DESCRIPTION AND TECHNICAL PARAMETERS

This chapter shows general information on all types of seed drills. It contains description of the operating mode, scope of their use and technical parameters.

Machine characteristics

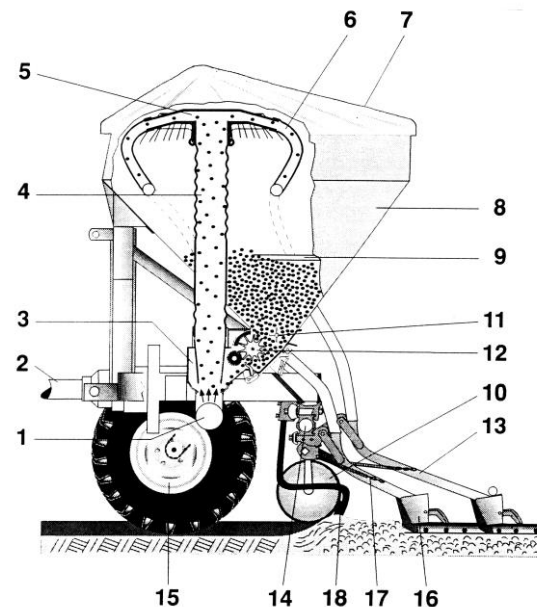
Pneumatic seed drills PNEUSEJ are primarily determined for dense-sowing cereals. Sowing machinery enables sowing of all seeds of seed size up to 10 mm, as for example:

- wheat, barley, rye, oats, corn, soybeans, beans, peas, beans, rape, grass, vicia.

Pneumatic sowing machines are equipped with DXD RC II sowing which enables sowing even with higher volume of plant residues.

Description of the machine

1. knee with injector
2. output shaft of tractor
3. diffusor
4. stack
5. distributor
6. seed tube
7. unfolding hopper tarpaulin
8. hopper
9. sieve
10. marker
11. fluffer shaft
12. dosing device
13. long sowing section
14. sowing sections beam
15. driving wheel
16. short sowing section
17. sowing section spring
18. loosener



Function of the seed drill

The dosing device can be driven by a wheel or an electric motor. Depending on the dosage setting of the dosing device a specific quantity of seeds is dosed from the hopper to the diffusor. Air flow from the fan takes seeds towards the distributor and then to sowing sections.

Seed drills can be used with all standard tractors/based on the type of seed drill from 50 kW/. Tractors shall be equipped with a tow bar of the three-point hitch or salvage triangle. The mechanic drive of fan shall be equipped with the protective cover of output shaft 540/ 1000 rpm.

The travel speed of the seed drill shall be within 5-12 km/hr depending on the surface, type of soil and required sowing accuracy.

Technical parameters

| Model | MC | | | ME | | |
|---|----------------------|----------------------|----------------------|---------|------------------|---------|
| Working width (m) | 3 | 4 | 4,5 | 5 | 6 | 8 |
| Number of rows/width of row (cm) | 20/15 24/12,5 | 32/12,5 | 30/15 36/12,5 | 40/12,5 | 40/15 48/12,5 | 64/12,5 |
| Dimensions in transport position (m): | | | | | | |
| 1. Width | 3,0 | 4,15 | 4,65 | 3,0 | 3,0 | 3,0 |
| 2. Length | 1,6 | 1,6 | 1,6 | 3,5 | 3,5 | 3,5 |
| 3. Height | 2,0 | 2,0 | 2,0 | 2,8 | 2,8 | 3,3 |
| Dimensions in working position (m): | | | | | | |
| 4. Width | 3,0 | 4,15 | 4,65 | 5,0 | 6,0 | 8,0 |
| 5. Length | 1,9 | 1,9 | 1,9 | 2,6 | 2,6 | 2,6 |
| 6. Height | 2,2 | 2,2 | 2,2 | 2,7 | 2,7 | 2,7 |
| Working speed (km/hr) | 5-12 | 5-12 | 5-12 | 5-12 | 5-12 | 5-12 |
| Travel speed (km/hr) | 10 | 10 | 10 | 10 | 10 | 10 |
| Weight without seeds from (kg) (without accessories) | 1185 | 1290 | 1355 | 2070 | 2200 | 2615 |
| Volume of hoppers (l) | 1150 1300 1600 | 1150 1300 1600 | 1150 1300 1600 | 2000 | 2000 | 2000 |
| Slope accessibility (°) | 11 | 11 | 11 | 11 | 11 | 11 |
| Traction machine power (HP) | 120 | 160 | 180 | 100 | 120 | 160 |

ASSEMBLY

Tractor coupling



Increased risk of injury

When connecting there is a higher risk of injury, thus never stand between the tractor and the machine. Check categories of connecting device of the machine and the tractor, the categories shall match.

- ▶ Slide suitable bolls of lower arm on the lower tow arms and secure with locks.
- ▶ Set both lower arms at the same height.



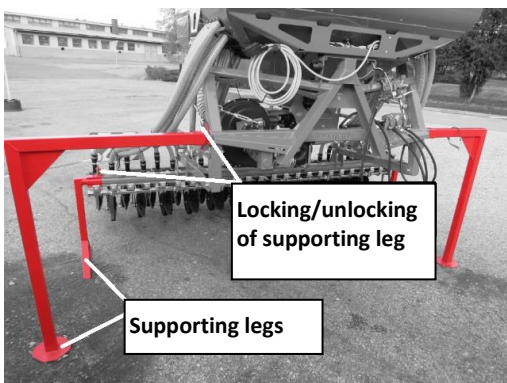
Pay attention to locking of lower arm locks to avoid releasing of the seed drill from the tractor arm.

- ▶ Connect the machine to the tractor, pay attention to locking of lower arm locks.
- ▶ Connect the upper arm of the three-point hitch.
- ▶ Set the lower arms so that there is a small gap to the right and to the left for the machine.
- ▶ Lift the machine up to its transport position and dismount supporting legs.

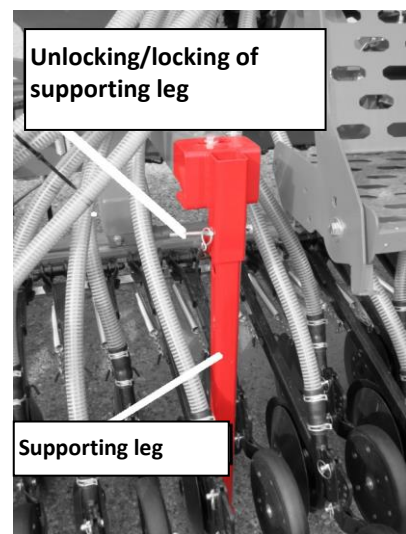


After lifting it is necessary to remove the supporting legs.

Parking legs of seed drills



Parking legs MC



Parking legs ME

- ▶ Connect the cardan to the fan drive on the output shaft of tractor.

The fan in seed drills MONSUN is driven by the cardan of output shaft directly from the tractor or by a hydraulic drive.



Connect the cardan only with switched-off motor of the tractor.

- ▶ Set revolutions of the output shaft at 540 rpm or 1 000 rpm based on accessories of the seed drill. With such revolutions the fan should achieve its optimum turns. Change the fan revolutions by increasing or decreasing turns of the output shaft.

Connections

Electric system

- ▶ Connect the connector for machine lights.
- ▶ Connect the connector for additional electric equipment.

Hydraulic system

- ▶ Connect the hydraulic hoses to the tractor.
→chapter *Hydraulic system*.

HYDRAULIC SYSTEM



Before connecting, check all hydraulic hoses and their tight connection in quick couplings. Connect the hydraulics only when it is not under pressure. The hydraulic system under pressure can cause unexpected movements of the machine.



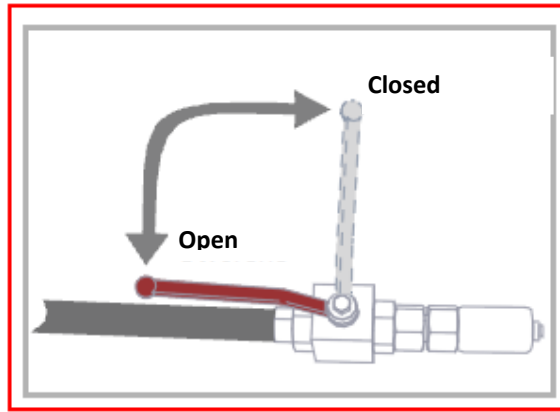
The hydraulic circuit is filled with Shell Spirax 54 TXM oil.



Do not mix various types of oils. When using the machine with various tractors an inadmissible mixing of two different oils can occur. Such mixture can seriously damage the tractor parts. Use only allowed type of oil.

Connectors of hydraulic hoses are marked in colours. Always connect hoses and a hydraulic circuit of the same colour. Colour marking of hydraulic hoses:

- **Blue**, - Control of markers.
- **Yellow** - Control of sowing arm folding. The circuit is equipped with a ball valve which needs to be open.
- **Red** - Fan hydraulic drive



Fan hydraulic drive



Hydraulic drive of the fan shall be connected to the preferentially supplied control valve of the tractor. This minimizes variations in fan revolutions when lifting and putting down the machine, or with different hydraulic load.

The oil flow goes to the three-way valve for regulation of the flow and it adjusted based on the hydraulic motor revolutions. Fan revolutions shall be checked by the terminal in the tractor.

Technical parameters of the fan hydraulic motor

| | Values |
|--|--------|
| Absorption capacity of the hydraulic motor (ccm) | 8 |
| Operational pressure in supply (bar) | 150 |
| Maximum pressure in reverse flow (bar) | 5 |
| Oil flow (l/min) | 43 |
| Maximum fan revolutions (rpm) | 5000 |

Pressureless return branch

Pressureless return branch reduces the risk of hydraulic motor damage. It is important to choose the correct place of connection of the hydraulic motor to the hydraulic system of the tractor, because:

- the returning oil shall flow through the hydraulic filter,
- **returning oil shall not flow through control valves because the pressure in the return branch would increase too much.**

Operation



Only set the revolutions when the fan is stopped. Setting with running fan can cause a damage to the machine.

Maximum allowed pressure in the return branch is maximum 10 bar.

If the pressure is too high, the shaft sealing would be pushed out.



The fan revolutions shall not exceed 5 000 rpm. The fan can be damaged with higher revolutions.

Control valve of hydraulic drive

A three-way control valve is found in the machine. Using the control valve you can set the oil flow and thus revolutions of the fan. Check correct revolutions with electronics.



Check hydraulic couplings.

Before commissioning check connections of hydraulic hoses and hydraulic hoses themselves. Loosened bolt joints and damaged hoses can cause a leakage of pressurised hot oil. This can cause serious injuries.

Use with various tractors

Setting of the control valve for tractors with flow regulation

- ▶ Fully open the three-way valve for the flow regulation of the seed drill, this means that the adjusting screw shall be fully screwed and the screw fully unscrewed (picture of adjusting three-way/two-way valve of the hydraulic motor).
- ▶ Activate the tractor control unit.
- ▶ Set required revolutions using the flow regulator on the tractor.

Setting of the control valve for tractors without flow regulation

- ▶ set required revolutions using the three-way adjusting screw.

Tractors without flow adjusting valve, with adjusting pump

The three-way valve for the flow regulation shall be set to the two-way valve for the flow regulation. Such setting is made as follows:

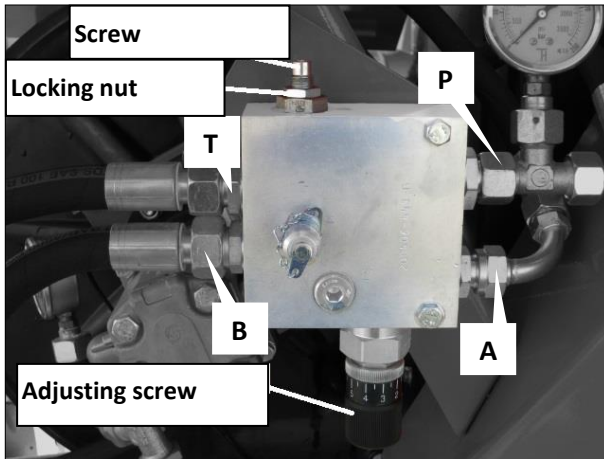
- ▶ Release the locking nut.
- ▶ Fully screw the screw. By screwing the screw the valve is set to the two-way valve for the flow regulation.
- ▶ Tighten the locking nut back.
- ▶ Set the required revolutions by the adjusting screw on the two-way valve for the flow regulation.



The change of setting from the three-way valve to the two-way valve for the flow regulation or vice versa shall be made with stopped valve. Setting with running fan can cause a damage to the machine.



The fan hydraulic drive is tested by the manufacturer on the hydraulic aggregate.



- A- Supply to the hydraulic motor
- B- Hydraulic motor outlet
- P- Supply
- T- Outlet

Adjusting three-way/two-way valve of the hydraulic motor

Markers operating



When working pay attention to persons around the marker. Nobody can be near or under the marker when it is folded or unfolded.



The marker exceeds the working width of the machine by a half. Take extra care to obstacles and persons in the surroundings.

→ setting of markers length Chapter *Preparation on the field* → *Setting of marker*

The marker is used to mark the track of following run. Markers are hydraulically controlled and are alternately switched using the pressure and the switch over valve.

Unfolding the marker:

- ▶ Check that the hydraulic hoses couplings are tight and that the machine is unfolded in working position,
- ▶ activate the marker using the lever in the tractor.

Then the marker unfolds.

Folding the marker:

- ▶ Activate the marker by pulling the lever in the opposite direction then for unfolding.

Then the marker shall fold.

Repeating this procedure the second marker shall be activated. Thus both markers are alternately controlled using one hydraulic circuit.



The pressure switch over valve is based on an alternate switching of two outlets using the reverse pressure. It is not necessary to make the whole piston stroke for switching over which fits for by-passing of obstacles.

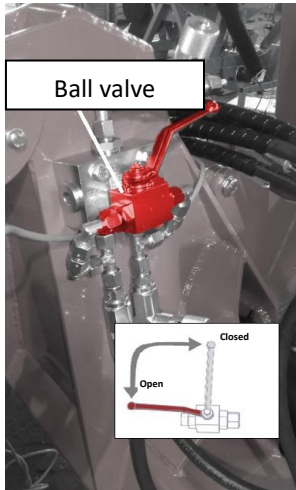
Activating of both markers

Depending on the situation both markers can be simultaneously activated. At the switch over valve there is a ball valve connecting both markers.

It needs to be open to active both markers. On the contrary, it needs to be closed to alternately use the markers.

Turn the ball valve to the “open” position.

- ▶ You control both markers at the same time.



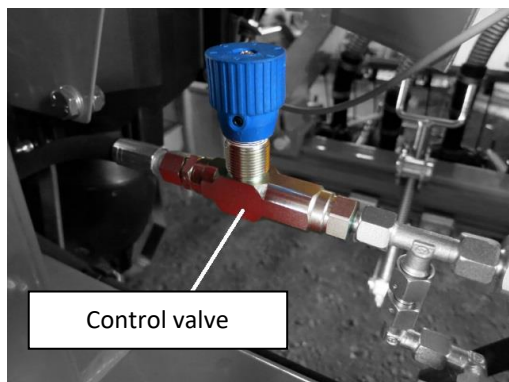
The ball valve controls both markers at the same time.

Speed regulation of markers unfolding

A control valve is found in the hydraulic system of markers. This valve sets the speed of markers folding and unfolding.

In order to reduce the speed of unfolding:

- ▶ partially tighten the control valve,
- ▶ check the speed of marker's operation.



Control valve to set the folding speed

ELECTRONIC CONTROL

All information on the electronic control is found in particular operating manuals.

PREPARATION FOR SOWING

This chapter presents the general information on using your seed drill, preparing for sowing and setting of the seed drill.

Dispenser

The dispenser sets:

- Value of setting
- Micro setting (ON or OFF).
- Switch (for normal or fine seeds).

In order to set the correct value, define the normal or the fine seeds:

- Normal seeds
 - seed size 4 to 10 mm,
 - for example: wheat, barley, corn, peas, oats, beans, triticale, rye, soy.
- Fine seeds
 - seed size 1,5 to 4 mm.
 - for example: grass, rape, clover, facelia.

Table of seeds

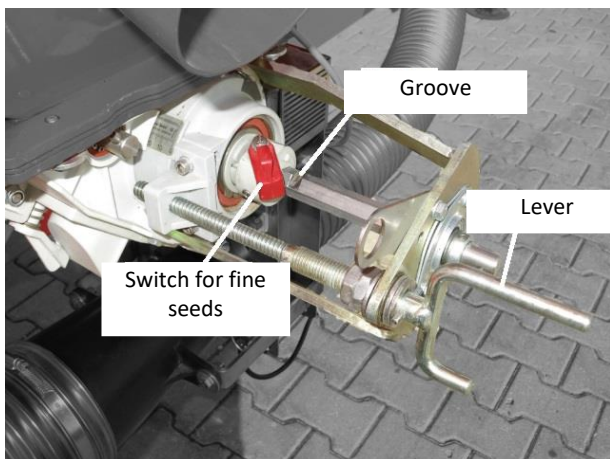
Following table shows values for normal and fine seeds. Values in the table are only informative as the volume weight and size of seeds often vary. The sowing test gives you the correct setting of the value. For sowing of the small quantity of seeds use the micro-dosing system.

| REGULATING CHART | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|---------------|---------|---------------|-----------|--------------|------------|-------------|--------------|---------------|-------------|--|--|---------------------|-------------|------------|--|--|-------------|-------|------|--|--|
| OSIVO SEED | | PŠENICA WHEAT | RAZ RYE | JÄCMEN BARLEY | OVOS OATS | FAZULA BEANS | HRACH PEAS | BOB LUPINES | VIKA VETCHES | KUKURICA CORN | TRAVA GRASS | OSIVO SEED | REPKA RAPE | ĎATELINA RED CLOVER | TRAVA GRASS | OSIVO SEED | REPKA RAPE | ĎATELINA RED CLOVER | TRAVA GRASS | | | | |
| kg/dm ³ | | 0,77 | 0,74 | 0,68 | 0,5 | 0,85 | 0,81 | 0,76 | 0,83 | 0,79 | 0,36 | kg/dm ³ | | 0,65 | 0,77 | 0,39 | kg/dm ³ | | 0,65 | 0,77 | 0,39 | | |
| | | kg/ha | | | | | | | | | | | | kg/ha | | | | | | | | | |
| STUPNICA NORMÁLNÝ VÝSEV NORMAL SOW SCALE | 10 | 34 | 33 | 32 | 24 | 23 | 21 | 28 | 32 | 8 | | STUPNICA JEMNÝ VÝSEV FINE SOW SCALE | 2,5 | 1,80 | 2,30 | | STUPNICA MIKROVÝSEV MICRO SOW SCALE | 2,5 | 0,90 | 1,15 | | | |
| | 15 | 51 | 49 | 48 | 35 | 42 | 40 | 45 | 51 | 24 | 18 | | 5,0 | 4,60 | 5,30 | | | 5,0 | 2,30 | 2,65 | | | |
| | 20 | 69 | 66 | 64 | 47 | 61 | 59 | 62 | 70 | 47 | 26 | | 7,5 | 6,80 | 8,60 | 2,80 | | 7,5 | 3,40 | 4,30 | 1,40 | | |
| | 25 | 86 | 83 | 79 | 59 | 79 | 78 | 79 | 89 | 70 | 34 | | 10,0 | 9,10 | 12,00 | 5,20 | | 10,0 | 4,55 | 6,00 | 2,60 | | |
| | 30 | 104 | 100 | 95 | 71 | 98 | 97 | 96 | 108 | 92 | 42 | | 12,5 | 11,40 | 15,30 | 7,20 | | 12,5 | 5,70 | 7,65 | 3,60 | | |
| | 35 | 122 | 117 | 111 | 82 | 116 | 117 | 113 | 127 | 115 | 50 | | 15,0 | 13,70 | 18,00 | 9,20 | | 15,0 | 6,85 | 9,00 | 4,60 | | |
| | 40 | 140 | 134 | 127 | 94 | 135 | 136 | 130 | 146 | 137 | | | 17,5 | 15,90 | 21,30 | 11,20 | | 17,5 | 7,95 | 10,65 | 5,60 | | |
| | 45 | 157 | 151 | 143 | 106 | 154 | 155 | 147 | 165 | 156 | | | 20,0 | 18,20 | 24,00 | 13,20 | | 20,0 | 9,10 | 12,00 | 6,60 | | |
| | 50 | 174 | 168 | 159 | 118 | 172 | 174 | 164 | 184 | 175 | | | 22,5 | 20,50 | 26,60 | 15,00 | | 22,5 | 10,25 | 13,30 | 7,50 | | |
| | 55 | 192 | 184 | 174 | 130 | 191 | 194 | 181 | 203 | 194 | | | 25,0 | 22,80 | 27,50 | 16,20 | | 25,0 | 11,40 | 13,75 | 8,10 | | |
| | 60 | 210 | 200 | 190 | 141 | 209 | 213 | 198 | 222 | 212 | | | ventilátor/fan „F“ • klapka/flap "F" červené koliesko/red wheel „N“ | | | | | ventilátor/fan „F“ • klapka/flap "F" červené koliesko/red wheel „M“ | | | | | |
| | 65 | 228 | 217 | 206 | 153 | 228 | 232 | 216 | 241 | 231 | | | | | | | | | | | | | |
| | 70 | 246 | 235 | 222 | 165 | 246 | 251 | 234 | 260 | 249 | | | | | | | | | | | | | |
| | 75 | 264 | 252 | 238 | 177 | 265 | 270 | 251 | 279 | 267 | | | | | | | | | | | | | |
| | 80 | 281 | 269 | 253 | 189 | 283 | 289 | 268 | 298 | 285 | | | | | | | | | | | | | |
| | 85 | 298 | 286 | 268 | 200 | 302 | 309 | 285 | 317 | 304 | | | | | | | | | | | | | |
| | 90 | 316 | 302 | 284 | 212 | 320 | 328 | 302 | 336 | 323 | | | | | | | | | | | | | |
| | 95 | 335 | 319 | 300 | 224 | 338 | 347 | 320 | 355 | 342 | | | | | | | | | | | | | |
| 100 | 352 | 337 | 316 | 236 | 356 | 366 | 337 | 374 | 361 | | | | | | | | | | | | | | |
| 105 | 370 | 354 | 332 | 248 | 374 | 385 | 354 | 393 | 380 | | | | | | | | | | | | | | |
| 110 | 387 | 371 | 348 | 260 | 393 | 404 | 371 | 412 | 398 | | | | | | | | | | | | | | |
| ventilátor/fan „N“ • klapka/flap „N“ • červené koliesko/red wheel „N“ | | | | | | | | | | | | | | | | | | | | | | | |

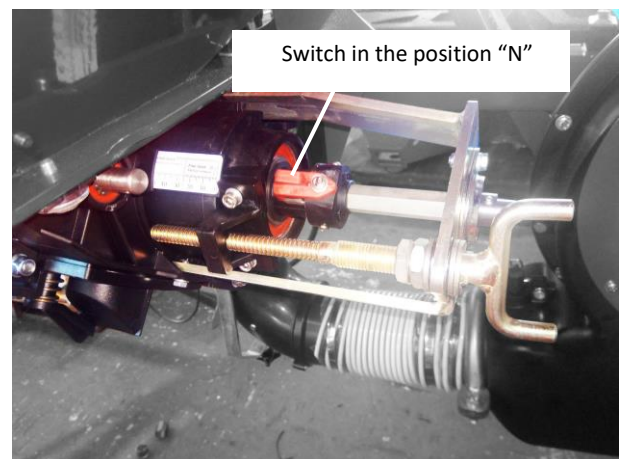
Table of sowing setting

Setting of dispenser based on the sowing type:

- ▶ deduct necessary data from the table of setting
- ▶ set for a standard sowing:
 - red switch on the dosing device to the position "N",
 - throttle valve of fan to the position "N".
- ▶ set for a fine sowing:
 - spindle to the position 0,
 - red switch to the right until the groove of hexagonal shaft, the letter "F" is visible on the switch,
 - throttle valve of fan to the position "F".



Setting of fine sowing



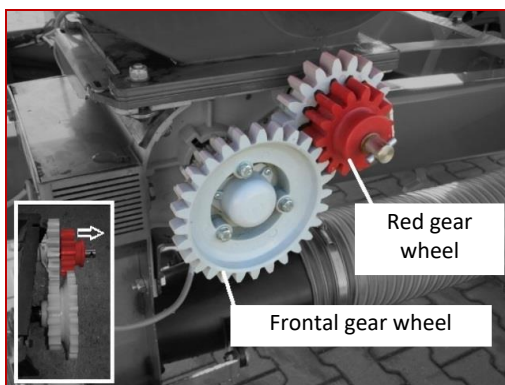
Setting of normal sowing

Micro dosing

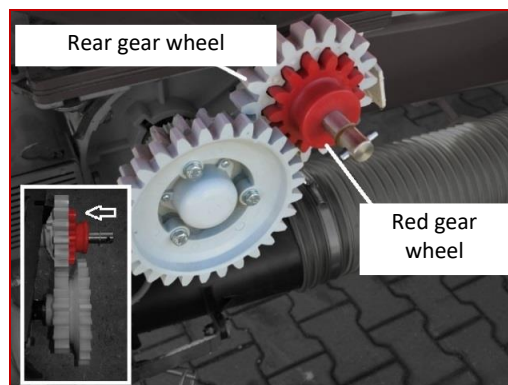
The micro dosing enables sowing of fine seeds or of a very small volume of seeds per hectare. By pulling the red gear wheel to the frontal larger gear wheel you reduce revolutions of the dispenser by a half. The advantage of this system consists in double increase of width with preserving the same sowing volume.



Attention! With switched-on micro dosing the dispenser can open at the maximum value of 25 otherwise there is a risk of damage to the dispenser.



Micro dosing on



Micro dosing off

Cleaning disc

The cleaning disc is used to clean residual seeds from the sowing roll in case of fine seeds sowing, as for example rape, clover, grass.



The cleaning disc can be used only for sowing of fine seeds.

For sowing of normal seeds it is necessary to dismount the cleaning disc and to fix it from outside of the dispenser.

- ▶ Release the screw.
- ▶ Dismount the cleaning disc.
- ▶ Mount the cleaning disc to the sowing roll.



Unscrew the worn cleaning disc and replace it.



Cleaning brush of the dispenser

Filling of seeds



Do not drive on the road with filled seed hopper.

Driving on the road with filled seed hopper is not allowed. Fill the hopper when you are on the field. Driving on the road with filled seed hopper can cause an accident.

→ Driving on the road - Safety

- ▶ Secure the machine against movement.
- ▶ Release the tarpaulin rope.
- ▶ Open the hopper lid.
- ▶ Fill the hopper at least 3 cm above the seed level sensor in the hopper.



Before filling the seeds close the emptying valve on the seed hopper and the chute on the dispenser.



The sowing quantity can be reduced only with turning dispenser or with empty hopper. Failure to observe this notice can cause the damage to the dispenser.

Sowing calibration



In case of two dispensers the calibration test shall be made for both dispensers.

- ▶ Find the value of setting for the specific crop and required sowing in the table of sowing.
- ▶ Setting scale shows set values from 0 to 110 (for fine seeds only 25 – when trying a larger opening there is a risk of the red switch breaking off). Turn the lever till you see the required value on the cover edge and setting scale.



Never open the dispenser for fine sowing for more than the value 25. When trying a larger opening the switch can be damaged.

- ▶ Fill the seeds to the hopper.
- ▶ Unlock and dismount the knee.
- ▶ Hang the scale on a fix place, hand the empty calibration bag on the scale and make zero on the scale.
- ▶ Hang the calibration bag under the hole in the diffusor.
- ▶ Release the spring lock on the drive shaft and disconnect it, fix the calibration lever on the drive shaft.
- ▶ Turn the dispenser 85 times which corresponds to the surface of 1/10 ha.
- ▶ Weight the captured seeds on the scale.
- ▶ Compare the quantity of seeds with the required quantity. Adapt the dosage based on the example below.
- ▶ Mount the knee and secure it.
- ▶ Then fix the drive shaft and secure with spring lock.

Calibration example:

- ▶ setting based on the table of sowing at 60 (210 kg/ha wheat),
- ▶ 19 kg dosed by the sowing test 19 kg (required 21 kg),
- ▶ we find out the relative difference between the dosed and required quantity – 10 %,
- ▶ increase the setting by 10 % to the value 66,
- ▶ repeat the sowing test if the dosed quantity does not correspond to the required quantity,
- ▶ dispenser is calibrated.



Do not forget to mount the injector knee after the calibration. Provided the knee is not mounted, the seeds fall down directly from the diffuser to the ground and is not transported to sowing coulters.



The accuracy of used scale shall be taken into account in weighting. Do not overload the scale but weight only the quantity allowed for the weighting scope.

DRIVING ON THE ROAD

Safety

Read following instructions before the machine preparation. Failure to observe them can cause accidents and serious injuries.

Take care of the prescribed technical condition.

Provided you drive the machine on public roads the machine shall comply with valid operating conditions for public roads. This includes:

- Mounting of lights, warning and protective equipment.
- With machine folded the brake lights and directional lights and the license plate shall be visible.
- Compliance with regulations for allowed transport width, weight and capability.
- The empty hopper shall be covered with a tarpaulin.

The driver and owner of the machine is responsible for non-observance of operational conditions for vehicles on public roads.



Before driving on the road

When transporting the machine on public roads, the seed hopper shall be empty. Driving on the road is allowed only with empty seed hopper (fertilizer hopper). If the hopper is not emptied, it affects the driving properties of the machine and can cause an accident.



Closing the ball valves

If the hydraulic hoses are equipped with ball valves, they must be closed during the transport. Otherwise, unexpected movements of the machine can be caused by accidental actuation of the control units on the tractor, which can cause an accident.



Checking the pressure in tires

Before driving check the pressure in tires. If the value in tires is incorrect, inflate them correctly.



Fixing the lighting

Mount the lighting or warning plates. All direction indicators and side lights shall be well visible. The lighting cables shall be secured in such a way that they do not stretch in turns or come into contact with the tractor wheels. Poorly visible direction indicators or sidelights can cause an accident.



Clean impurities

Remove post-harvest residues, stones or coarse soil deposits. When driving on the road these elements can loosen and cause an accident.



Checking the lock

Check locking of all securing mechanisms. Unlocked lock can release when driving and cause an unintentional reaction of the machine.

Sowing technology

If the sowing technology is in the working position, it is necessary to lift it to the transport position.

Driving on the road

Locking of control devices

When driving it is necessary to lock control devices in the tractor and ball valves in hydraulic hoses.

Transport of persons on the machine is forbidden.

Never transport persons nor objects on the machine. Transport on the machine is life-threatening and strictly forbidden.

Drive at reasonable speed.

Always adjust your driving speed to the condition of road. If the road condition is poor and the speed is too high, the machine can be overloaded and damaged.

Before driving check:

- Folding and locking of all working tools,
- securing of steps in transport position,
- locking of the supporting leg in transport position,
- locking of markers against tilting,
- locking the machine opening against tilting,
- function of lighting,
- closing of quick-emptying hole.

PREPARATION ON THE FIELD

Seed hopper filling



Use only steps for entering the maintenance platform. The platform is solely determined for watching the loading procedure.



Before filling the seeds close the emptying valve on the seed hopper and the chute on the dispenser.

- ▶ Fill the seed hopper.

After hopper filling

A protective tarpaulin is provided to protect against wind and rain. The seed hopper shall be covered with this tarpaulin during sowing to avoid dust and humidity entering into seeds.

- ▶ Pull the tarpauling with a rope.
- ▶ Secure the tarpauling with a rubber band.



Securing the tarpaulin

Setting of sowing coulters beam

Set the sowing coulters beam with a spindle on the three-point hitch or with tensioning screws in case of MC.

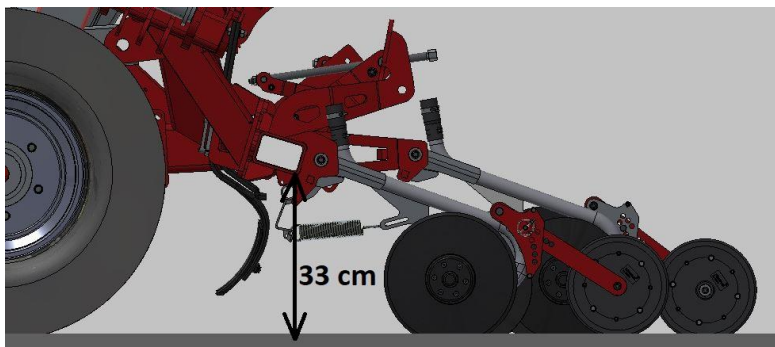
Use the spindle to set the distance of the beam to fix sowing coulters above the ground. With regard to the sowing coulters structure and their stops it is important to keep the correct distance of the beam above the ground. If such height is not observed, there is a risk of worsened sowing in terms of its depth, or damage of machine in case of too small distance above the ground.

⚠ Regularly check the height of the beam. The height of the beam depends also on other factors, such as:

- size of tires,
- pressure in tires,
- machine wheel recess (depending on soil conditions).

- ▶ Prepare the sowing technology in its working position.
- ▶ Put the seed drill down.
- ▶ Measure the distance of the lower beam edge above the ground. The distance should be about **33 cm**.
- ▶ Adapt the beam height by turning the spindle or tensioning screws.

⚠ In case of MC it is necessary to turn equally tensioning screws on both sides of the beam.



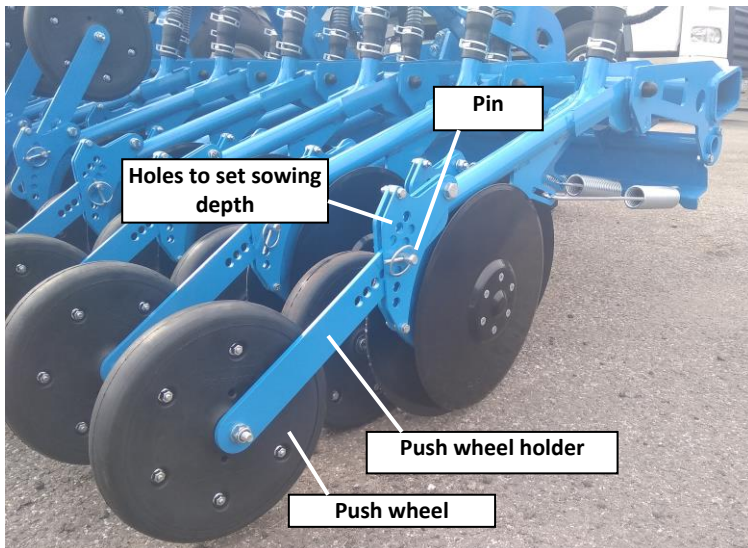
Distance of the beam above the ground.

Sowing depth

Set the sowing depth using the push wheel on the sowing coulter.

Depth control enables a better plant growing. The seed sowing remains the same even at higher speed.

- ▶ Prepare the sowing technology in its working position.
- ▶ Put the lower arms down.
- ▶ Unlock and remove the lock from the pin on the push wheel holder.
- ▶ Moving the pin to a specific hole set the required depth.
- ▶ Lock the pin.



Setting the sowing depth



All pins in push wheels holders shall be in the same hole.

Setting of sowing coulters pressure

The sowing coulters pressure can be set centrally.

Central setting

All sowing coulters are pushed to the ground with springs that are fixed together to a thrust rod. The central pressure setting is made with a thrust lever. Increase the thrust by turning to the left, decrease the thrust by turning to the right.

✂ Key to set the thrust



Central pressure setting

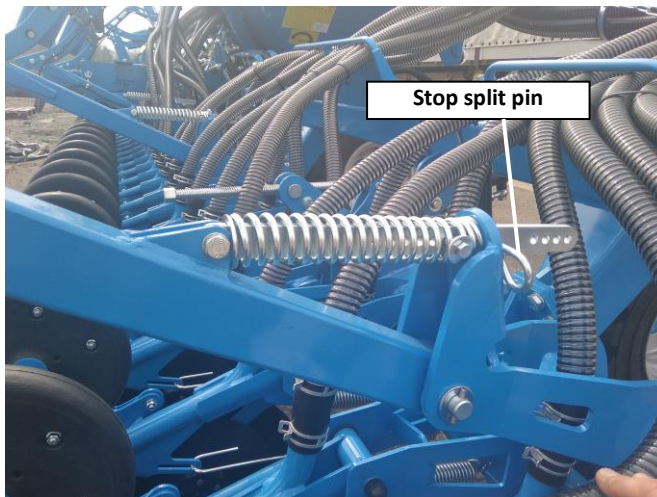
Setting of harrow frame

The harrow frame is to cover the sown seeds. Some parameters shall be set on the harrow frame depending on the soil conditions:

- frame stop,
- frame thrust,
- inclination of harrows.

Stop of the harrow frame

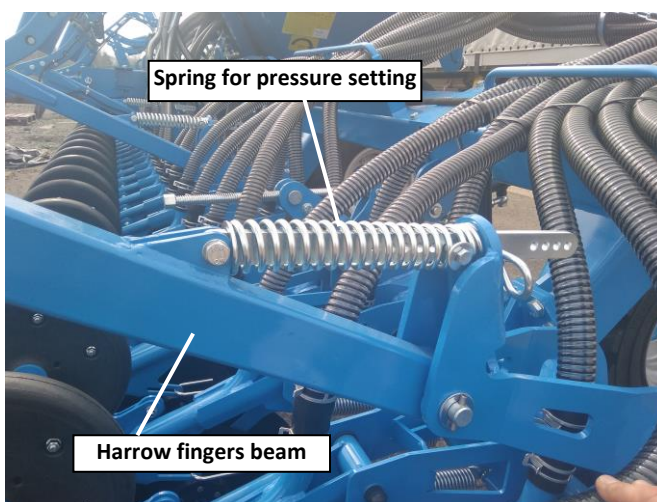
A stop split pin is found on the upper side of the harrow frame holder. Using this split pin you can set the lower position of the harrow frame.



Stop of the harrow frame

Thrust of harrows

Depending on various soil conditions it is necessary to set the required thrust for the correct function of harrows. Set the thrust with a spring preload. Decrease the thrust by turning to the left, increase the thrust by turning to the right.

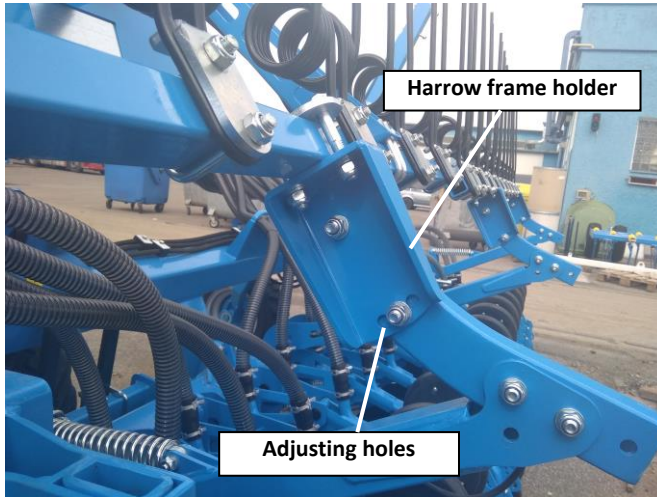


Thrust of harrows

Inclination of harrows

The inclination of harrows defines the work intensity of harrows. For a higher work intensity it is necessary to set a higher inclination. The inclination is set by a change of holder screwing into another hole.

- ▶ Unscrew the harrow frame holder.
- ▶ Move the holder to another hole and screw it.



Inclination of harrows

Setting of marker

Markers serve for marking the trace for the next run. Setting of marker is possible to the tractor center or to the tractor wheel.

Setting of marker to the tractor center

Necessary data:

- width of seed drill row (=pitch of sowing coulters)
- working width of the seed drill.

- ▶ Put the machine in its working position.
- ▶ Start the market.

Calculation:

$$\text{Length of the marker for the tractor centre} = \frac{\text{Row width of the seed drill} + \text{working}}{2}$$

Example:

Row width12,5 cm

Working width of the machine800 cm

In this case the calculated length of marker is 406,25 cm.

Setting of marker to the tractor wheel

Necessary data:

- width of seed drill row (=pitch of sowing coulters)
- working width of the seed drill,
- front wheels spacing.

▶ Put the machine in its working position.

▶ Start the marker.

Calculation:

Length of the marker to the tractor wheel =

$$\frac{\text{Row width of the seed drill} + \text{working width} - \text{front wheels spacing}}{2}$$

2

Example:

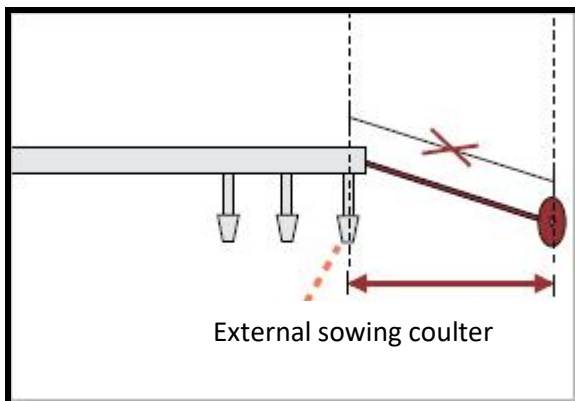
Row width12,5 cm

Working width of the machine800 cm

Front wheels spacing.....150 cm

In this case the calculated length of marker is 331,25 cm.

Measure the calculated length of the marker on the ground, never on the marker arm. This can cause an inaccuracy.



Correct measurement of the marker

The arm of the **right** marker shall be measured based on the axis of the right external sowing coulters.

The arm of the **left** marker shall be measured based on the axis of the left external sowing coulters.

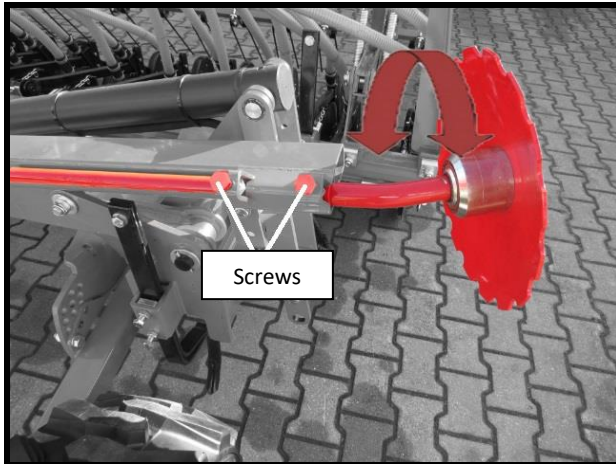
Setting the angle of the marker disc inclination

Setting the angle of the marker disc inclination depends on the soil properties.

Heavy soils = inclined disc (set the inclination angle as needed)

Light soils = vertical disc (no setting of the inclination angle, or there is only a minor inclination).

Set the marker disc inclination so that the marker traces are well visible in the soil later. Markers shall not grub.



Setting of marker angle

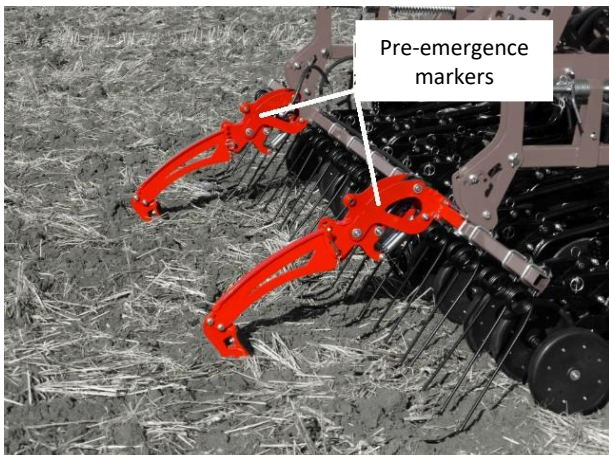
- ▶ Release screws.
- ▶ Set the angle as needed.
- ▶ Tighten screws.

Setting of pre-emergence markers of tramlines

The marker of pre-emergence tramlines creates tramlines for sprayer. The hydraulic valve is controlled based on tramlines of Drillmat III. The arm starts always when the sowing sections are locked with flaps.

The marker with two skives is determined for modes in which both tramlines are made during one run.

The marker with one skive is determined for modes in which both tramlines are made during the run there and back.



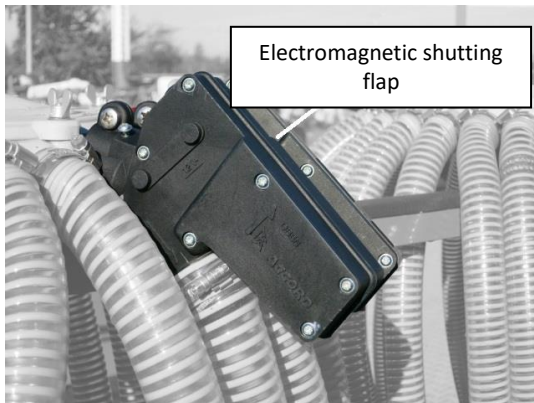
Pre-emergence markers

Electromagnetic shutting flaps

The electromagnetic shutting flaps control the tramlines establishment. They close the seed flow towards sowing coulters.

- The number of electromagnetic shutting flaps depends on the tire width.
- The position of electromagnetic shutting flaps depends on the tractor spacing.

In case of change of spacing or tires width contact the seller. It might be necessary to mount further electromagnetic shutting flaps or to close further sowing coulters.




Electromagnetic flaps

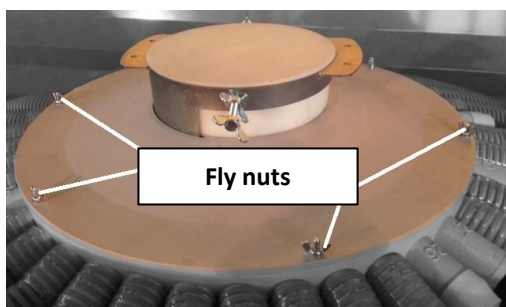
Switching off a half machine width of MC

Switching off a half machine width can be made with a special cover of the distributor. Mount the cover instead of the original one.

- ▶ Unscrew fly nuts on the distributor cover.
- ▶ Remove the distributor cover.
- ▶ Put the distributor cover for a half machine width shut-off on the distributor.
- ▶ The arrow on the distributor cover shall point to the travel direction.

 Make sure that the arrow points to the travel direction. Outlets for the active distributor half shall be fully passable.

- ▶ Fix and tighten fly nuts on the distributor.



Shutting-off a half of the seed drill

Disconnection of sowing coulters

Some crops need a larger distance among rows than it is set by the structure spacing of sowing coulters. Seed drills MONSUN can be equipped with a reduction distributor cover which allows the seed flow in every second or every third sowing coulters. Thus the distance among rows increases to 250 – 300 mm, or 250 – 375 mm. Due to two distributors 2 reduction covers need to be mounted.

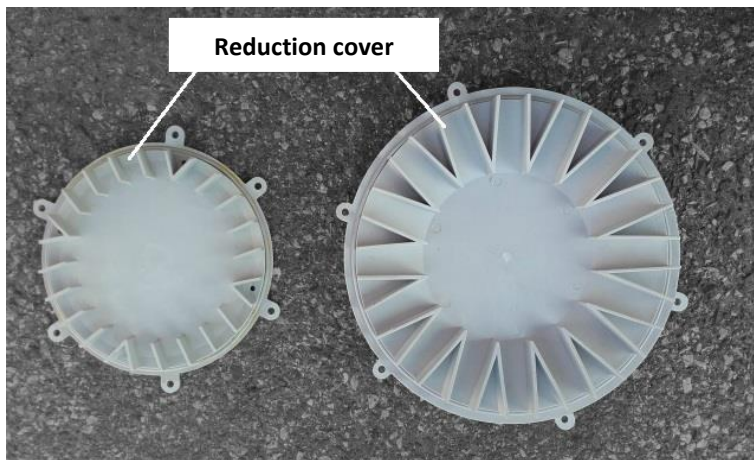
→ Chapter - Maintenance - Replacement of the distributor cover

- ▶ Unscrew fly nuts on the distributor cover.
- ▶ Remove the distributor cover.
- ▶ Fix the reduction cover on the distributor.
- ▶ The arrow on the distributor cover shall point to the travel direction.

! Make sure that the arrow points to the travel direction. Outlets for the active sowing coulters shall be fully passable.

- ▶ Fix and tighten fly nuts on the distributor.

! It is necessary to change markers with used reduction cover of distributor. Please note that in case of shuttle seeding the distance among rows is not observed for edge sowing coulters.

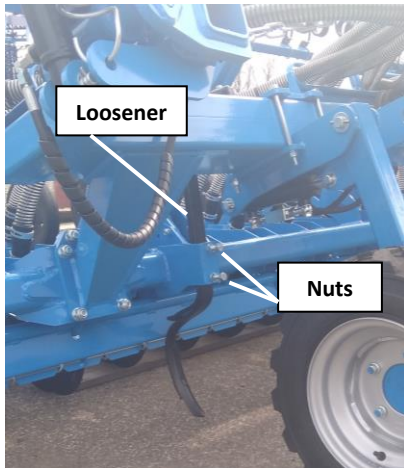


Reduction covers

Setting of line looseners behind the wheel

Looseners behind the wheel serve to loose the compressed soil. Maximum working depth of soil loosening 5 cm.

- ▶ Release the nut of the loosener holder.
- ▶ Set the required depth.
- ▶ Tighten the nut of the loosener holder.



Wheel loosener

Pre-work inspection

Before you start you need to check the function and correct setting of the machine. Check if:

- the electronic system works properly.
- the correct mode of tramlines is set,
- flaps of tramlines are set to the correct width of the sprayer.
- the micro dosing and the fine sowing are on, or off.
- the throttle valve of the fan is correctly set,
- the marker is set properly,
- the emptying flap is closed,
- steps are lifted-up to transport position and locked,
- seed tubes are not kinked or damaged,
- marker is set and unfolded.



Provided the height of 4,00 m is exceeded in folding the machine, never unfold the machine under power lines. When in contact there is a life-threatening situation or a risk of fire.

control drive



Transport of persons on the machine is forbidden.

It is forbidden to transport persons or objects on the machine. Transport on the machine is life-threatening and strictly forbidden.

Checking the surroundings

Check the nearest surroundings of the machine before starting, unfolding and operation. Always pay attention to have a sufficient view. Start the machine until there are no objects or people in its surroundings.



First make a trial run without sowing on the field. A switchback or driving with obstacles are not suitable.

- ▶ Perform the test drive under standard working speed (10-12 km/h).
- ▶ If necessary set the sowing depth and tools for soil treatment again.

MACHINE OPERATION

Checking the machine work

Check some parts of the machine during sowing. Pay especially attention to:

- fan revolutions,
- ejection of the correct marker,
- sowing depth,
- flaps for tramlines, their passability and function,
- covering of seeds with soil,
- soil compression using thrust wheels,
- depth of deposition,
- faultless switching of electromagnetic closing flaps,
- operation of cleaning brush,
- seeds passability,
- seed tubes,
- correct setting of marker and looseners.

Machine height and outside power lines

Provided the machine height in folding and unfolding achieves more than 4,00 m, under no circumstances do not make such operations under outside power lines!



There is a risk of a voltage jump. If the machine touches the outside alive power lines:

- never leave the cab of the tractor.
- do not touch metal parts of the tractor.
- do not create conductive connections to earth.
- warn persons not to approach the machine or the tractor.
- wait for the rescue team as the outside power lines need to be switched off first.

Never stand on the machine under outside power lines. The voltage can be transferred even without direct contact.

Checking the surroundings

Check the nearest surroundings of the machine before starting, unfolding and operation. Always pay attention to have a sufficient view. Start the machine until there are no objects or people in its surroundings.



Do not remove protective equipment.

Protective equipment must not be removed or disabled. Before the use check all protective equipment. Unprotected parts of the machine can cause serious or fatal injuries.

Working position and work

The correct setting of the seed drill is the prerequisite for sowing.

- ▶ Activate the terminal.
- ▶ Activate the fan.
- ▶ Start sowing.

Electronic control

As the dispenser is driven, electronic control automatically displays necessary information. Based on the control system the display shows:

- currently sown dosed quantity (kg/ha), depending on the type of electronics,
- current driving speed,
- all data related to hectare output,
- data on revolutions.

Working speed

Observe the working speed when sowing. Allowed working speed is within 5-12 km/h depending on the sowing dosage.

Markers lifting

When unfolding the marker arm shall be folded till its stop, thus the control box automatically switches to the control of the other marker.

Turning

It is necessary to lift the machine when turning.

- ▶ Slow down before reaching the field end and lift the sowing machine during driving. When doing so do not let decrease the fan revolutions.



The dispenser transfers the seeds only when the machine is in its working position. It takes some time to the seeds to reach the sowing coulter.

- ▶ After having turned, put the sowing machine down.

MAINTENANCE OF THE MACHINE AFTER SOWING

When sowing is over, open the dispenser and empty the seeds or fertilizer hopper.

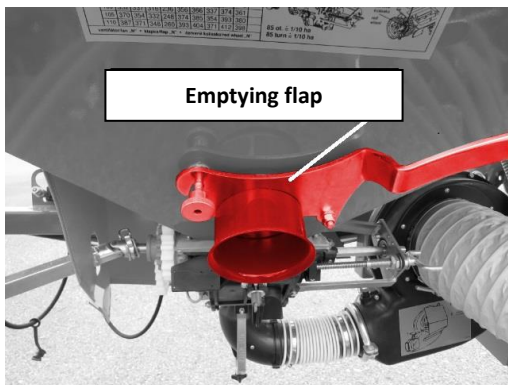
Emptying

When driving or when a longer machine shutdown it is necessary to empty the seeds hopper and the dispenser.

There is the outlet hole with a flap on the rear hopper side, in its lower part. You can empty the seeds from the hopper by opening this flap.

- ▶ Switch off the fan drive.
- ▶ Secure the machine against movement.
- ▶ Put a collection tank below the emptying flap.

- ▶ Open the emptying flap.

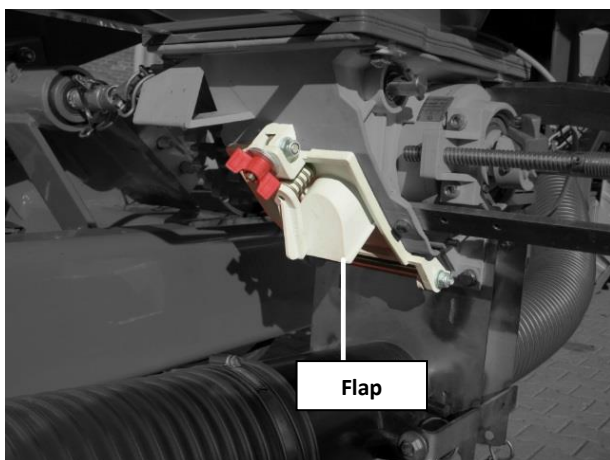


Quick emptying of the hopper

- ▶ Wait until the hopper is empty.
- ▶ Close the emptying flap.

In order to fully empty the machine:

- ▶ open the emptying door on the dispenser,
- ▶ wait until the all seeds fall out.



Cleaning door of the dispenser






Never open the emptying door of the dispenser when the hopper contains a lot of seeds. Then it is not possible to close the emptying door.

Cleaning the machine

The machine can be cleaned with air or water flow (high-pressure cleaner). Clean any residues of seeds or fertilizer from the machine.



Lack of cleaning reduces the machine service life.

-  Clean bearings only under a small pressure. Any water intrusion into bearings reduces their service life.
-  Pay attention to electric drive motors, sensors and electric installation. Avoid any direct contact of water with these devices.
-  Do not spray the water directly on labels.

It is allowed to clean the seed drills only from outside. Stairs and platforms shall be cleaned after every use of the machine. This considerably reduces the risk of injury.

If the water enters into the seed hopper:

- ▶ open the emptying door on the dispenser,
- ▶ disconnect the air hose from the dispenser in order to let the water flow out,
- ▶ supply hoses and the seeds hopper can be cleaned only with compressed air.



When using the compressed air for the machine cleaning a harmful dust from mordants and fertilizers can be released. Due to this reason use a respirator when cleaning the machine with compressed air.

When shutting down the machine for a long time, we recommend covering the machine with a protective oil layer. This increases the machine service life. Use only biologically degradable oil.

Seed tubes



Due to the harmful dust use a respirator with corresponding protection class.

The harmful dust can be released when stained seeds are used.

- ▶ Blow the seed hoses and hopper with compressed air.

Sowing coulters and thrust wheels

Clean sowing coulters and thrust wheels with high-pressure cleaner. Do not aim water jets on bearings.

Servicing

In order to keep the long service life of the equipment, we recommend treating of the machine with protective oil layer after every season and for every storage.

Use only approved and biologically degradable oil, for example the rape oil.



Before oiling, cover tires of transport wheels. Oil can damage tires.

DISCONNECTION AND STORAGE

Always disconnect the seed drill only with mounted parking legs.
Cleaned machine stays for storing in unfolded position in order to save seeding hoses.
If needed, lift the looseners of the seed drill up.
The seed drill shall be stored in a dry place, whereas it should stand on a solid horizontal surface.
When storing apply a layer of oil. Use only approved and biologically degradable oil.

MAINTENANCE

Safety during maintenance



Perform maintenance work only if you have necessary experience, skills and suitable tools. Perform repairs, service and maintenance on the machine only when:

- outlet shaft is switched off
- the motor is switched off
- the ignition key is pulled out
- electronic control is switched off

Unintentional start of the machine can cause serious injuries.



Use only original spare parts. Use of non-original spare parts can cause a failure of machine as well as a serious injuries caused by the lack of quality in these spare parts.



Before welding on the machine disconnect all electric devices from their supply. Failure to do so may cause a damage to the electronics and fire.



Do not use pneumatic greasing presses for greasing of bearings. The high pressure of these presses can damage bearings.

Safety in using oils and greasing products

Additives in oils and greasing products can have a detrimental effect on health. Pay attention to following warning:



Avoid contact of a grease with skin. A contact with skin can cause skin damage.

Protect your hands against the contact with a grease with gloves resistant to oils or with a protective cream.



Do not use oils and greases to clean with bare hands. Chips from these substances increase the risk of injury.

Often change oil-contaminated clothes.



Dispose the used oil in compliance with legal regulations.

Principles

The instructions in this operating manual apply to maintenance works. When performing such works the machine parts need to be unfolded in work position and secured.

Perform greasing with manual greasing press with one or two strokes of the press. Excess volume of grease pushes bearings away from each other. Dust and impurities can enter bearings. This can cause a limited service life of bearings.

Screwed joints

Screwed joints can release in time, that is why it is necessary to regularly tighten all screw joints. Screwed joints shall be tightened after first work hours and always when a loose joint can be seen, minimally once per season.

Tightening torques of screwed joints:

| Screw | Quality of screws | | |
|-------|--------------------|--------|--------|
| | „8.8“ | „10.9“ | „12.9“ |
| | Tightening torques | | |
| M6 | 9,9 | 14 | 17 |
| M8 | 24 | 34 | 41 |
| M10 | 48 | 68 | 81 |
| M12 | 85 | 120 | 145 |
| M16 | 210 | 290 | 350 |
| M20 | 425 | 610 | 710 |
| M24 | 730 | 1050 | 1220 |

Tightening torques of screws

Maintenance intervals

Before the first use of machine

- check of the air pressure in tires
- check of electric installation
- check of hydraulic distribution
- check of air distribution
- check of seed tube hoses and other hoses
- check of dispenser
- tightening of all screwed joints
- check of dispenser drive
- function of the seed level sensor in the hopper
- function of flaps for tramline establishment
- fixation of seed drill to the lower arm of the tractor
- fixing the sowing technology to the three-point hitch
- check of sowing coulters spacing
- check of markers function
- tensioning of dispenser drive chain

After first 50 hectares

- check of the air pressure in tires
- cleanliness in the seed hopper
- tightening of screws in sowing coulters holders
- check of articulated shaft
- check of seed tubes flexion and compliance with decreasing seed tubes ways
- check of securing of the three-point hitch in sowing technology

After 50 hectares

- cleanliness in the seed hopper
- tightening of all screwed joints
- check of seed tubes flexion and compliance with decreasing seed tubes ways
- check of articulated shaft
- check of securing of the three-point hitch in sowing technology

After 150 hectares

- the same as “*after 50 hectares*”
- check of hydraulic distribution
- check of air distribution
- check of sowing coulters spacing

After 300 hectares

- the same as “*after 150 hectares*”
- tensioning of dispenser drive chain
- greasing of the dispenser drive chain
- check of fan bearings
- function of the seed level sensor in the hopper
- function of flaps for tramline establishment
- check of dispenser

After 600 hectares

- the same as “*after 300 hectares*”
- visual check of the machine
- check of the air pressure in tires

After 1000 hectares

- *professional check by a serviceman*
- the same as “*after 600 hectares*”
- check of electric distribution parts
- check of sharpness and sowing coulters bearings
- check of all seed drill bearings
- check of markers discs
- wear of tires
- check of the sowing coulters beam
- check of the condition of sowing coulters pressure

Securing the machine

You must properly secure the machine before performing maintenance and service operations.



Unsecured machine represents a danger that is not obvious at first sight. First secure the machine before you perform any operations on the machine. If the machine is not secured, a serious injury can incur.

Lubrication

Greasing of bearings

Bearings need to be regularly greased. Do not use pneumatic greasing press to grease bearings as it can damage them. Use only manual greasing press and perform greasing only with one or two strokes.

Maintenance-free bearings must not be greased.

List of greasing points

You find information on greasing points in individual chapters for each seed drill separately.

Wheels

Check of tires

- ▶ Check transport wheel tires once per season.

Check of the air pressure in tires

- ▶ Check the air pressure in tires once per season at least.
- ▶ Refill the correct pressure in tires when needed.

| | Dimension | Pressure |
|--------------|-------------------|-----------------|
| MV800 | 23x8,5-12 | 3,5 |
| MV | 31x15,5-15 | 3,1 |
| VENGA | 31x15,5-15 | 3,1 |

Table 4 Prescribed pressure in tires

Dispenser

Removal of residual seeds

If any residual seeds are found in the hopper, remove them.

Replacement of cleaning spattle

If worn it is necessary to replace the spattle behind emptying door.

- ▶ open the emptying door
- ▶ unscrew and replace worn sealing cuffs
- ▶ close the emptying door

Replacement of cleaning disc

- ▶ unscrew and replace the worn cleaning disc on the rear dispenser side

Sensors

In this section you find instructions for setting and replacing the sensors.

The machine can be equipped with following sensor:

- fan revolutions sensor,
- radar sensor,
- dispenser revolutions sensor,
- sensor of the seed level sensor in the hopper
- sensor of speed and driven track,
- sensor of three-point hitch position.

Setting of the fan revolutions sensor

Adapt setting of the fan revolutions sensor if:

- the device does not show any values of fan revolutions,
- the device shows lower values of fan revolutions as the real ones.

A groove on the fan shaft generates an impulse for the sensor. There are usually two impulses per one revolution.

Adaptation of setting of the fan revolutions sensor

- ▶ Lightly release the nut on the sensor.
- ▶ Manually slowly turn the fan shaft and screw the sensor so that it touches the shaft.

The sensor shall touch the shaft and shall not fall into the groove. Screws on the pulley which are at the same part of the shaft as grooves are helpful.

- ▶ Unscrew the sensor by about 1,5 mm.

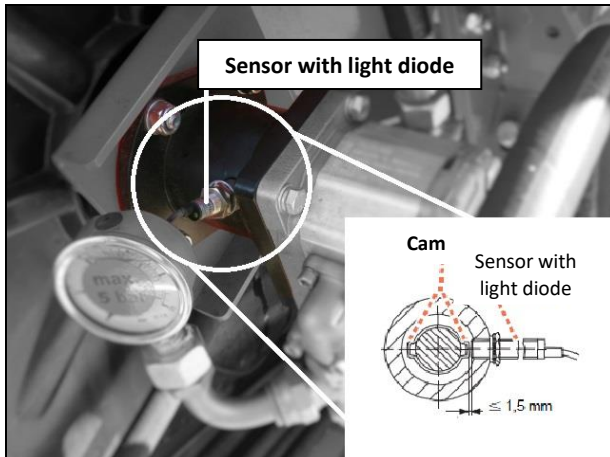


When setting the sensor turn carefully the fan ventilator. Incorrect screwing and shaft rotation can cause a damage to the sensor.

⚠ Never start the fan if you are not sure with correct sensor setting. This can permanently damage the sensor.

▶ Check a smooth rotation of the shaft without touching the sensor. Carefully manually turn the fan. The shaft shall not touch the sensor but should invoke to impulses per one revolution. The groove provides a switching impulse when passing the sensor, the diode on the sensor blinks.

▶ Tighten the nut on the sensor.



Setting of the fan sensor.

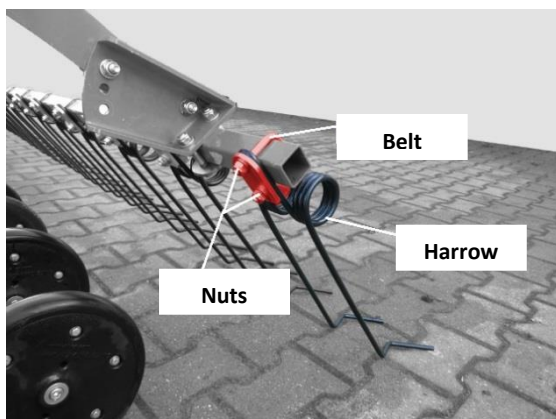
Hydraulic hoses

Hydraulic hoses get worn and age without visible external signs. Based on valid international regulations the hydraulic hoses need to be replaced every 6 years.

Ensure the hoses are without pressure when changing them.

Replacement of harrow fingers

- ▶ Release screws and nuts.
- ▶ Replacement of the harrow.
- ▶ Fix the harrow handle and firmly tighten.



Replacement of harrow fingers

Shortening of seed tubes

Shorten the seed tubes so that they are not overhanging. Pay attention so that the lower edge of sowing coulters beam is about 33 cm above the ground.

→ chapter “Preparation on the field”, paragraph “Setting of sowing coulters beam”.

- ▶ Use pliers to enlarge the upper hose clamp and then remove it from the sleeve.
- ▶ Cut the hose with a knife as needed.
- ▶ Then put the hose back to the sleeve and secure with the clamp.



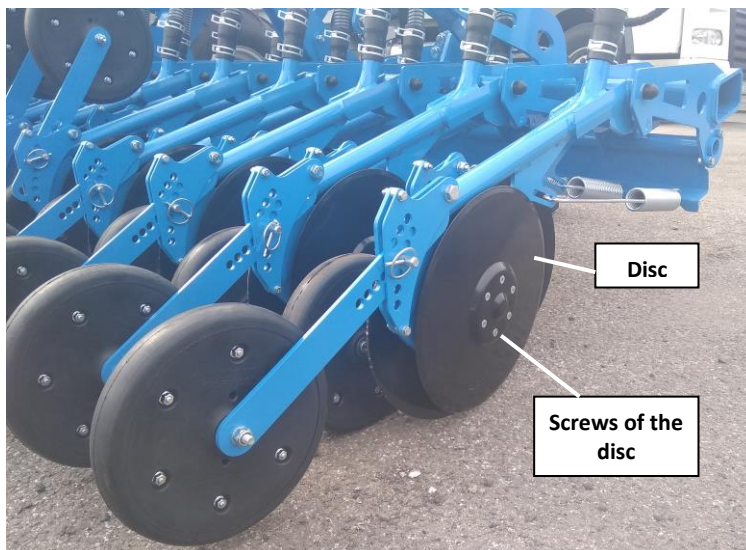
Pay attention not to be injured when cutting hoses with a knife. Hoses are reinforced with springs of hard material.

Replacement of DXD RC II disc



Discs can be very sharp, there is a risk of being cut. Use protective gloves. Without protective gloves there is a risk of being cut.

- ▶ Release screws on the disc.
- ▶ Replace the disc.
- ▶ Fix and tighten screws.



Replacement of sowing discs

Replacement of compression spring

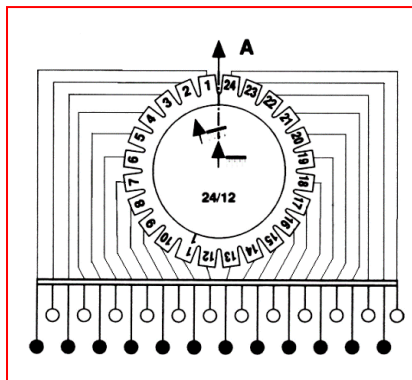
- ▶ Release the pressure on the sowing coulters as much as possible.
→ chapter “Preparation on the field”, paragraph “Setting of the thrust”.
- ▶ Remove and replace the spring.
- ▶ Hang the new spring first into the loop on the lever on the tilting holder.
- ▶ Fix the chain to the sowing coulters holder.

Replacement of the distributor cover

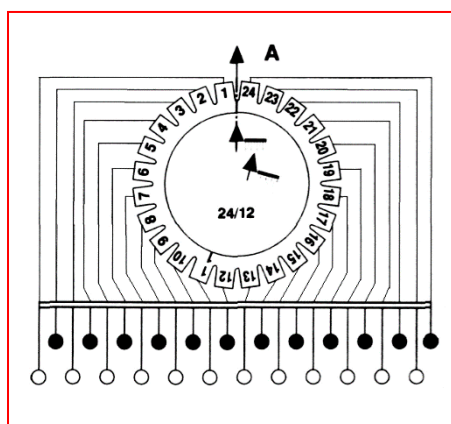
Replace the distributor cover if worn.

- ▶ Unscrew fly nuts on the distributor cover and remove the cover.
- ▶ Replace the distributor cover.
- ▶ Screw the new distributor cover to its correct position using fly nuts.

Depending on which sowing coulters are to be activated turn the distributor cover as shown in the figure. Screw the reduction valve so that the arrow on the reduction cover points in the travel direction. With reduction covers 24/12 you have two options of assembly:



- The arrow of the reduction cover in the travel direction - only long sowing sections work.



- The arrow of the reduction cover in moved out of the travel direction - only short sowing sections work.

Marker

The maintenance of the shear screw on markers is made in the machine working position with unfolded marker. This is valid for seed drills MC.

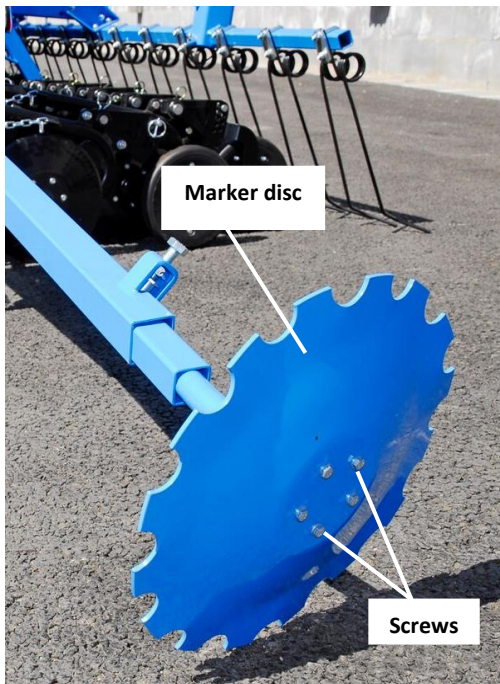
Check the shear screw on the marker arm if it is not damaged, replace it if needed.

- ▶ Unfold the marker arm.
- ▶ Remove residuals of damaged shear screw.
- ▶ Replace the new shear screw.
- ▶ Tighten it with the self-locking nut.

Marker disc

Check any damage to the marker disc and replace if needed.

- ▶ Release screws.
- ▶ Replace the marker disc.
- ▶ Put screws back and tighten them.



Marker disc

Loosener

The maintenance of the loosener is made in the machine working position. Check skives for wear and replace if needed.

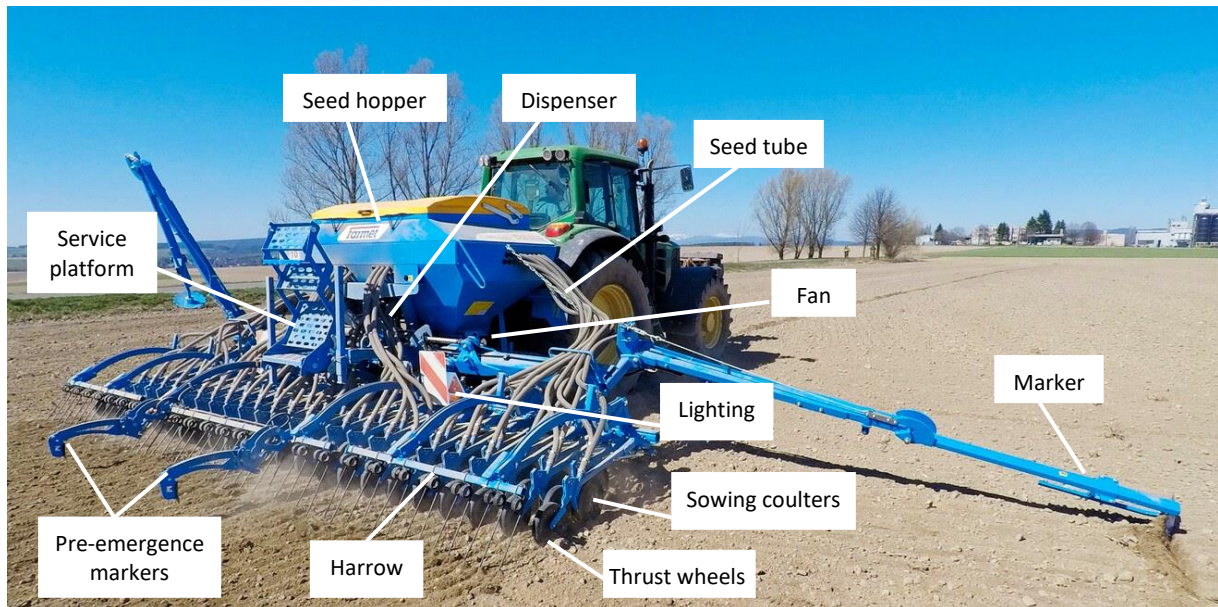
- ▶ Release the nut and replace the screw.
- ▶ Turn the skive or insert a new one.
- ▶ Fix a new screw and secure it with the nut.

DIFFERENCES OF SEED DRILLS

Differences of seed drills MC

Seed drills MC are machine which can be connected with a quick-coupling to most agricultural machines or a chassis for a separate sowing.

Description of the machine



Attaching the seed drill with soil tillage machine

Using the quick-coupling the seed drills MC can be connected to most of rotary harrows and cultivators. If the seed drill is to be driven mechanically, the agricultural machine shall have an outlet to connect the outlet shaft.



Follow instructions of the manufacturer of your agricultural machine.

The number of output shaft revolutions of the seed drill and of the agricultural machine need to comply with. In standard the machines MC are equipped for the revolution number 540 or 1 000 rpm. The maximum allowed inclination of the cardan shaft shall not be exceeded when connected to the seed drill, see Operating manual of the cardan shaft.

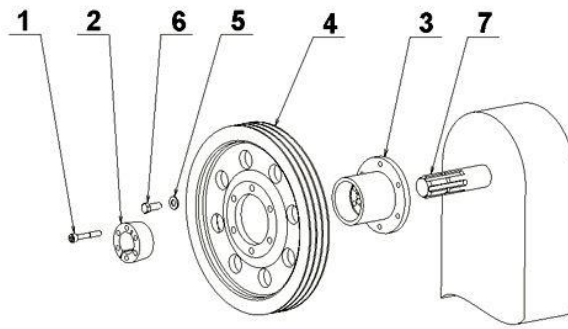
Fixation of rotary harrow

If you fix the seed drill on rotary harrows (hereinafter only as RH), the seller of agricultural machines shall fix the quick-coupling on rotary harrows.

Then mount the supplied pulley on V-belts on the output shaft of rotary harrows as described below:

List of parts:

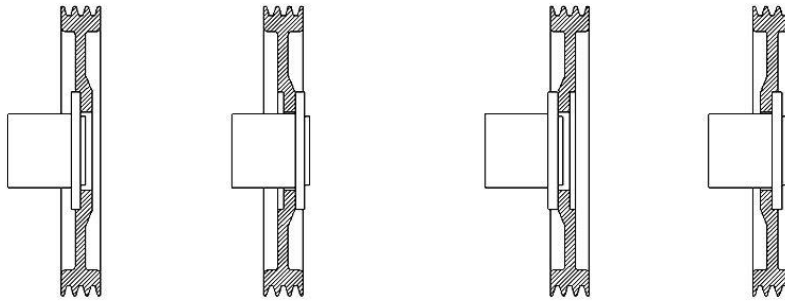
- 1- Hexagonal screw M8x80 DIN 912
- 2- Cone
- 3- Pulley flange
- 4- Pulley
- 5- Washer $\varnothing 10$
- 6- Screw M10x25
- 7- Output shaft of rotary harrows



Pulley assembly procedure:

1. **Screw the pulley (4) to the pulley flange (3).**

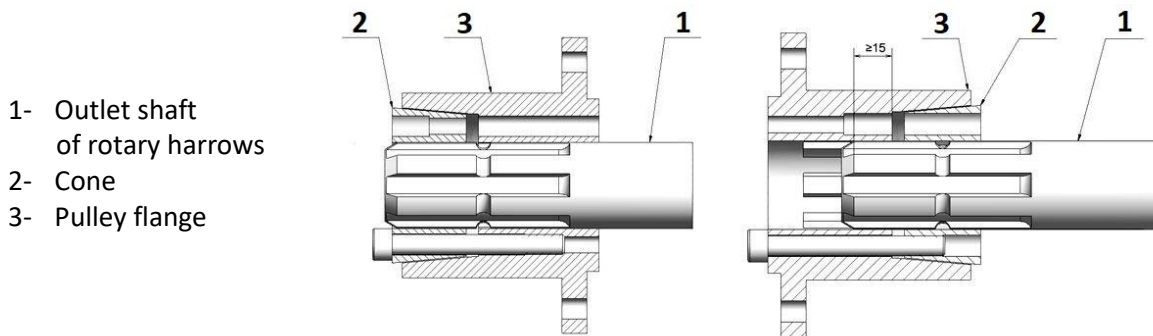
There are four options how to mount the pulley on the flange.



2. **Insert the cone (2) in the pulley flange (3) and slightly screw hexagonal screws (1).**

3. **Fix the pulley with flange and cone to the output shaft of rotary harrows.**

The profile of pulley flange and of the output shaft shall overlap by 15 mm at least. The cone needs to touch the outlet shaft profile with its full length.



- 1- Outlet shaft of rotary harrows
- 2- Cone
- 3- Pulley flange

4. **Fix the V-belts and set the alignment of pulley.**
5. **After having set the alignment of pulleys tighten hexagonal screws (1) and thus tighten the cone (2) on the rotary harrows shaft.**



No person can be present when driving back and connecting rotary harrows and the seed drill with the tractor between the tractor and rotary harrows.

Connection to the tractor

- ▶ Connect RH to the tractor, pay attention to locking of lower arm locks.
- ▶ Set the lower arms so that there is no play to the right and to the left for the machine.
- ▶ Lift up RH and level the tractor with RH based on the seed drill axle.
- ▶ Unlock the safety pin on the RH quick-coupling.
- ▶ Carefully lift RH up and connect the quick-coupling into the triangle hitch of the seed drill. Safety lever of the quick-coupling shall interlock.
- ▶ Lift RH up with connected seed drill and dismount the parking legs.



Do not touch with hands between the V-belt and the arm. There is a risk of injury.

- ▶ Tilt the fan and insert V-belts. The fan shall not touch with its lever the machine frame. In case fan touches the frame / V-belts are not sufficiently tensioned / V-belt need to be replaced with shorter ones.
- ▶ Testing of pulley alignment. Maximum offset /not an angle offset) can be 0,5 mm per 100 mm of pulleys axes pitch. The V-belts shall not go sideways for more than 2,5 mm with for example the axes pitch 500 mm. The more the grooves are parallel, the more the operation is smooth and the service life of V-belts and pulleys longer.



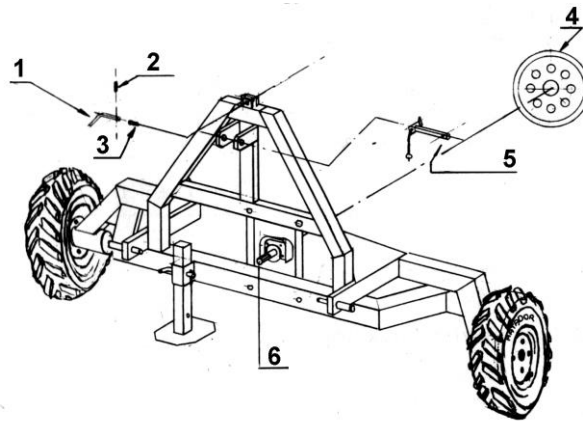
Buy and replace V-belts only in sets.

Attaching the seed drill on a chassis for solo sowing

In case you wish to sow with the seed drill MC without using an agricultural machine, you need to attach a chassis to the seed drill.

- ▶ Connect the chassis to the tractor, pay attention to locking of lower arm locks.
- ▶ Fix the pulley on the chassis. Thus the fan can be driven from the tractor through a cardan shaft.
- ▶ Mount the cardan shaft.
- ▶ Unlock the locking pin (1) on the chassis.
- ▶ Carefully lift the chassis up and connect the quick-coupling into the triangle hitch of the seed drill. Locking pin (1) of the quick-coupling shall interlock.
- ▶ Lift the chassis up with connected seed drill and dismount the parking legs.
- ▶ Tilt the fan and insert V-belts. The fan shall not touch with its lever the machine frame. In case fan touches the frame / V-belts are not sufficiently tensioned / V-belt need to be replaced with shorter ones.
- ▶ Testing of pulley alignment. Maximum offset /not an angle offset) can be 0,5 mm per 100 mm of pulleys axes pitch. The V-belts shall not go sideways for more than 2,5 mm with for example the axes pitch 500 mm. The more the grooves are parallel, the more the operation is smooth and the service life of V-belts and pulleys longer.

- 1- Locking pin
- 2- Spring pin
- 3- Spring
- 4- Pulley
- 5- Pin
- 6- Grooved shaft

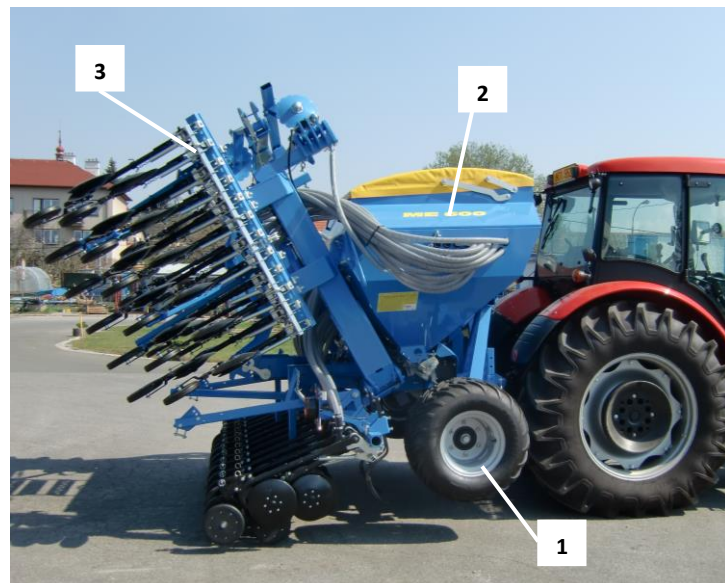


Differences of seed drills ME

The seed drill ME is designed for large working widths with hydraulically tilting beam of sowing coulters.

Description of the machine

1. Driving wheel
2. Hopper with two outlets, dosage devices, stacks and distribution head.
3. Hydraulically tilting frame



Attaching the seed drill with the tractor

- ▶ Connect the seed drill with the tractor by rods of three-point hitch or using a quick-coupling.
- ▶ Connect the hydraulic outlets:
 - to control markers,
 - to hydraulically tilt the beam of sowing coulters.



Pay attention not to break sowing hoses when folding and unfolding. The tractor and the seed drill need to stand on a fixed and flat surface. Nobody can be present between the tractor and the seed drill when connecting them.



The necessary operational pressure for folding is 130 bar. After being folded the beam of sowing coulters is automatically locked.



Secure the control valve of hydraulic folding in the tractor when driving which prevents its unintentional folding.

Close the ball valve in connection supply.

Secure the markers with safety belts when driving.



Decommissioning the seed drill



The seed drill needs to stand on a horizontal surface.

The seed drill need to be shut down in unfolded condition as there is a risk of damage to sowing hoses.



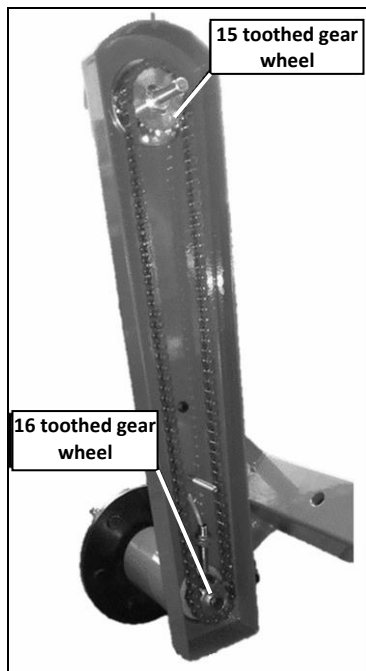
Parking leg of the seed drill ME

Setting of gear transmission for sowing of spelt



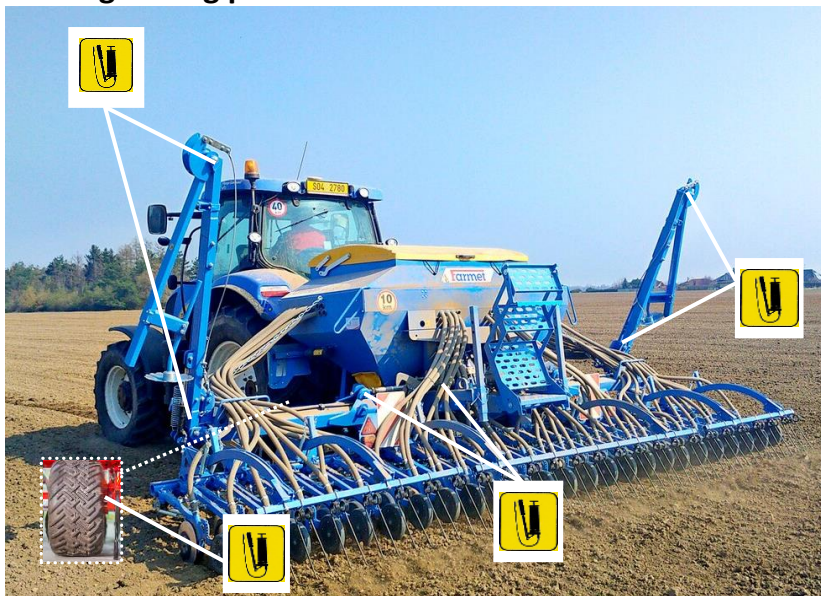
When sowing **unhulled spelt** at density $0,32 \text{ kg/dm}^3$ the driven gear wheels need to be replaced. **Replace the lower ones with 16 toothed ones, the upper ones for 15 toothed ones, and shorten the drive chain.**

Make a test sowing by turning the calibration lever for 155 times. The measured seeds corresponds to sowing at $1/10 \text{ ha}$. The maximum sowing option is 290 kg/ha . Speed of sowing is $7\text{-}8 \text{ km/hr}$. With increased speed there is a risk of hoses clogging.



The gear box with changed gear wheels for sowing of spelt.

List of greasing points



TROUBLESHOOTING

Defects can be often removed in simple and quick way. Before you ask for a service, try to remove the defect by yourselves using following tables.

Electronics

| Defect | Cause | Remedy |
|--------------------------------------|---|---|
| The electronics do not operate. | Burn fuse. | Replace the fuse. |
| | Disconnected supply. | Check the supply cable connection. |
| | Insufficient supply voltage. | Check the voltage. The voltage needs to be 12 V. |
| Fan revolutions falls to half value. | Impulses are invoked only with one groove on the drive shaft. | Adapt setting of the fan revolutions sensor. |
| Fan revolutions are zero. | Sensor without voltage. | Check the electric supply. |
| | No impulses. | Adapt setting of the fan revolutions sensor. |
| | The sensor is defective. | Check the fan revolutions sensor, replace it when needed. |

Hydraulics

| Defect | Cause | Remedy |
|---|---|--|
| The fan revolutions are not sufficient. | Small section of the supply line, incorrect size of connectors. | Choose the supply line with sufficient section and large connectors. |
| | lack of oil | Check and fill the oil. |
| | high pressure in the feedback | Check the oil filter, use connectors with larger section. |
| Oil leakage in hydraulic motor. | Worn shaft sealing or incorrectly mounted. | Replace the sealing. |
| Fan revolutions are insufficient. | Incorrectly set three-way valve. | Check the setting of the three-way valve. |
| | Insufficient volume or pressure of oil. | Check the valve for pressure limiting. |
| High temperature of hydraulic oil. | Oil flow need to be regulated on the tractor. | Fully open the three-way valve to adjust the flow on the machine and regulate the oil flow on the tractor. |
| | The three-way valve is set as the two-way valve. | Correctly set the three-way valve. |
| Hydraulic motor shortly halts. | Too little oil. | Fill the oil. |
| The marker folds too much quickly. | Missing throttle pad in the hydraulic system | Ask for mounting of a washer. |
| | The flap in the hydraulic system is oversized. | Ask for the replacement of the throttle valve. |
| The marker folds too much slowly or not at all. | The flap in the hydraulic system is clogged. | Ask for the flap cleaning. |
| | The flap in the hydraulic system is underdesigned. | Ask for the replacement of the throttle valve. |
| Both markers open simultaneously. | The switching valve is wrong. | Let the switching valve get replaced. |
| The marker of tramlines des not move. | The flap in the hydraulic system is clogged. | Ask for the flap cleaning. |
| Both markers open simultaneously. | The switching valve is wrong. | Let the switching valve get replaced. |
| The marker of tramlines des not move. | The flap in the hydraulic system is clogged. | Ask for the flap cleaning. |

Dispenser

| Defect | Cause | Remedy |
|--|--|---|
| Crackling sound in the dispenser. | Very large seeds. A foreign object in the dispenser. | Dismount the spring pins from the shaft. Remove a foreign object. |
| The volume of seeds varies. | Humidity in seeds. The lever and the spindle for setting the seeds volume operates too smoothly. | The seed hopper needs to be emptied during the night. Tighten the nut on the lever. |
| In case of fine seeds and micro dosing the seeds volume does not fall under 4-5 kg/ha. | The sealing cuff on the dispenser is worn. The sealing cuff does not correctly touch the roll. | Replace the sealing cuff. Place the sealing cuff correctly. |
| The seeds volume is too high. | High revolutions at the calibration test. Incorrectly locked red geared wheel for the micro dosing. | Perform the calibration test with maximum one revolution per second. Correctly start the micro dosing. |
| The seeds volume is too high or too low. | Incorrectly set value. Error in seeds weighting. | Correct the set value. Check the function of scale. Do not include the weight of the tank. Check units on the scale. |
| The seeds volume is too low. | Micro dosing is switched on. Chambers are polluted. Cleaning brush does not move. | Switch off the micro dosing. Clean the chambers. Clear or replace the cleaning brush. |
| No seeds are supplied to no sowing coulter. | Locked injector. The fan is not switched on. Closed throttle valve on the fan. | Remove clogging and check the correct revolutions of the fan. Activate the fan. Open the throttle valve. |

Sowing technology

| Defect | Cause | Remedy |
|--|--|--|
| No tramline is established. | Too low voltage in the connector. The electromagnetic shutting valve does not operate. | Check the connector connections with regard to corrosion. Replace the electromagnetic shutting valve. |
| The sowing unit for establishing the tramline remains closed at every run. | Locked electromagnetic shutting valve. A foreign object in the main distributor. | Clean the electromagnetic shutting valve. Remove a foreign object. |
| Seed tube is clogged with seeds. | The sowing coulters are clogged with soil for example. Hoses are kinked or slack. Fan revolutions are too low. | Clean clogged sowing coulters. Check hoses out of the seed hopper. Shorten hoses if needed. Pay attention to correct revolutions of the fan. |
| The harrow works in excess depth. | The pressure is too high. | Reduce the thrust of the harrow. |
| The harrow is clogged. | The harrow inclination is set too sharply. | Reduce the working angle. |
| The mode of establishing the tramlines does not switch over at the end of the field. | The sensor on the three-point hitch does not send any impulses to the computer. The sensor is defective. | Check the distance between the sensor and the tie rod of the three-point hitch. Replace the sensor. |

CZ ES PROHLÁŠENÍ O SHODĚ
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 D EG-KONFORMITÄTSERKLÄRUNG
 F DÉCLARATION CE DE CONFORMITÉ
 RU СЕРТИФИКАТ СООТВЕТСТВИЯ ЕС
 PL DEKLARACJA ZGODNOŚCI WE

1. My We Wir Nous Мы My: **Farmet a.s.**
Jiřinková 276
552 03 Česká Skalice
Czech Republic
DIČ: CZ46504931
Tel/Fax: 00420 491 450136

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2. Strojní zařízení: - název : **Radličkový secí stroj**
 Machine: - name : **Share sowing machine**
 Fabrikat: - Bezeichnung : **Sämaschine**
 Machinerie: - dénomination : **Semoirs à dents**
 Сельскохозяйственная машина: - наименование : **Лемешная сеялка**
 Urządzenie maszynowe: - nazwa : **Siewnik radełkowy**
- typ, type : **MONSUN**
- model, modèle : **ME 500; 600; 800**
- PIN/VIN :
- výrobní číslo :
- serial number
- Fabriknummer
- n° de production
- заводской номер
- numer produkcyjny:

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4. Normy s nimiž byla posouzena shoda: Standards used for consideration of conformity: Das Produkt wurde gefertigt in Übereinstimmung mit folgenden Normen: Normes avec lesquelles la conformité a été évaluée: Normы, на основании которых производилась сертификация: Normy, według których została przeprowadzona ocena: ČSN EN ISO 12100, ČSN EN ISO 4254-1.

Schwällil Approve by date: 01.03.2021
 Bewilligen Approuvé
 Утвердил Uchwalil

V České Skalici dne: 01.03.2021

Ing. Petr Lukášek
technický ředitel
Technical director

Ing. Karel Žďárský
generální ředitel společnosti
General Manager



Farmet a.s.
Jiřinková 276
552 03 Česká Skalice
DIČ CZ46504931
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