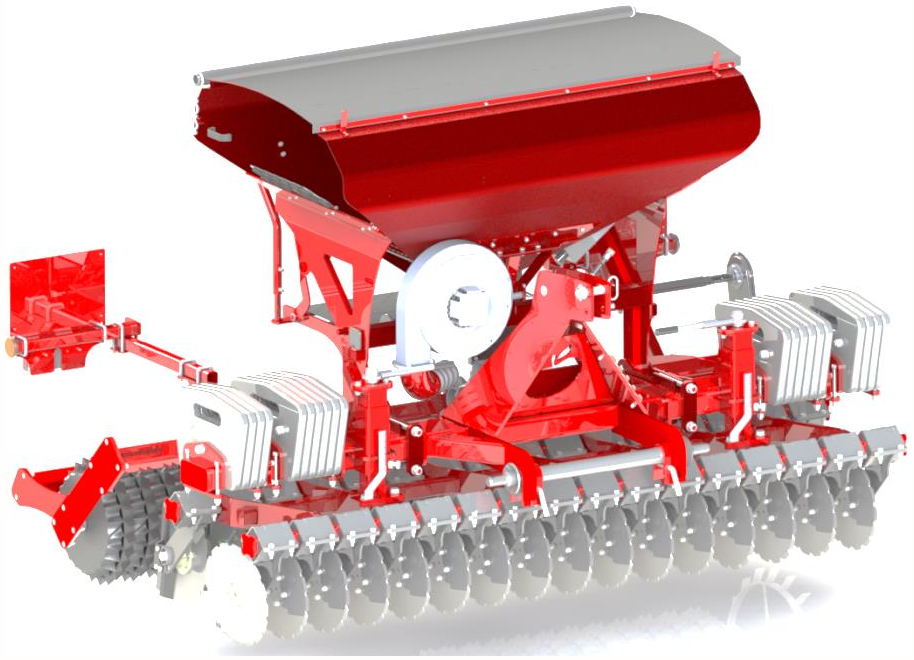
OPERATING MANUAL

FENIX G

SEED DRILL



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Read the Operating Manual thoroughly and follow the safety instructions contained in it before operating the machine.

To access the Parts Catalogue and Guarantee Card, scan the QR code on the machine type plate. Remember to register the guarantee or contact your dealer to do so.

VERSION
EN 01/2020

FENIX G

Seed drill

OPERATING MANUAL

Machine identification data:

Type	
Date of production	
Serial No.	

This operating manual is an integral part of the machine. It is important that the manual is always in the possession of the user of the machine. Access to the manual must be provided to machine operators and people involved in its operation, setting, repair and overhauling.

Read the Operating Manual thoroughly and follow the safety instructions contained in it before operating the machine.

Developed by:

Construction Office
UNIA Sp. z o.o.

We pay attention to the fact that the individual properties of the seed material have a large impact on the spreading standard. Therefore, the control data contained in the tables are only indicative and calibration should be carried out before each sowing.

Sowing properties depend on:

- the type of seed, its varieties, weight and shape of seeds
- heap up properties of seeds
- the type of soil, on which sowing is carried out
- type of seed treatment used

Therefore, we cannot guarantee that a seed with the same name, variety or even from the same manufacturer has the same spreading properties, because the seed charts could be determined using different seeds and having different properties.

The given machine settings and sowing rates are indicative and are used to pre-set the machine for calibration. In this case, the manufacturer's liability for damage caused as a result of incorrect sowing resulting from failure to perform tests is excluded.

Unload the seed drill from the vehicle with a crane or tractor using a ramp.

Always lift and handle the machine with the utmost care, with the seed hopper empty. Do not allow any bystanders staying within the range of performed works.

	**Caution!** **Before driving on public roads, attach a marking plate to the rear of the machine!**

Duties and Responsibility

Follow the instructions in the User Manual

The staff operating the machine should be familiar with the general safety regulations applicable when operating agricultural machinery. **The operators are obliged to read and follow the instructions and guidelines in this User Manual.** Always follow the health and safety instructions.

User's obligation

The user undertakes to allow the machine to be only operated and maintained by personnel, who:

- ✓ are trained in the area of health and safety and accident prevention
- ✓ have appropriate qualifications and are properly trained in working and servicing the machine in question
- ✓ have read and understood this User Manual

Personnel working on and with the machine must be provided with the required personal protective equipment, such as

- ✓ safe work footwear
- ✓ protective clothing
- ✓ means for protecting the skin
- ✓ additional protection against adverse weather conditions etc.

The user undertakes to ensure that:

- ✓ **all warning signs on the machine are kept legible. Complete/replace any damaged or missing warning signs.**

All persons employed at work with/on the machine shall undertake the following before commencing work:

- ✓ to comply with applicable labour safety and accident prevention regulations
- ✓ to read the chapters: SAFETY AT WORK, RESTRICTIONS ON MOVING ON HIGHWAYS, PREPARATION OF THE UNIT TO WORK, and SAFETY SIGNS. When using the machine, follow the instructions and indications contained in the mentioned chapters
- ✓ to familiarize themselves with the machine, its construction, and mode of operation.
- ✓ to read the chapters describing the procedures necessary for the performance of work tasks

If you find that the machine or its component has been damaged and/or worn out, and therefore, does not ensure safe operation, rectify any defects in this respect immediately. If you have not the necessary resources and/or qualifications, go to a service centre or workshop that provides proper service in this regard.

CONTENTS

I. PREFACE

Read the User Manual thoroughly and then, learn the design and operation of the seed drill and its assemblies. Accurate adherence to the instructions contained in this Manual will ensure long-term, efficient, trouble-free and safe operation of the machine. In case of any problems and doubts with the operation, please contact the nearest authorized dealer or the manufacturer's Sales Department. The Vendor is obliged to enter the address of warranty service into the warranty card.

UNIA Sp. z o.o. will be grateful for your comments to this Manual as well as comments on the machine, its operation and service sent to us. UNIA Sp. z o.o. shall assume no liability for any damages resulting from non-observance of instructions contained in this User Manual.

II. GENERAL

The unit is a machine attached to the links of the tractor. It is delivered together with the lighting system, bracket for attaching the slow moving vehicle sign and the User Manual.
The User Manual constitute the basic equipment of the machine.

The device is intended only for common use, pre-sowing cultivation and sowing of cereals, optionally combined with the sowing of fertilizer. Any other use that goes beyond the above framework is considered as not in accordance with the intended purpose. The manufacturer is not responsible for any damage resulting from such usage. The user bears the risk.

Intended use also includes compliance with the manufacturer's operating and maintenance conditions, keeping the machine in good condition and using only original spare parts.

The machine may only be used, maintained and kept in a proper condition by a person who knows how to operate the machine and who have been informed about hazards.

It is also necessary to comply with the applicable accident prevention regulations and other generally accepted principles in the field of technical safety, occupational medicine and road traffic regulations.

III. WARNING SIGNS

NOTE FOR THE USER!

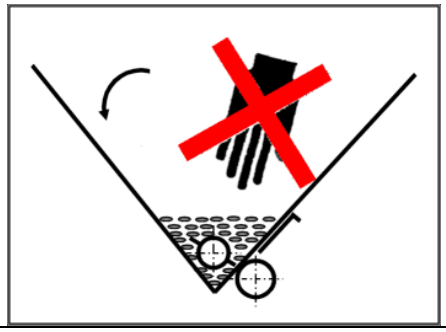
Safety signs and inscriptions should be protected against damage, dirt and painting. Replace damaged and illegible signs and inscriptions with new ones, which should be purchased from the manufacturer or seller of the machines.

C.2.26 Switch off the engine and remove the key before starting any maintenance work!	Read operating instructions	**C.2.27** Do not drive on platforms, harrows and other machine components!	Place for attaching the suspension elements for unloading

C.2.23 Do not touch the machine components until all assemblies are at standstill.	**B.2.12.** Do not reach into or step into the container of the machine while the engine is running!	**C.2.20.** Do not open or remove safety devices while the engine is running!	**C.2.11.** Danger of getting caught on the PTO shaft. Keep away from moving parts.

WARNING:

Danger of getting your hand caught by the agitator!



IV. GENERAL GUIDELINES ON SAFETY AND ACCIDENTS PREVENTION

General rule:

Check the technical condition of the unit before each use of the machine

1. In addition to the instructions in this manual, the generally accepted safety and accident prevention regulations must also be observed.
2. Do not allow unauthorized people (children), who are not familiar with its intended use and operation to operate the machine.
3. The unit may only be operated by an operator who has read this Operating Manual.
4. Working without guards of the mechanisms, riding on the unit and its drawbar, as well as driving the unit without brakes is prohibited.
5. Entering the loading box is forbidden during work and transport.
6. It is forbidden to exceed the permitted speed of the unit.
7. Leaving the unit on slopes and inclinations without braking and protecting the wheels (by placing wedges) is forbidden.
8. Staying within the machine's operating range is forbidden. Keep at least 6m distance away from the moving machine.
9. Exceeding the permissible speed may damage the machine and cause an accident.
10. It is forbidden to load or unload the unit, if it is not coupled with the tractor.
11. Do not leave any objects or tools inside the loading box.
12. When sowing the treated seeds, the worker operating the unit should wear a tight suit in order to be protected against the harmful effects of dust.

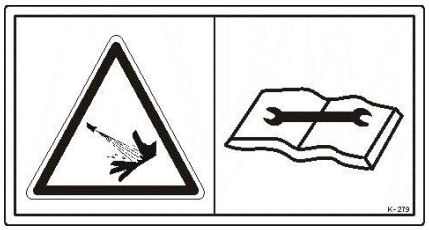
13. It is unacceptable to perform mechanical loading using the universal loader, if there is somebody staying in the area of its operation.

V. NOISE AND VIBRATIONS

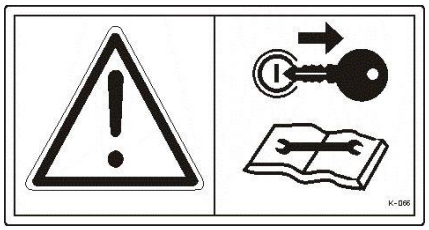
The sound pressure level is 77 dB (A). It is measured at the operator's ear level during operation. The tractor's cabin should be closed. During operation with the unit, the operator should be in the tractor cabin or wear hearing protectors.

When working with the unit, there are no risks caused by vibrations because the operator works in the tractor's cabin where the seat is amortized and appropriately ergonomically shaped. The value of vibrations acting on the operator's body does not exceed 0.6 m/s^2.

VI. HYDRAULICS

1. The hydraulic system is under high pressure!
2. When connecting the hydraulic cylinder and the motor, pay attention to the correct connection of the hoses.
3. In the case of hydraulic connections between the tractor and the machine, mark the plugs of the quick couplers in order to exclude improper operation.
   The opposite function (e.g. lifting / lowering) will occur when changing connections - risk of damaging the machine!
4. Regularly check the hydraulic hoses and replace them when worn or damaged. New cables must comply with the technical requirements of the device manufacturer!
5. 
   Liquids escaping under pressure (hydraulic oil) can penetrate the skin and cause serious injuries!
   In case of injury, consult a doctor immediately! Danger of infection!
6. Before starting work on the hydraulic system, reduce the oil pressure in the system to zero and turn off the engine!

VII. MAINTENANCE

1. 

Maintenance, cleaning and troubleshooting work should be performed basically with the drive turned off, the engine at a standstill and the key removed from the tractor ignition switch.

2. Regularly check the tightness of the bolt nuts and tighten them if necessary!
3. Ensure safety when carrying out maintenance work with the machine lifted by using appropriate supports!
4. Use suitable tools and gloves when changing working tools!
5. Oils, grease and filters must be disposed of in accordance with the regulations!
6. Always cut off the power supply before starting work on the electrical system!
7. If the safety devices are worn out, check and replace them as soon as possible!
8. Spare parts must at least meet the technical requirements specified by the manufacturer! This condition is met by original parts!
9. When carrying out electric arc welding on the tractor and attached devices, disconnect the cables on the generator and on the battery!

VIII. RESTRICTIONS ON TRAVELING ON PUBLIC ROADS

- Never exceed the speed limits during transport:
  - on roads with a smooth surface (asphalt) up to 25 km / h,
  - on dirt or cobblestone roads 6 ÷ 10 km / h,
  - on rough roads no more than 5 km / h,

follow the traffic regulations in your country!!

- Driving speed must be adjusted to the road conditions so that the unit does not jump on the tractor's suspension system and there is no excessive load on the machine frame and the tractor's suspension system!
- Pay special attention when passing and overtaking other vehicles and on curves (device rigidly connected to the tractor)!
- The machine, as a part of the vehicle protruding beyond the rear side contour of the tractor covering its rear lights, poses a threat to other vehicles traveling on the road!
- When transporting the machine on public roads, it is mandatory to use lighting devices, a warning sign and side reflectors.

The unit is connected to the tractor by means of links and the central bolt of the tractor.
It is forbidden to exceed the permitted speed of 25 km/h.
If it is necessary to leave the unit on a sloping terrain, it is absolutely necessary to secure the unit with the brake and secure the road wheels by placing wedges.

The machine prepared for work exceeds the permitted transport width of 3 m. In order to adapt the machine for transport on public roads, perform the following steps:

1. Retract the leg that drives the sowing system (only in versions with a mechanical drive).

To retract the drive wheel:

a) Remove the wheel securing cotter pins [2].
b) Retract the leg [1].
c) Secure the wheel with cotter pins [2]

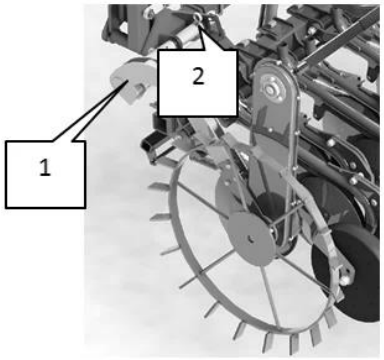


Fig. 1 Retracting the drive wheel
1-drive wheel, 2-securing cotter pins

IX. PREPARATION FOR THE FIRST START-UP

Follow the steps listed in the chapter before the first start-up of the unit:

When preparing the machine for operation, connect it to the tractor first.

There is a risk of injury when connecting and disconnecting to/from the tractor! Do not stand between the tractor and the machine or behind the machine during connecting and when the machine is not secured against rolling away with securing wedges or with the parking brake.
At the moment of start-up it is prohibited to stay within the machine's reach.

Connecting the seed drill to the tractor

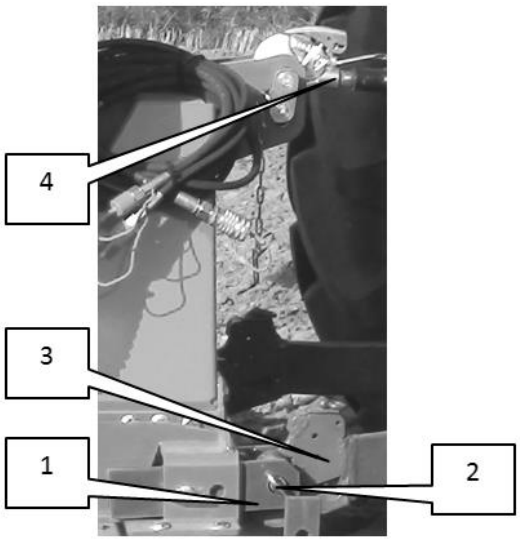


Fig. 2 Connecting the seed drill to the tractor.
1-Machine drawbar/suspension axle, 2-pin, 3-tractor's links, 4-central bolt.

a) Connect the unit with the tractor.

To do this, connect the holder/suspension axle [1] with the tractor links [2] by means of the bolt [3] and install the central bolt of the tractor [4]. Remember to secure the pins against sliding out.

b) Connect the hydraulic system hoses with the quick couplers of the external circuit of the tractor

Connect the turbine oil supply hydraulic line to one of the single-acting sockets on the tractor (see Fig. 3).

Fig. 3 Hydraulics connection.

Mark the type of the socket that is in the free oil return line to the tractor oil tank (screw connection, connector with valve ...). Check that there is no pressure remaining in the oil return line in order not to interfere with the good operation of the turbine.

	**CAUTION:** The return line MUST be connected to the tractor tank = FREE RETURN, before starting the turbine! Releasing the free return line during operation may damage the turbine motor.
	**CAUTION:** **Work with the unit should be performed with links of the tractor in the floating position.**

CAUTION! Correct operation of the tractor requires an efficient internal hydraulic system and the correct oil level – near the upper level marking.

- ✓ Check the operation of individual mechanisms and drive systems
- ✓ Connect the air system and electric installation to the tractor
- ✓ Check the operation of individual mechanisms and drive systems
- ✓ Check the operation of the electrical installation and air system

X. GENERAL AND COMMERCIAL INFORMATION. REPAIR DURING THE WARRANTY PERIOD.

In case of any problems or doubts with the maintenance and operation, please contact the authorized vendor or the manufacturer's Sales Department. The vendor is obliged to enter the tasks performed during the warranty period into the warranty card. **Read the User Manual thoroughly before starting the machine for the first time and follow the safety instructions contained in it!**

The device is intended only for common use, for pre-sowing soil cultivation and sowing seeds as indicated in the User Manual (see sowing chart). In the case of sowing seeds other than those indicated in the instructions, contact the manufacturer in order to determine, if the machine can be used for this purpose. The usage other than in compliance with the above-mentioned method is treated as incompatible with the intended use. The manufacturer is not liable for damages resulting from such usage, only the user bears the risk.

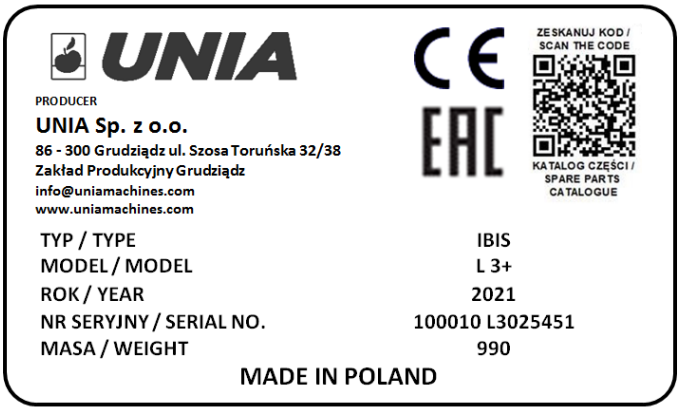
Intended use also includes compliance with the conditions of use and maintenance of the machine in good condition and using only genuine spare parts specified by the manufacturer.

The unit may only be used, maintained and kept in a proper condition by people familiar with its maintenance and informed about the hazards.

It is also necessary to comply with relevant accident prevention regulations and other generally accepted rules in the field of technical safety, occupational medicine and traffic regulations.

The name plate is located on the rear of the seed hopper.

The nameplate is filled by the manufacturer. It contains basic technical data suitable for the type of unit purchased, according to the figure on the right. For technical data, see also the User Manual, page 17.



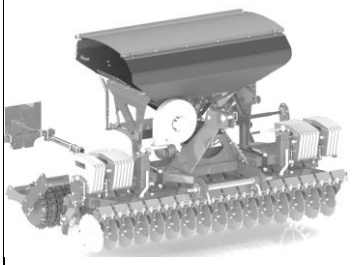
Name plate example

XI. USER MANUAL

1. INTENDED USE

The FENIX G unit is designed for row sowing of grass seeds and regeneration of meadows. It can also be used for row seeding of other types of seeds (see sowing chart) with parameters defined by the machine specification.

1.1. Technical data

	Fenix G
	
Working width [m]	3
Tank volume [dm^3]	1000
Transport width [m]	3
Coulter quantity	24
Coulter type	disc
Minimum power demand [PH]	140
Weight of weights - standard	420 kg
Weight of additional weights	300 kg
Weight [kg] (without additional weights)	2900
Seed coulters	32
Row spacing	90mm.
Dispenser drive	Electric / mechanical
Turbine drive	Hydraulic 24l / min.
Type of distributor	Plastic, 32 outlets

2. CONSTRUCTION AND OPERATION

2.1. Main Assemblies of the seed drill.

The seed drill consists of the following assemblies (see Fig. 4 below):

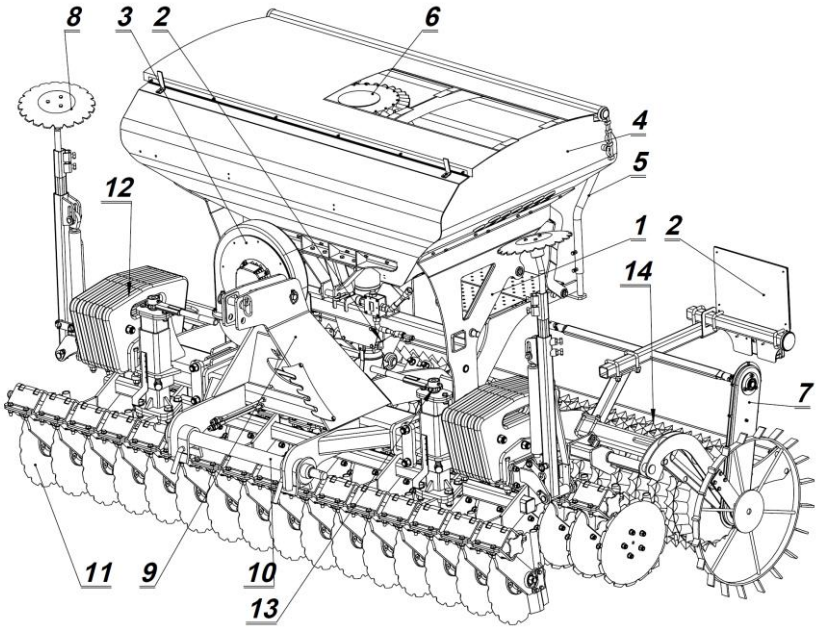


Fig. 4
1 – seed drill frame, 2 – metering unit, 3 - seed transport system with a turbine,
4 - seed hopper with a tarpaulin, 5 - platform with railing, 6 - distributor, 7-drive 8 - track markers,
9 – frame of the unit, 10 - suspension axle, 11- sowing coulters, 12-weights.

The frame is made of closed profiles and sheets supporting the seed hopper. The frame is used to connect the seed hopper with the unit and is an element connecting other components of the machine.

The metering unit is used to measure the appropriate dose of seed.
The electronically controlled motor, based on the speed from the GPS antenna, rotates the wheel of the metering unit at the appropriate speed and measures the seed dose. Instead of an electric motor, the device is mechanically driven by a star wheel as standard.

Seed transport system with a turbine - is used to create the pressure in the system necessary to transfer the seeds to the distributor and then to the coulters.

The seed hopper is made of an inverted pyramid-shaped sheet and is bolted to the frame. A tarpaulin is bolted to the upper part to protect the seeds from rain and dust. The metering unit is located in the lower part of the hopper.

The platform allows reaching the loading box in a safe manner and performing all activities related to the seed loading and machine maintenance.

The distributor serves to evenly divide the metered dose of seeds into individual sowing coulters.
The seeds from the manifold are blown into the pipes and then through the coulters to the soil.

The track markers mark a line across the field that sets the next machine pass. Thanks to this, during the next pass, there is no risk of overlapping runs or leaving unseeded belts. Markers are additional equipment of the machine.
The frame of the unit is made of closed profiles and thick sheets. In the central part of the frame, there is a suspension system for aggregating the machine with a tractor. Adjusting elements for changing the cultivation depth are also welded to the main frame.

The drive consists of a star wheel which transmits the drive to the metering unit by means of a gear and a cardan shaft. There is no mechanical drive in the version with electric drive.

The compacting roller is used to close the grooves in which the seeds are located and to maintain a constant sowing depth.

Weights are used for additional weighting of the machine on soils where there is a problem with sinking of the seed coulters. Increasing the weight increases the coulter pressure.

3. USING THE MACHINE.

3.1. Loading and Unloading

Loading and Unloading

	**CAUTION!** The seed hopper of the seed drill must not be filled, if the unit is not coupled to the tractor.

Loading of the unit should take place by means of a crane, loader or conveyor. The seeds must be evenly distributed over the entire surface of the load box at the same time.

3.2. Connecting and Setting the Blower.

	**CAUTION!** The return line MUST be connected to the tractor tank = FREE RETURN, before starting the turbine! Releasing a free return during operation may damage the turbine motor.

Connecting the blower

The oil delivery from the tractor must be at least 40L/min. below this value; the amount of oil may be insufficient to simultaneously operate the blower and other hydraulic functions.

On tractors with a pump below 40 l/min. the amount of oil flowing onto the blower circuit should be limited to approx. 25 l/min. by means of knobs on the tractor manifold or in the tractor controller (if possible).

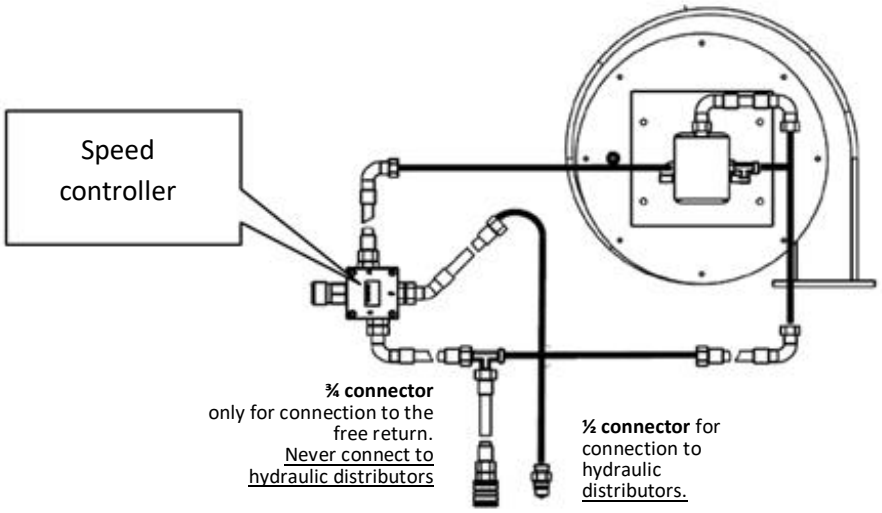


Fig. 5 Turbine

Turbine speed

The speed of the turbine is changed by means of a hydraulic controller located in the front part of the machine.

It is difficult to indicate the optimal speed of the turbine; it has to be determined by conducting field tests.

The turbine speed may not be too high, so as not to blow seeds out of the soil. It may also not be too low, so that the seeds do not remain in the ducts, especially in the case of coarse seeds.

The controller connected to the hydraulic motor allows, depending on its position, setting the internal pressure in the distribution lines. A pressure gauge installed on the tank (from the tractor side) allows pressure reading.

The turbine speed must be set depending on the type of seeds to be sown and the working width. For orientation: **see Table below:**

Working width	3m	4m	6m
Fine seeds:	3-4 kPa	4.5 kPa	4.5 kPa
Coarse seeds:	4-5 kPa	5.5 kPa	6 kPa

Ensure that the turbine speed setting is approx. 50 % (knob of the controller), start the hydraulic distributor of the tractor in the position of continuous opening. The turbine must rotate.

Otherwise, check the hydraulic system and ensure that the oil return is set to the tractor free oil return.

Restart the tractor hydraulic distributor in its continuous opening position and start the turbine in the controller. The turbine must rotate.

3.3. Operation and Setting of Metering Unit.

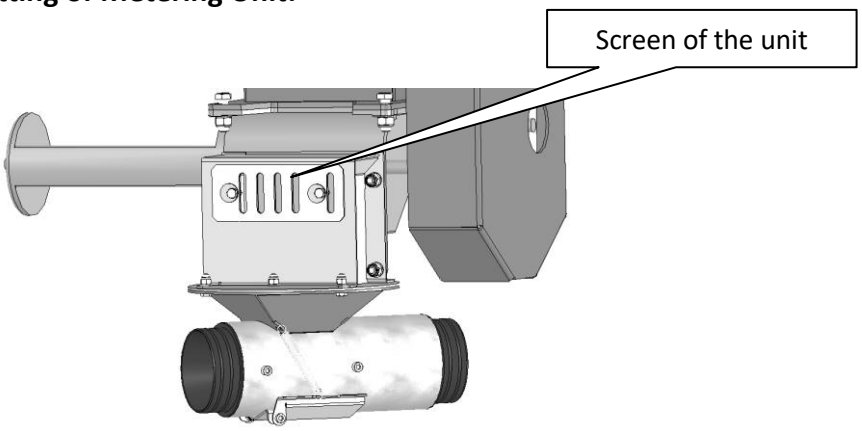


Fig. 6 Metering unit

Ensure that the dispenser is clean before each use. This will affect its good operation.
Each container has a volumetric type separation unit consisting of wheels with distribution channels. You can change the dosage by changing the volume of the seed wheel, by screening it. The sliding gear on the unit (red) allows you to reduce its speed by half.

	**CAUTION!** The screen of the unit (Fig. 6) is used to equalize the pressure when sowing large doses (close the screen when over 350 kg/h). For the remaining doses, the screen should be in the **open** position.

3.3.1. Calibration test on the FENIX G seed drill.

Three types of controllers are used to operate the seed drill.

- Standard controller for reading basic parameters.

- Pilot seed (additional option)

- Drill Control (in the version with a mechanical drive).

Calibration in the version with electric drive.

After performing the necessary settings (see sowing chart):

Calibration in the version with electric drive.

1. Depending on the type of seeds and the desired dose

   Set the seed wheel to the correct position on the scale. (information in the sowing chart)

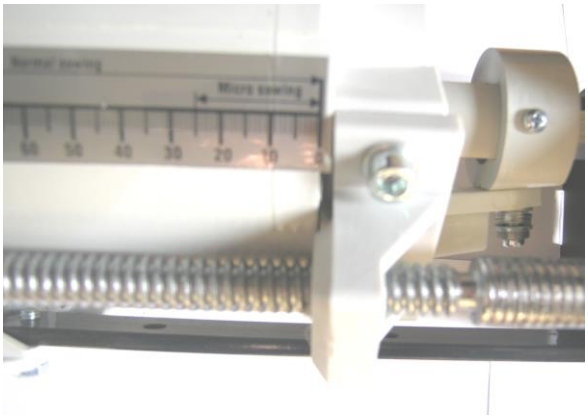


Fig. 7 Scale of the unit

2. Place the container for the seed.

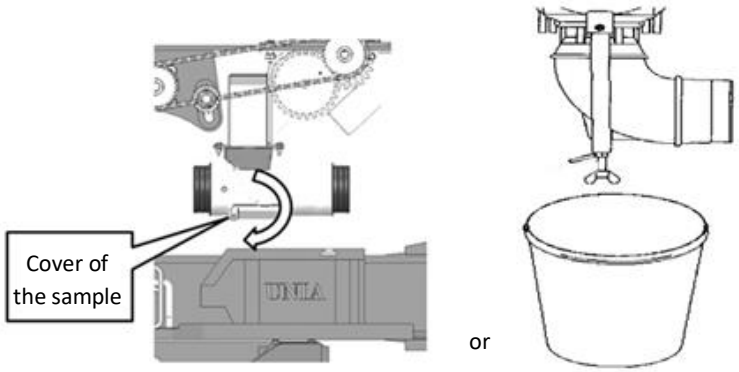


Fig. 8- Calibration test

	CAUTION: Do not hold the container with your hand during the test! Keep a distance of at least 50 cm from the working unit.

2. Enter the desired dose per hectare on the electronic console
3. Start the calibration test panel (see the controller manual).
4. Start the calibration procedure in the electronic console and press the button on the seed drill.

Fig. 9- Test button

Caution, the button must be held pressed during filling; do not release the button until the container is filled.

The more seeds are introduced into the container, the greater the precision of the calibration test.

5. Weigh the seeds collected in the container(s).
6. Insert the weight of the seeds into the electronic console.
7. Repeat this step 3 times to get a precise calibration

	Attention: Detailed information in the controller manual.

Calibration in the version with a mechanical drive.

1. Make all the necessary settings for the control electronics. (see controller manual).
2. Set the seed wheel to the correct scale position. (see sowing chart).
3. Place the container for the seed
4. Turn the star wheel 14.6 revolutions/ar; 1460 revolutions/ha. (Fig. 10)

1ha = 1460 wheel revolutions

Fig. 10

5. Weigh the seeds collected in the container(s).
6. Repeat the operation to make sure that the calibration is correct.

	The data contained in the sowing chart should be treated as approximate due to the fact that the seed of the same kind, but of a different variety, is not the same in terms of size and weight. In order to obtain the exact desired seed quantity per hectare, a calibration must be performed each time.

3.3.2. Checks during sowing

The following checks should be carried out during sowing, after each sown hectare:

1. Ensure that the sowing units dispense seeds and they are not blocked.
2. Check that the air conduit set is properly attached both upstream and downstream the dispenser. The hoses leading from the manifold to the coulters can't have any bends or horizontal sections.
3. Check correct connection of the turbine hydraulic conduits with the tractor distributor.
4. Check visually that no seed hose is clogged (especially in the version without flow sensors).
5. Ensure that the amount of seeds coming out of each sowing unit is identical.
6. Check the sowing depth manually across the entire width of the machine.
7. Ensure that the seed container tarpaulin is closed properly.
8. Clean the grille at the turbine inlet regularly in order to avoid clogging, as this could lead to contamination of the seed lines.

3.3.3. Adjustment of seed Amount

When setting the required quantity of sown seed, use the sowing chart and carry out the calibration test then.

NOTE!

1. When pouring the seed to the seed container for the first time it should be poured when the metering roller is completely closed (**recommended**), or at the roller setting by at least 15 % less than indicated in the sowing chart.
2. With the seed container is filled, and after each seeding test, you can reduce the sown seed quantity by no more than one turn of the adjustment knob (to the left). Increasing the amount of sown seeds - no limits in the scale range.
3. When reducing the dose or closing the unit, empty the seed hopper and the dispenser from seeds, otherwise the dispenser may be damaged.
4. Setting of gear wheels: 1:1 (small wheel inserted into the large gear.)

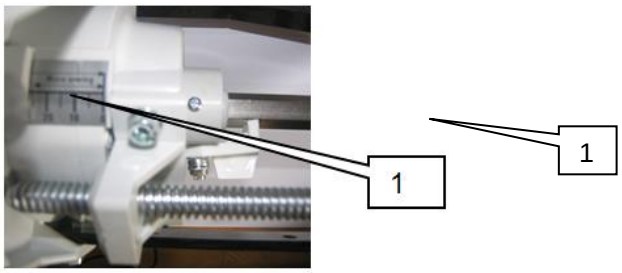


Fig. 11. 1- the scale of fine seeds sowing

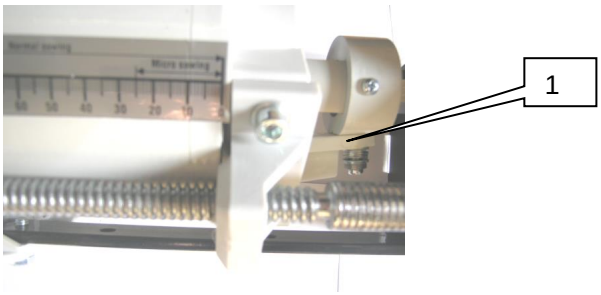


Fig. 12. 1- The resistance of the seed wheel

Settings for fine seeds (of rapeseed type)

In order to adapt the unit for sowing fine seeds, perform the following steps:

- empty the seed hopper and dispenser completely;
- unlock the adjusting screw knob;
- completely close the metering roller (at 'O');
- set the resistance in the hex shaft cut-out (see Fig. 12) – it is only possible with the metering roller completely closed;
- adjust the fan speed;
- set according to the sowing chart, on the scale for fine seeds (Micro sowing) the desired number of seeds sown;
- carry out the calibration test and correct the amount of seeds sown
- lock the adjustment screw knob

When sowing very fine seeds, e.g. very fine rape or poppy seeds, individual seeds may fall out of the unit. Sowing such seeds can be carried out provided that the following steps are performed.

1. sealing the housing and the dispenser flap with the tape [1] in the shape and dimensions shown, Fig. 13.1 and 13.2 on the circumference/.
2. sealing the gap between the left side of the rubber cap and the housing of the dispenser with a tape [1] Fig.13.3 in the place and dimensions shown.
   The surfaces on which the tape will be glued should be thoroughly cleaned and degreased.

After that, set the dosing roller according to "SETTINGS FOR FINE SEEDS".

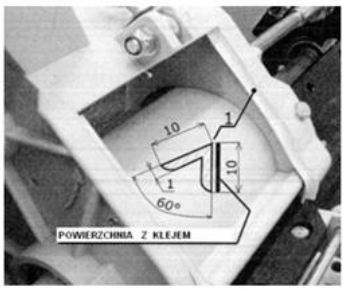


Fig. 13.1

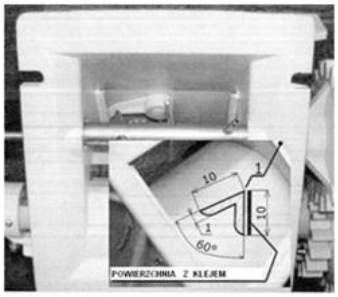


Fig. 13.2

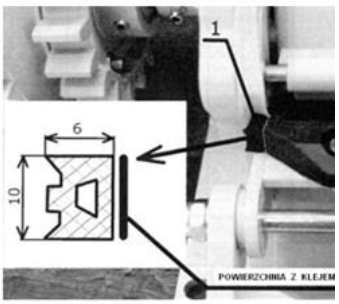


Fig.13.3

CAUTION!

In case of difficulties with setting the dose of fine seeds (e.g. rape in a dose smaller than 2.5kg/ha), we suggest the following solution: while maintaining the above requirements, set the metering roller to twice the required value, extend the small gear (red) from the big gear and mesh it with the other big gear wheel. In this way, you should receive the required sowing rate, which should be confirmed by the sowing test. After sowing in this way, you should go back to the previous setting of the gears, that is, the small wheel should be inserted into the large one.

	Caution: After shifting the gear on the unit, change the setting to 2:1 in the controller.

3.3.4. Operation of the Seed Dispenser.

CAUTION!

The dispenser may only be used for metering with the seed material specified in the sowing chart. For sowing other materials, it is absolutely necessary to make arrangements with the machine manufacturer.

We recommend that you learn thoroughly operation of the entire dispenser and air system after purchasing any part of the dispenser or the entire air sowing system, and before its installation and use, especially its part, where the purchased part will be installed.

Proper and efficient maintenance will extend the lifetime of the dispenser and it may be carried out by a person, who has been trained to operate and maintain the unit.

Each dispenser has a logo and serial number (five digits) stamped on its housing.

The allowed speed of the dispenser shaft is n_{max}=[120 RPM.]

NOTE!

1. It is forbidden to drive the dispenser shaft at a speed different than specified.
2. Decrease the sowing rate with the dispenser empty and cleaned or during sowing. Residues in the dispenser will prevent proper setting of the metering roller, and in extreme cases, may cause damage to the dispenser.
3. Rotating the metering roller in the direction opposite to the driving direction is forbidden, since this may cause damage to the dispenser.

4. We recommend additional blowing the dispenser toothed gear, which clearly affects the extension of its service life.

5. Thorough washing of the dispenser with water under pressure and drying it with compressed air after finishing work is recommended; preserve the metal parts with silicone grease afterwards.

6. Before sowing fine seeds, be sure to check the dispenser wear. If the metering roller shell or the flat brush are excessively worn or contaminated, the seeds will fall out. Replace any worn parts.

7. We recommend washing the flat brush in petrol or technical alcohol after sowing oily seeds.

8. After the end of the sowing season, have the dispenser reviewed by a service technician.

9. Be sure to lubricate the thread of the trapezoidal screw, the hexagonal shaft and the threads of the flap closing screws for pouring the seeds with silicone oil before the season and after the season.

Maintenance of the Dispenser

1. Before every sowing: inspect the dispenser, especially for any impurities and clean, if contaminated

2. After every 300ha: check the screw connections of the dispenser, the condition of the rubber blade, the flat brush, the casing and the shell or the rim of the metering roller; replace, if worn

3. After 1000ha: professional inspection carried out by the service technician of all parts of the dispenser and the entire air seed dispensing system.

Troubleshooting (Dispenser)

1. Difficult operation of the dispenser setting mechanism:

   - dirty dispenser, especially components affecting the movement of the roller" clean;
   - the nut on the trapezoidal screw is too tight: loosen it.

2. Dosed amount other than set:

   - the machine sows more seeds: worn components: sickle, rim, roll dividers or rubber blade;
   - the machine sows less seeds: seeds do not reach the dispenser, find the cause;
   - it sows less by 50 %: extended and meshed small gear.

3. Losing seeds from the dispenser: worn parts of the dispenser: housing, shell, sickle, rim, roll dividers or rubber blade; replace

4. Dispenser does not feed seeds:

   - seeds do not reach the dispenser - investigate and correct the cause;
   - drive cut off - remove;
   - damaged transmission - repair;
   - damaged screw or pin connections of the metering roller drive toothed gears - repair.

	**Warning! Risk of injury.**

It is strictly forbidden to put hands close to the gears of the dispenser during their rotation (operation). It may lead to injury to fingers and/or hands.

3.4. Filling and Emptying the Seed Hopper and Dispenser.

The seed hoppers should be filled with seeds by means of mechanical or pneumatic loading devices that are not the equipment of the FENIX seed drill. Loading devices can be purchased in the depots of agricultural machinery.

	**Warning! It is forbidden to stay on any machine elements other than the platform. Carry out loading and unloading activities only when the machine is parked with the tractor engine turned off. It is forbidden to dig the seeds with your hand and stay on the platform during work.**

After filling the box with the seeds, level the seeds with the spatula – **only at the machine standstill**. This is especially important when the seed level sensor is installed.

Always empty the seed hopper and dispenser in the following way (see Fig. 14 below):

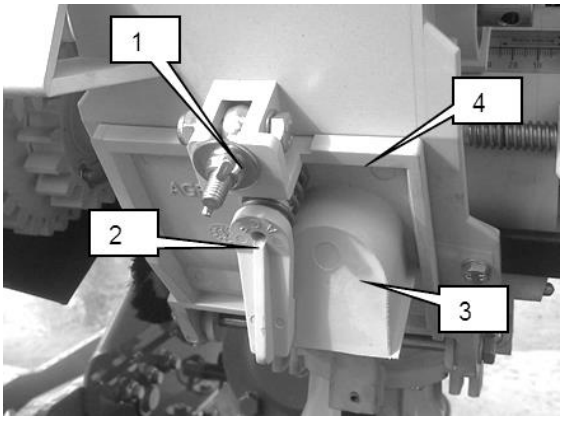


Fig. 14 1 - cover screw; 2- lever of partial pouring off; 3-chute; 4-flap

Partial "pouring off" of the seeds is done by the chute [3], which is opened by turning the lock [2]. When using the chute [3] some seed will remain in the lower part of the dispenser.
The coarse chute [5] is used to empty the hopper when a large amount of seed is left in the hopper.

In this way, you can only empty the tank up to the level of the chute [5]. The rest of the seeds should be removed by unscrewing the screw [1] and opening the flap [4].
The seeds should be poured into a container or on a properly laid sheet.
It is not possible to empty only the dispenser or only the seed hopper.

CAUTION!

In the final stage of emptying the dispenser, remove the seeds from the grooves of the metering roller and the lower part of the dispenser, using a suitable brush. **This operation should be performed at a standstill, with the tractor turned off and the power supply to the controller switched off.**

3.5. Track markers.

The track markers are alternately folded (right/left) to mark the track on the soil. This marker sets the centre of the tractor's next pass, thus avoiding leaving any unsown field stripes and overlapping passages (Fig. 15).

Fig. 15 Track markers**.**

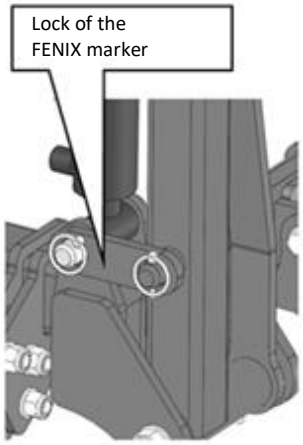


Fig. 16 Lock of the marker.

The track is marked on the centre of the machine or on the wheel. It is possible to set the marker length and the disc rake angle.

- The length of the marker is adjusted to avoid overlapping passes or leaving blank gaps between passes. In order to change the length of the track marker, loosen the screws [3] and [1] Fig. 17, slide in or out the movable elements [4] and [1], and then tighten the screws. The measured distance from the centre of the machine to the centre of the marked track should be equal to the working width of the machine. For example, for a 3m wide seed drill, the distance from the centre of the machine to the marked track should be 3m. During the first passes, check in the field that the passages are correctly marked.
- The rake angle of the marker disc. By changing the disc angle, we increase the clearance and reduce the width of the marked track. To adjust this feature, loosen the screws [1] Fig. 17, adjust the plate angle by turning the element [2], and then tighten the screws.

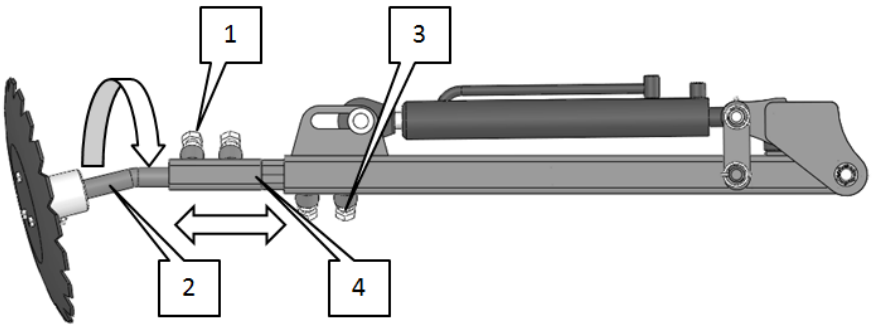


Fig. 17 Adjustment of the track marker

It is necessary to block the markers before driving the machine on a public road. (Fig. 16)

	The markers must be unlocked before work commencement. Failure to remove the locks may damage the markers.

	When the machine is at work, never come close to the area of effect of the bout markers

3.6. The depth of the cultivation.

For operation, the unit must be set perpendicularly to the ground. Before commencing adjustment, the unit must be mounted on the tractor and lowered to the working position on a flat and hard surface.
Two adjustment knobs on both sides of the machine are used to adjust the working depth of the unit (Fig. 18).

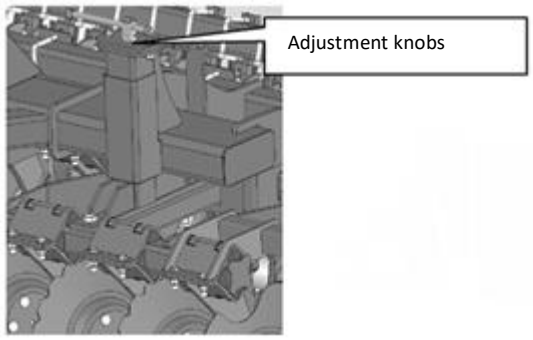


Fig. 18

By turning them clockwise, the working depth decreases. Turning them counterclockwise increases the working depth.

	Note: The set length of both adjustment knobs should be the same.

3.7. Work with the unit and operating conditions.

Obtaining the correct effects of the unit operation requires fulfilling the following rules:

1. Check that the machine is correctly attached to the tractor.
2. Read this OPERATING MANUAL carefully.
3. Before entering the field, check the condition of threaded connections and the condition of working elements.
4. Check and correct the working depth if necessary.
5. Maintain an even driving speed.
6. Always clean the machine after finishing work.
7. Replace damaged parts immediately with new original ones.
8. At the headlands, raise the unit to a height that allows to perform a manoeuvre without catching the ground with working elements.
9. During the subsequent working passes, the unit should be driven in a straight line, without leaving any bypasses. When working with the seed drill, follow the tracks made by the marker of the seed drill.
10. Violent jerks should be avoided.
11. Remedy any defects as soon as they are discovered.
12. Avoid working on stony soils.
13. Use the correct lubricants and adhere to the lubrication schedule according to the lubrication chart.
14. Check the tightening of bolts and nuts every 30 hours of operation. The tightening torque of the knife mounting bolts - 350 Nm.

15. When replacing the knives, pay attention not to replace the right knives with left knives and vice versa. The knife blade should point in the direction of rotation. After installing the knives, check by hand whether the rotors with knives turn without jamming.
16. In the event of shearing the bolts in the PTO shaft (if this type of shaft is installed), protecting the machine against damage, replace only bolts recommended by the factory, i.e. **M8 x 60-8.8 B** bolt acc. PN-85/M-82101. The bolt strength 8.8 is stamped on the bolt head.
17. Do not adjust the bolts of the overload clutch in the articulated telescopic shaft (if this type of shaft is installed).

When starting work, switch on PTO revolutions in transport position and after reaching 540 rpm smoothly lower the unit while driving forward.

Caution: It is not allowed to start work with the unit knives submerged in the ground.
It is not allowed to operate the unit while driving backwards.

4. Daily Maintenance

Observe the safety instructions for daily maintenance. Your machine has been designed and built to achieve maximum efficiency, profitability and comfort in a variety of working conditions. Your machine has been inspected at the factory and by our distributor before delivery, to ensure that you receive the machine in excellent condition. In order to keep the machine in perfect working condition, perform the daily maintenance at the indicated intervals.

In order to keep the machine in good condition and achieve optimum performance at all time, it is necessary to clean and perform the maintenance work on the machine at regular intervals. Hydraulic, electric assemblies and bearings may not be washed with a high-pressure cleaner, or with direct water jets. Gears, bolted joints and bearings are not sealed id washed with water under VERY high pressure.

4.1. Maintenance Intervals

Maintenance intervals are determined by a number of factors. They are affected, for example, by different working conditions, weather conditions, driving and operating speeds, formation of dust, soil type, etc., the quality of the lubricants and preservatives used, which determine the length of time to carry out the next maintenance work.

The indicated review intervals can therefore only serve as reference points. When we go away of the normal conditions of use, the periods between maintenance works must be adapted to these conditions:

1/ After the first 10 hours of operation:
- Check tightness of all bolts and nuts.
- Check the hydraulic system (for tightness).
- Check the tightness of the wheel nuts.
- Carry out complete machine diagnostics to ensure there is no problem.
- Clean the machine from the soil.

2/ After the first 50 hours of operation
- Check tightness of all bolts and nuts.
- Check the hydraulic system (for tightness).
- Check the tightness of the wheel nuts.
- Carry out complete machine diagnostics to ensure there is no problem.
- Lubricate the articulated joints provided with the grease nipples.

4.2. Storage

If the machine will not be used for a longer period of time:

- Store the machine in a roofed area, if possible.
- The machine **must be** stored in its resting position. All working units should be lowered to the ground to ensure good stability.
- Disconnect the electrical controls and place them in a dry place.
- Secure the machine against rust. Spray the oil that is readily biodegradable, e.g. rapeseed oil.
- Remove the wheels
- Protect piston rods of hydraulic cylinders against rust.
- Storage should be out of the reach of unauthorized persons, especially children and pets.

Do not spray oil or any anti-corrosion agent on plastic or rubber parts, as they may become brittle and break.

4.3. Lubrication

Machine lubrication:

The machine must be lubricated regularly and after each high-pressure cleaning, and after the period specified by the manufacturer in the lubrication chart. This will keep the machine operational and reduce preparation costs as well as reduce downtime.

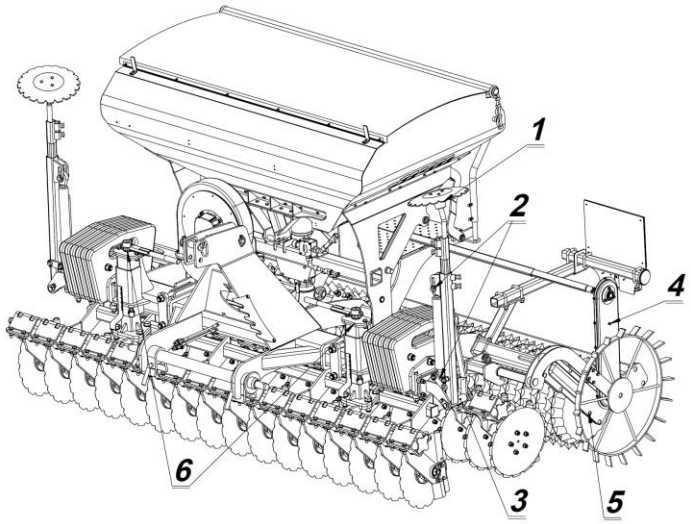


Fig. 19 Lubrication diagram

Lubrication intervals	Place of lubrication	Number of lubrication points	Grease type
Every 50 hours of work	1- Pre-emergence marker disc hubs	2	ŁT-42
Every 50 hours of work	2- Cylinder heads	4	ŁT-42
Every 100 hours of work	3- Marker pin.	4	ŁT-42
Once a season	4- Chain of the gear.	2	ŁT-42
Eevery 50 hours	5- Bearing of rear shafts	2	ŁT-42
Once a season	6- Coulter adjustment screws	2	ŁT-42

CAUTION:

Protect yourself against direct contact with lubricants by wearing protective gloves or using protective creams. Wash any traces of lubricants on the skin thoroughly with warm water and soap. Do not clean the skin with petrol or diesel fuel or with other detergents.

The oil is poisonous. If you have swallowed oil, consult a physician immediately.

- Keep lubricants out of the reach of children.
- Never store lubricants in open containers or in containers without a description.
- Avoid skin contact with clothes that are soaked or stained with oil. When the clothing is dirty, it must be changed.
- Do not keep cleaning clothes that are soaked in oil in pockets.
- Get rid of oil-soaked shoes and treat them as hazardous waste.
- If oil gets in your eyes, rinse them with clean water and consult a physician, if necessary.
- Soak up the decolouring liquid with a binder and remove.
- In the case of oil ignition, never extinguish it with water. To do this, use appropriate, authorized extinguishing agents and wear a respiratory protection device.
- Absorb spillage with the help of a sorbent material and dispose of.
- In the case of oil ignition, never extinguish it with water. To do this, use appropriate, approved extinguishing agents and wear a respiratory protection equipment.
- Waste contaminated with oil and used oils must be disposed of in accordance with applicable regulations.

Lubricate the machine according to the indicated intervals.

Thoroughly clean all lubrication points and the grease gun prior to lubrication to avoid any ingress of dirt into the bearings. Remove contaminated grease outside the bearings and replace it with new grease!

4.4. Hydraulic System Maintenance and Use

Caution: The risk of infection caused by hydraulic oil ejecting under high pressure that penetrates the skin.

- Work with the hydraulic system should be carried out in a specialist workshop.
- Completely depressurize the hydraulic system before starting any work.
- Use appropriate tools to detect leaks.
- Never stop oil leakage with your hands or fingers.
- Liquid ejecting under high pressure (hydraulic oil) may penetrate the skin and cause serious injury.
- In the case of injuries caused by hydraulic oil, consult a physician immediately. The risk of infection!
- When connecting the hydraulic hoses of the machine with the tractor hydraulic system, make sure that the hydraulic systems of the tractor and machine are not under pressure.
- Check the correctness of connecting the hydraulic hoses.
- Regularly check that the hydraulic hoses, connectors and sockets are in good condition and clean.
- Have the hydraulic hoses inspected by a specialist at least once a year, in order to ensure they are in good condition.
- Damaged or worn hydraulic hoses must be replaced with new ones.
- Use only UNIA original hydraulic hoses.
- The service life of hydraulic hoses must not exceed 6 years, including the storage time of the machine, for a maximum of two years. Even in the case of proper storage and observance of the instructions for use, hoses, hydraulic hoses and connections are getting old, which is completely normal, hence the limitation of their storage and working time. However, the time of use may depend on empirical factors, in particular taking into account the potential risks. With regard to hoses and thermoplastic hydraulic hoses, other reference parameters may also be taken into account.
- Disposal of used oils must comply with applicable regulations. In the event of a problem, please contact your oil dealer.
- Store hydraulic oils out of the reach of children.
- Be careful not to contaminate the ground or water with hydraulic oil!

After the first 10 hours of operation, and then, after every 50 hours of operation

1. Check all components of the hydraulic system for tightness.
2. If necessary, tighten the connectors.

Before each start-up

1. Visually inspect the condition of the hydraulic hoses for any defects.
2. Eliminate points of friction of pipes and hoses.
3. Damaged or worn hydraulic hoses must be replaced immediately.

Inspection criteria for hydraulic hoses.

For your own safety, observe the following review criteria:

Replace the hydraulic hoses if, during the review, you find one of the following:

- Damage to the outer layer up to the reinforcement (e.g. abrasion areas, cracks, crevices, scratches, etc.).
- Crushing of the outer layer (formation of cracks).
- Deformations that do not correspond to the natural shape of the hose or pipe, under pressure or without pressure, or during bending (e.g. separation of layers, formation of bubbles, spot crumbling, cracks, crumbling of bending points, etc.).
- Leaks.
- Damage or deformation of a tip (affecting the seal), (minor surface defects do not constitute grounds for replacement).
- The hydraulic hose disconnects from the terminal (connector).
- Corrosion of a tip (connector), resulting in reduced performance and reliability.
- Failure to comply with the installation specifications.

Assembly and disassembly of hydraulic hoses

The following instructions must be strictly observed when assembling or disassembling hydraulic hoses:

- Use only UNIA original hydraulic hoses.
- Always take care of cleanliness.
- When assembling hydraulic hoses, they must be mounted in such a way that in each operating condition:
  - ✓ They were not exposed to stretching, other than that exerted by their own weight.
  - ✓ They were not subject to crushing on short sections.
  - ✓ They were not exposed to external mechanical influences.
  - ✓ The friction of the hoses against the machine components or between them was avoided; for this purpose, they should be correctly positioned and fastened. Otherwise, the hydraulic lines should be protected with covers. Cover the components with sharp edges.
  - ✓ The admissible bending angle was not exceeded.
- If a hydraulic hose is connected to moving parts, the length of the hose should be measured in such a way that the total movement range was not less than the smallest allowable radius of bend and/or that the line was not otherwise subjected to friction.
- Hydraulic hoses should be fastened in places provided for this purpose. Therefore, avoid such brackets that obstruct the natural movement and modification of the length of the line.
- Hydraulic hoses must not be painted.

4.5. Lighting Installation.

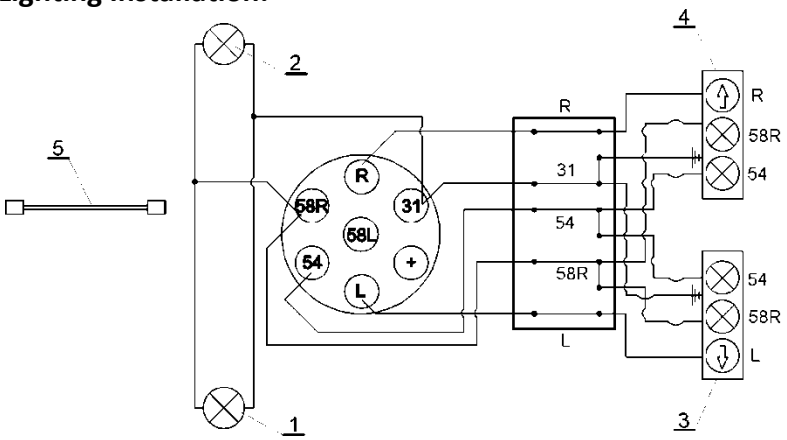


Fig. 20 Lighting Installation diagram

1 - left position lamp (not available in mounted machines), 2 - right position lamp (not available in mounted machines), 3 - rear right lamp unit, 4 - left rear lamp unit 5 - connection cable

The electrical installation in the FENIX seed drill is of fixed type, provided with two rear lamp units. A connection cable (5) is used to connect the installation with the tractor installation. The installation diagram is connected according to Fig.20. Before leaving for highways, check the correctness of the electrical installation every time.

5. Disassembly and decommissioning.

The user of the machine, in accordance with the provisions on environmental protection, is obliged to conduct proper waste management agreed with the relevant local self-government authorities.

As part of these activities, at the time of replacement and scrapping of parts and assemblies or liquidation of the entire device, the user should:

- parts that are still suitable for further use can be preserved and stored in the warehouse,
- the scrap metal parts must be handed over to the scrap collection point,
- components made of cardboard, paper, plastics, rubber, etc., should be transferred to points dealing with the purchase of recyclable materials,
- used oil from meshing devices should be handed over to companies managing the collection of used oils and lubricants; otherwise, follow local regulations regarding waste management for environmental protection.

6. Manufacturer's Liability.

The manufacturer shall not be liable, if the machine is operated contrary to the law, safety regulations or recommendations of this manual. Because, during operation of the machine, situations not provided for in this manual may occur, the user should always follow the general safety rules.

The manufacturer's responsibility shall be excluded in the event of arbitrary use on the machine spare parts or parts other than genuine or approved by the manufacturer.

The manufacturer shall not be liable for indirect damages, including damage to other machines or devices.

The manufacturer shall not be responsible for the wrong selection of seeds, their type or quantity. If your own experience in this area proves to be insufficient, you should ask a specialist for help.

The manufacturer's liability shall not cover improper (or departing from expected) work results. In any case, the user must control and supervise the cultivation and sowing to ensure that the sown dose is correct under all operating conditions. The user should also constantly check the correctness of sowing.

The owner is responsible for the operation and maintenance of the machine.

The owner of the machine is responsible for the appropriate qualifications of the operators and their knowledge of the operation and maintenance of the machine.
It should be remembered that improper operation of the machine poses a risk to people, animals, water reservoirs and arable fields. Always follow the instructions of manufacturers of machines and devices, seeds as well as plant protection products and fertilizers, contained in specialist instructions.

DESIGN SOLUTIONS OTHER THAN SHOWN HERE AND THAT DO NOT REQUIRE CHANGE OF THE MANUAL, ARE ALSO ALLOWED.

7. Warranty Terms and Conditions.

The warranty covers defects and damages resulting from the fault of the manufacturer due to material defects, poor machining or assembly.

NOTE

The producer / vendor / shall not accept the warranty claim if:

1 - THE CONTENT OF THIS MANUAL IS NOT FOLLOWED,

2 - ANY TECHNICAL MODIFICATIONS AND REPAIRS HAVE BEEN MADE WITHOUT THE CONSENT OF THE MANUFACTURER

3 - THE MACHINE OR ITS ACCESSORIES HAVE BEEN IMPROPERLY STORED, MAINTAINED AND USED

4 - THE WARRANTY CARD IS NOT BE FILLED BY THE VENDOR OR IT IS INCOMPLETE

The warranty does not cover wear and tear parts that have worn out due to normal use.

Rubber and plastic components are only covered by the warranty in the case of obvious material defects.

8. Sowing chart.

Seed material	WHEAT	RYE	BARLEY	OAT	BEAN	PEA	VETCH	maize/corn	grass		RAPE	LUCERNE	GRASS
Kg/dm^3	0,77	0,74	0,68	0,50	0,85	0,81	0,83	0,79	0,36				
SCREEN OPEN	NORMAL SOWING kg/ha									SCREEN CLOSED WYSIEW NASION	SOWING OF FINE SEEDS kg/ha		
SCALE										SCALE			
10	17	25	15	22	23	12	20	7		**2.5**	1.8	2.3	
15	38	43	32	37	42	27	38	22	18	**5**	4.6	5.3	
20	56	58	47	51	61	55	56	43	26	**7.5**	6.5	8.6	2.8
25	74	75	61	66	79	74	75	61	34	**10**	9.1	12.0	5.2
30	90	91	77	80	98	93	91	81	42	**12.5**	11.4	15.3	7.2
35	106	108	87	95	116	109	109	98	50	**15**	13.7	18	9.2
40	121	124	99	108	135	127	127	113		**17.5**	15.9	21.3	11.2
45	138	141	113	123	154	145	142	131		**20**	18.2	24.0	13.2
50	153	156	126	137	172	160	159	149		**22.5**	20.5	26.6	15
55	170	170	141	149	191	179	175	165		**25**	22.8	27.5	16.2
60	186	187	154	164	209	198	194	181		1ha = 1460 wheel revolutions			
65	202	203	167	177	228	215	209	200					
70	218	218	181	191	246	233	236	216					
75	235	234	194	208	265	251	243	233					
80	252	251	207	220	283	269	257	250					
85	267	266	221	233	302	286	275	268					
90	284	283	234	247	320	304	292	284					
95	300	298	249	261	338	323	309	301					
100	317	310	262	272	356	342	327	217					
105	334	328	276	287	374	358	343	335					
110	351	343	290	300	393	376	359	352					

REMARKS AND COMMENTS

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