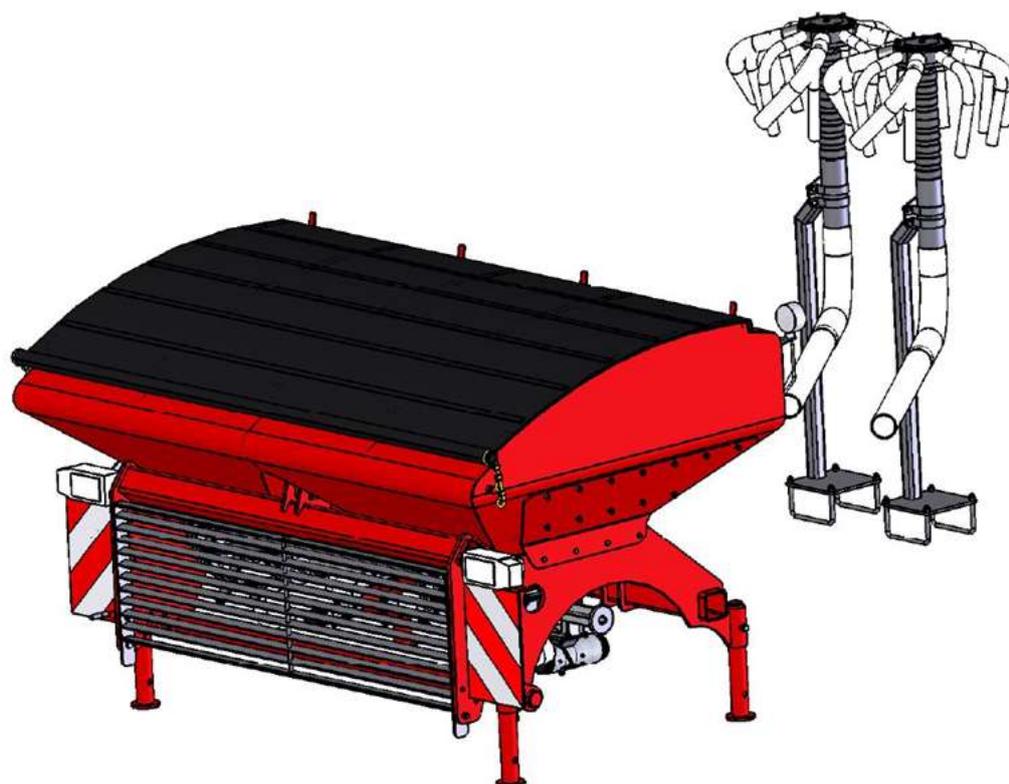


Pneumatic seeder on tractor front suspension

USF 1600



UNIA Sp. z o.o.

ul. Fabryczna 2, 49 - 301 BRZEG, POLSKA

Tel. + 48 77 444 45 86 | Serwis: + 48 77 444 45 11 | serwis.brzeg@uniamachines.com

uniamachines.com



Before starting the machine,
please read the manual
and follow safety instructions.



To get access to our parts catalogue and
warranty card, please scan QR code from
the ID plate of the machine. Please be so
kind and remember to register your
warranty or contact our dealer.

UNIA Sp. z o.o.
ul. Szosa Toruńska 32/38
PL 86-300 Grudziądz, PLOAND

uniamachines.com

USF-1600

Seeder

USER MANUAL

Machine identification data:

Type	<input type="text"/>
Manufacture date	<input type="text"/>
Serial No.	<input type="text"/>



This User Manual is an integral part of the machine. The Manual should always be available for the user of the machine. The machine owner should make the Manual available to the machine operators and people involved in its operation, adjustment, repairs and overhauls.



Before operating the machine, read this User Manual and follow the safety instructions and guidelines contained therein as well as those concerning the correct use of the machine.

Developed by:

UNIA sp. z o.o.
Design Office

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

Therefore, we cannot guarantee that the seed with the same name, variety and even the same producer has the same spreading characteristics as the one included in the sowing chart.

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 seeder from the vehicle with a crane or tractor using a ramp.

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

Caution!

Always attach a special board at the back of the machine before leaving for highways!

UNIA sp. z o.o.
ul. Szosa Toruńska 32/38, 86-300 Grudziądz, Poland
2018

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.

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Read the User Manual thoroughly and then, learn the design and operation of the seeder 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.

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

Throughout the text of the manual, the left hand (LH) or right hand (RH) sides of the machine are determined by looking from the rear of the machine in the direction of its operation (driving).

The technical safety requirements are only met, if only original spare parts are used for repairs.

I. GENERAL

The seeder is a machine designed to be suspended on the front three-point linkage/hitch 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

1. SAFETY AT WORK

1. Do not allow unauthorized people (children), who are not familiar with its intended use and operation to operate the machine.
2. The seeder may only be operated by an operator who has read this User Manual.
3. Working without the guards and/or riding on the seeder is forbidden.
4. Entering the load box is forbidden during work and transport.
5. It is forbidden to exceed the permitted speed of the unit.
6. Leaving the unit on slopes and inclinations without braking and protecting the wheels (by placing wedges) is forbidden.
7. Staying within the machine's operating range is forbidden. Keep at least 6m distance away from the machine.
8. Exceeding the permissible speed may damage the machine and cause an accident.
9. It is forbidden to load or unload the seeder, if it is not coupled with the tractor.
10. Do not leave any objects or tools inside the load box.
11. 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.
12. It is unacceptable to perform mechanical loading using the universal loader, if there is somebody staying in the area of its operation.

2. RESTRICTIONS ON MOVING ON HIGHWAYS (PUBLIC ROADS)

The seeder is only connected to the tractor with the help of the front three-point linkage/hitch.

Before going on highways; check the correctness of the slow moving vehicle sign on the back of the machine and check the functioning of the lights.

It is forbidden to exceed the permitted speed of 25km/h.

If it is necessary to leave the unit on an inclined area, it is absolutely necessary to pull the brakes and secure the wheels by placing wedges under them.

3. PREPARATION FOR THE FIRST START-UP

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

- a) **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 seeder to the tractor



- a) **Connect the machine with the tractor.**

- to do this, connect the seeder (1) to the tractor links (3) and the central screw (2). Remember to secure the bolts with cotter pins

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

Connect the hydraulic oil supply line to one of the single-acting sockets on the tractor (see Fig. 2.)



Fig. 2

Mark the type of the socket that is in the free oil return line to the tractor oil tank (screw connection, connector with valve ...) (see Fig. 3). 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! Correct operation of the tractor requires an efficient internal hydraulic system and the correct oil level – near the upper level marking

- c) Connect the air system and electrical installation to the tractor
- d) Check the operation of individual mechanisms and drive systems
- e) Check the operation of the electrical installation and air system
- f) Connect the air system and electric installation to the tractor
- g) Check the operation of individual mechanisms and drive systems
- h) Check the operation of the electrical installation and air system

4. NOISE AND VIBRATIONS

Sound pressure level is 77dB(A), measured at the operator's ear level during operation, with the tractor cab closed. During operation of the unit, the operator should be in the cab of an agricultural tractor or wear hearing protection.

When working with the unit, there are no hazards caused by vibrations, since the operator's work position is in the tractor cab, where the seat is cushioned and ergonomically shaped. The value of vibrations acting on the operator's body does not exceed 0.6m/sec².

5. SAFETY SIGNS

REMARK TO THE USER!

Protect signs and safety inscriptions against damage, contamination and overpainting; replace any damaged and illegible signs and inscriptions with new ones, which can be purchased from the machine manufacturer or vendor.



C.2.26

Switch off the engine and remove the ignition key before starting maintenance!

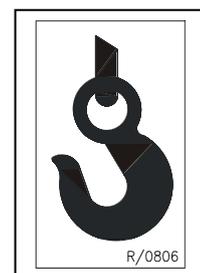


Read the User Manual!

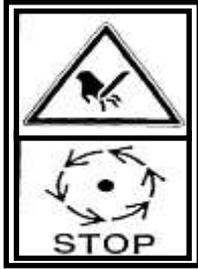


C.2.27

Do not ride on platforms, firmers and other machine components!



Lifting eye



C.2.23
Do not touch the machine components until all of its assemblies completely stop!



B.2.12.
Do not reach or enter the machine container until the engine is in motion!



C.2.20.
Do not open or remove the safety guards until the engine is in motion!

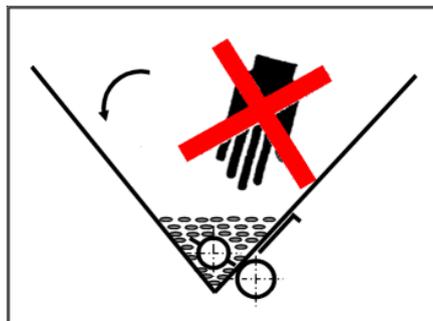


C.2.11.
Danger of catching on the PTO shaft. Keep away from moving parts



Caution!

Danger of being caught by the agitator!

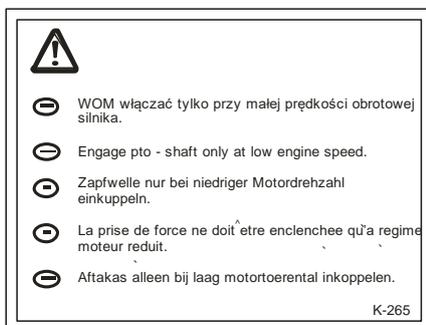




K – 141

Explanation:

Permissible speed of the tractor PTO shaft (in the version with a hydraulic pump driven by a PTO shaft.)



6. 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 machine is only intended for generally accepted use, i.e. for sowing seeds and spreading fertilizers, 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 seeder 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 nameplate is located on the frame, at the front of the machine.

The nameplate is filled by the manufacturer. It contains basic technical data suitable for the type of seeder purchased, according to the figure on the right. For technical data, see also the User Manual, page 13.



Nameplate

GENERAL SAFETY AND ACCIDENT PREVENTION GUIDELINES

The basic rule:

Check the technical condition of the machine before each use!

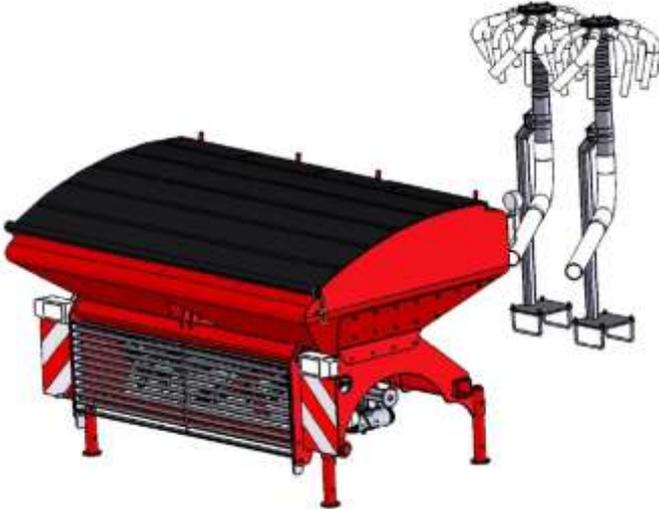
- Observe the instructions in this manual as well as generally accepted safety and accident prevention regulations
 - Observe the relevant traffic regulations when driving on highways
 - Before starting work, familiarize yourself with all devices and actuators and their functions. It is too late when the machine is working!
 - Before each start-up, check that nobody stays in the vicinity (especially children). Ensure proper visibility, e.g., use the assistance of a pilot, when reversing
 - The user's clothing should be close fitting. Avoid loose clothing!
 - Keep the machine clean in order to avoid a fire hazard.
-
- Coupling the machine is only possible with the engine stationary and the key removed from the ignition switch

II. USER MANUAL

1. INTENDED USE

USF-1600 seeder is intended for the sowing of specific seeds and spreading fertilizers in specified doses (see sowing chart.)

2. TECHNICAL DATA

	Tank volume:	1600dm ³
	Working width:	3m
	Distribution heads:	2x 4 outputs or 2x6 outputs or 2x8 outputs
	Dispenser:	Plastic
	Dispenser drive:	Mechanical or electrical
	Turbine drive:	Hydraulic
	Dispenser output max, 90mm dia.	900 kg/h
	No. of dispensers:	2
	Possibility of sowing two doses:	YES
	USF-1600 seeder weight (can be different, depending on equipment):	820Kg

3. CONSTRUCTION AND OPERATION

3.1. Main Assemblies of the Seeder.

The seeder consists of the following assemblies (see Fig. 1 below):

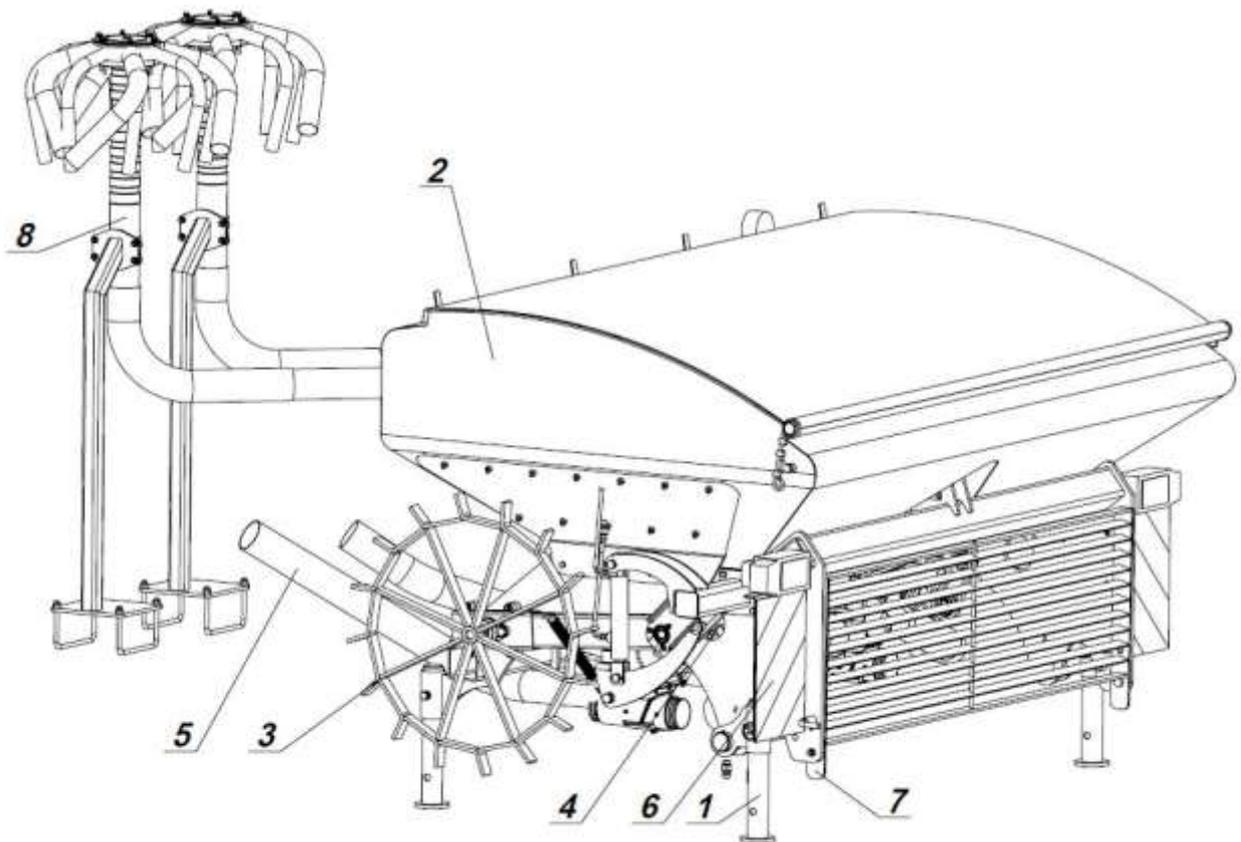


Fig. 1

1 – Frame assy., 2 – box assy. 3 – seeder drive,
4 – drive of sowing unit, 5 – air transport assy., 6 – lighting assy., 7 – platform,
8 – manifold,

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

The seed box is made of sheet metal in the shape of an inverted pyramid, fixed with brackets to the frame. A tarpaulin is bolted to its upper part. There is a sowing unit and outlets for emptying the box in the lower part of the box.

The motorized sowing unit is used to meter the right amount of seed. The sowing rate changes mechanically by changing the position of the sowing cylinder (slots in the sowing unit.)

The electronically controlled motor, based on radar speed, rotates at the appropriate speed near the sowing unit and meters the seed dose. In the mechanical version, the sowing units are driven directly from the star wheel.

The manifold (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 turbine is used to create pressure in the seed transport system necessary for transporting the seeds to the manifold and coulters.

4. USING THE MACHINE

4.1. Loading and Unloading

CAUTION!

The seed box of the seeder 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.

4.2. 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.

Turbine speed

It is difficult to indicate the correct 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 determining this pressure.

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

<i>Working width</i>	3m	4m	6m
Fine seeds:	3-4 kPa	4.5 kPa	4.5 kPa
Coarse seeds:	4 kPa	5.5 kPa	6 kPa



Fig. 2 Hydraulic system controllers

In order to change the speed of the turbine, use the hydraulic controller (see Fig. 2). Use the knob to set the delivery.

Ensure that the turbine speed setting is approx. 50 %, 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. The turbine must rotate.

4.3. Operation and Setting of Metering Units

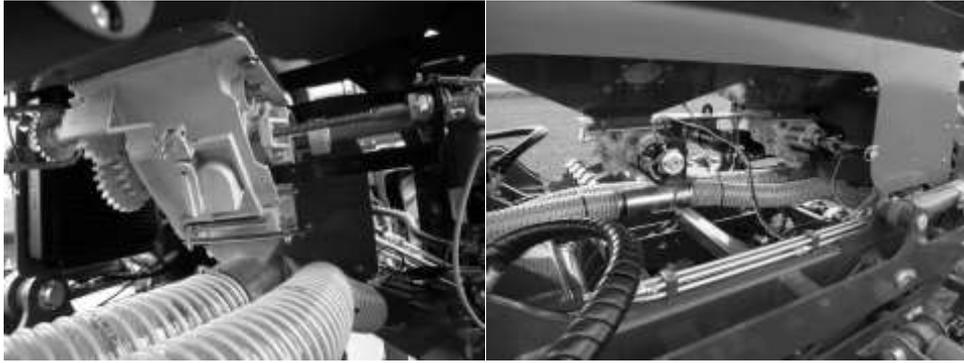


Fig. 3 Sowing units

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 manifold. You can change the dosage by changing the volume of the sowing wheel, by screening it. The sliding gear on the unit (red) allows you to reduce its speed by half.

4.3.1 Calibration Test (Dose Setting) on the USF-1600 Seeder

	Some seed preparations can disturb the seed outflow very much and thus, the proper operation of the distributor.
--	--

In order to obtain the exact sowing rate, you have to carry out static calibration tests (seeding rate tests.)

After performing the necessary settings (see sowing chart):

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

Set the seed wheel to the correct position on the scale.

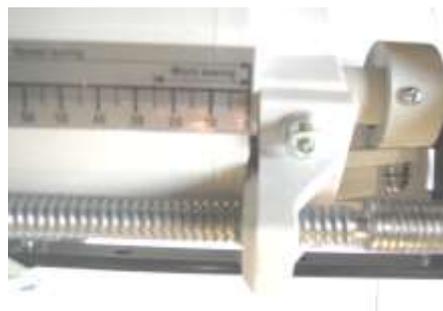


Fig. 4- Scale of the sowing unit

2. Place the seed box

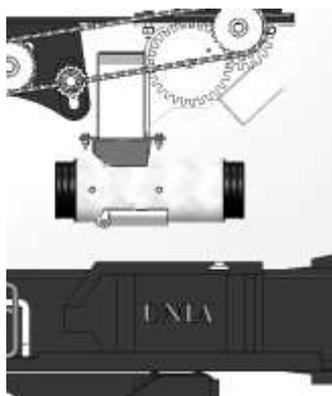


Fig. 5- Calibration test

3. Enter the desired dose per hectare on the electronic console
4. Start the metering unit
5. Start the calibration test procedure on the electronic console by pressing the button on the seeder



Fig. 6- 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.

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

In the version with a mechanical drive from the star wheel, the calibration test should be carried out with the help of the drive wheel. At a working width of 3 m, the wheel performs 1360 revolutions per hectare. During the test, we make the rotation of the wheel per 1 are of the sown dose, that is, 13.6 revolutions; weigh the sown dose and multiply it by 100, which gives the dose in kg/ha.

NOTE!

The data included in the seeding chart should be regarded as indicative, since the seeds of the same species, but different varieties, are not the same in size and weight.

In order to obtain the exact desired sowing rate per hectare, perform the sowing test

4.3.2 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 should not 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.
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.

4.3. Adjustment of Seed Amount

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

CAUTION!

1. Seeds for the seed container 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 - without restrictions.
3. With a larger reduction (without sowing test), slide the gate valve above the dispenser and empty the seed dispenser, because the dispenser may be damaged
4. Increasing the quantity of sown seeds – without restrictions, within the range of dosing roller settings.
5. Setting of gear wheels: 1:1 (small wheel inserted into the large gear.)

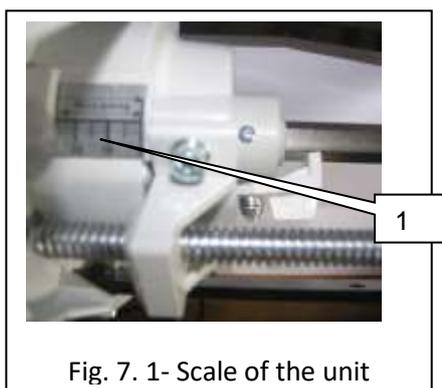


Fig. 7. 1- Scale of the unit

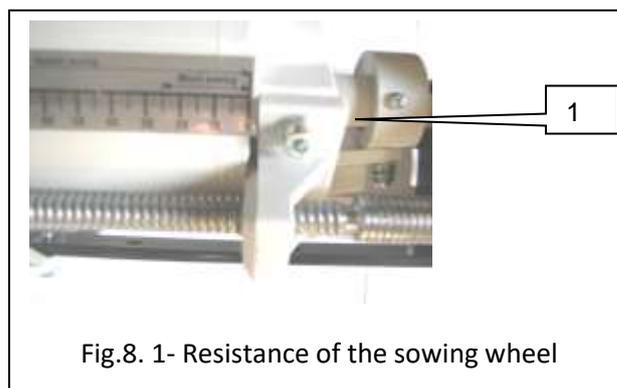


Fig.8. 1- Resistance of the sowing wheel

Settings for fine seeds (of rapeseed type)

Do the following:

- close the gate valve above the dispenser and empty the dispenser
- unlock the adjusting screw knob
- completely close the metering roller (at '0')
- set the resistance in the hex shaft cut-out (see Fig. 8) – **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

CAUTION!

In case of difficulties with setting the dose of fine seeds (e.g. rape in a dose smaller than 2.8kg/ha), we propose the following solution: while maintaining the above requirements, set the metering roller to twice the required value, extend the small gear from the big gear and mesh it with the other big gear wheel. In this way, you should receive the required sowing rate, which is best 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.

4.3.4 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 $n_{max}=[120 \text{ RPM.}]$

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.

4.4 Filling and Emptying the Seed Box and Dispenser

The seed boxes should be filled with seeds by means of mechanical or pneumatic loading devices that are not the equipment of the USF-1600 seeder. Loading devices can be purchased in the depots of agricultural machinery.



Warning!

It is not allowed to stay on other parts of the machine than the platform. Carry out loading and unloading operations only when the machine is at a standstill with the tractor engine switched off. It is prohibited to dig the seeds with your hand.

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 box and metering unit in the following way (see Fig. 9 below):

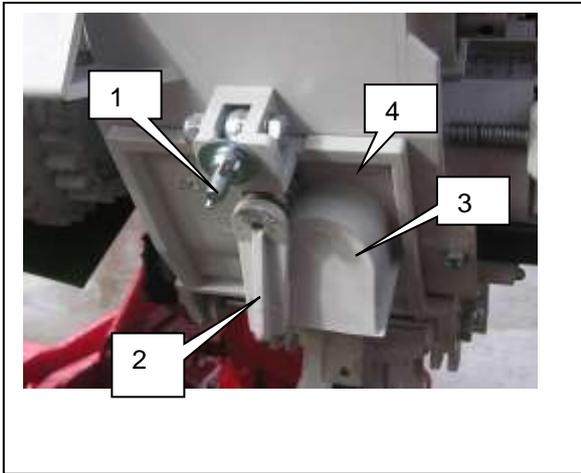


Fig.9. 1- cover screw; 2-lever of partial pouring off; 3-partial dump; 4-flap;

There is a dump (3) for partial ‘pouring off’ of seeds, installed, which can be opened by turning the lock (2). A portion of the seeds will remain at the bottom of the dispenser when using the dump (3).

Pour the seeds into a container or onto sheet placed under.

It is not possible to empty the seed box only through the dispenser.

CAUTION!

In the final stage of emptying the dispenser, manually 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 and the power supply to the controller switched off.

4.5. Operation of Electrically Driven Seeder

4.5.1. DRILL CONTROL Electronic System



Electric drive of the USF-1600 seeder dispenser is provided by an electric motor and operated via an electronic console



Always switch off the electronic console first and then, disconnect the power plug.

⇒ Activation of the electronic console

- a- Mount the operating console in the tractor cab.
- b- Connect the seeder cable to the operating console.
- c- Turn on the operating console.

⇒ Start screen:



Sowing on/off

Pre-filling of groove units



Adjustment of the target value



Access to other menus



Passage markers



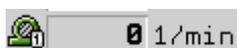
Process paths



Desired dose per hectare



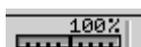
Working speed



Turbine speed



driving during technological paths operation



Percentage of temporary change in target value

a. Enter the target value

« **Settings / Dispenser** » menu allows configuration parameters for each dispenser.

- « **Target value** »
Specify the amount of seeds or granulated fertilizer to be sown per hectare.
- « **Change value** »
Specify the percentage of change in the target value, by which you can manually modify the setting when sowing seeds or granulated fertilizer. [→ 24]
- « **Calibration factor** »
Specify the delivered dose of seeds or granulated fertilizer per each rotation of the metering roller of the seeder.

Procedure

1. In the main menu, press the buttons:



⇒ « **Settings / Dispenser** » menu is displayed



2.  - If you use multiple dispensers, select the one you want to configure.
⇒ You can find the selected dispenser by the number displayed at the top of the menu.
3. Configure the parameters.

b. Perform the calibration test (dose calibration)

You can perform the calibration test when the seeder is ready for operation.

Procedure

- ☑ Have you prepared the seeder and its metering components for carrying out the calibration test, as specified in the description (see page 39)?
- ☑ The box is filled with enough seeds. Do not fill the box too much, as it may be necessary to dismantle or adjust the dispenser groove units.

1. Enter the value. [→ 22]

2. In the main menu, press the buttons:



⇒ « **Settings / Dispenser** » menu is displayed

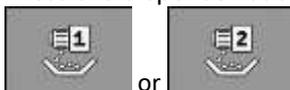


3. - If you use multiple dispensers, select the one, for which the calibration test is to be carried out.

⇒ You can find the selected dispenser by the number displayed at the top of the menu.

4. Enter the « **Target value** », with which you want to work.

5. Press the dispenser button, for which the calibration test is to be carried out, e.g.:



⇒ « **Calibration test** » menu is displayed

6. Enter the speed, at which sowing will take place in the box under « **Correct speed?** »



7. - Fill the dispensing units with seeds.

⇒ The metering units rotate for a few seconds.



8. - Start the calibration test.

9. Start the calibration test on the seeder.

10. Wait until the desired amount of seeds or fertilizer is obtained.

11. Stop the calibration test on the seeder.

⇒ Menu with the text « **3. Quantity** » is displayed.

⇒ The machine calculator will determine the weight on the basis of the available data and display it in the field next to the text « **3. Quantity** ». It may turn out that the displayed weight is different than the weight obtained during the calibration test.

12. Weigh the material collected into the container during the calibration test.

Enter the weight value in the box next to the text « **3. Quantity** ».

⇒ The machine calculator will determine the minimum and maximum speed, at which you can obtain the seeding rate with the used groove unit.

c. Pre-filling of the dispenser groove units

In order to be able to sow from the very beginning of the field and avoid the lack of sowing, you have to fill the dispenser groove unit with seeds before you begin driving the seeder. For this purpose, you can use the pre-filling function.

Procedure

1. In the main menu, press:



⇒ As long as the dispenser groove units are filled with seeds, this icon is displayed in the main menu: 

2. Do not start sowing, if this icon is hidden.

d. Start sowing

Procedure

- ☑ The seeder is going.
- ☑ The seeder is lowered.
- ☑ The dispenser groove units are filled with seeds.
- ☑ The turbine reaches its minimum speed.



1. - Start sowing.

e. Stop sowing

Procedure



1. - Stop the seeder.

⇒ The message « Work interrupted. is displayed in the main menu. ».

⇒ The dosing control is stopped.

f. Changing the target sowing rate during operation

You can change the target sowing rate during operation.

Function icon	Meaning
	<p>Increasing the value.</p> <p>The target value is changed by the value that was entered in the «Value change». [→ 22] parameter.</p>

Function icon	Meaning
	Decreasing the value.
	Return to the originally set value (100 %).

Procedure

☑ The « **Target value** » and « **Value change** » parameters are defined . [→ 22]

1. In the main menu, press the button:



⇒ The target value adjustment icons are displayed.

2.  ,  or  - Change the value.

⇒ The target value of dispensers is changed:



⇒ The calculator sets the sowing according to the new target value.

g. Calibration of the speed sensor by a 100-meter section method

If the speed sensor is calibrated using the 100 meter travel method, the number of pulses that the sensor receives on the 100 meter section should be determined. When this number of pulses is known, the calculator can calculate the actual speed.

After the first calibration, you can manually enter the number of pulses as the value of the «**Calibration factor**» parameter.

Procedure

1. Drive with the machine onto the field.
2. Mark the start of the travel on the ground, e.g. place a stone there.
3. Measure a 100m section in a straight line and mark its end.
4. In the main menu, press:



⇒ « **Settings / Speed** » menu is displayed.

5. Select the value « **Machine** » as the « **Speed source** ».

6.  - Activate the « **Calibration** » menu.

⇒ The « **Calibration** » menu is displayed.

7.  - Start calibration.

8. Drive to the end of the marked section.

⇒ The counted pulses will be displayed in the «**Number of pulses**» field during travel.

9.  - Press this button when you reach the end of the section.

⇒ Calibration is ready.

h. Enter the simulated speed

In order to verify the correct operation of the sensor, you can select the simulated speed.

	 WARNING!
	<p>Risk of injury when the machine is in motion!</p> <p>When this function is active, the operator can activate the functions when the seeder is stopped, although these functions can only be activated when the machine is driving. People in the vicinity are therefore at risk of injury.</p> <ul style="list-style-type: none"> ◦ Ensure that nobody is near the machine.

Procedure

1. In the main menu, press:



⇒ The « **Settings / Speed** » menu is displayed

2. Select the value « **Simulation** » as the « **Speed source** » parameter

3. Select the simulated speed as the « **Simulated speed** » parameter.

⇒ The simulation will take place at the desired speed

⇒ If you restart the calculator, the simulated speed will be automatically changed to «0».

5. 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 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 and washed with water under VERY high pressure.

5.1. 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.

5.2. Storage

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

- Store the machine in a roofed area, if possible.

- 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.
- Protect piston rods of hydraulic cylinders against rust.

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

Cleaning

Before every folding of the machine, it should absolutely be cleaned of dust settled under the cylinder. Build-up of soil, stones or other material may damage the cylinder. Failure to follow this instruction may void the warranty

Hygiene

The use of lubricants and mineral substances is in line with the recommendations and is not dangerous. However, you should avoid prolonged contact with the skin, and do not inhale their vapours.

Handling the lubricants.

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.

5.3. 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 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 genuine 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.

5.4. Lighting Installation

The electrical installation in the USF-1600 seeder is of fixed type, provided with two front composite lamps. A connection cable (5) is used to connect the installation with the tractor installation. The installation diagram is connected according to Fig.21. Before leaving for highways, check the correctness of the electrical installation every time.

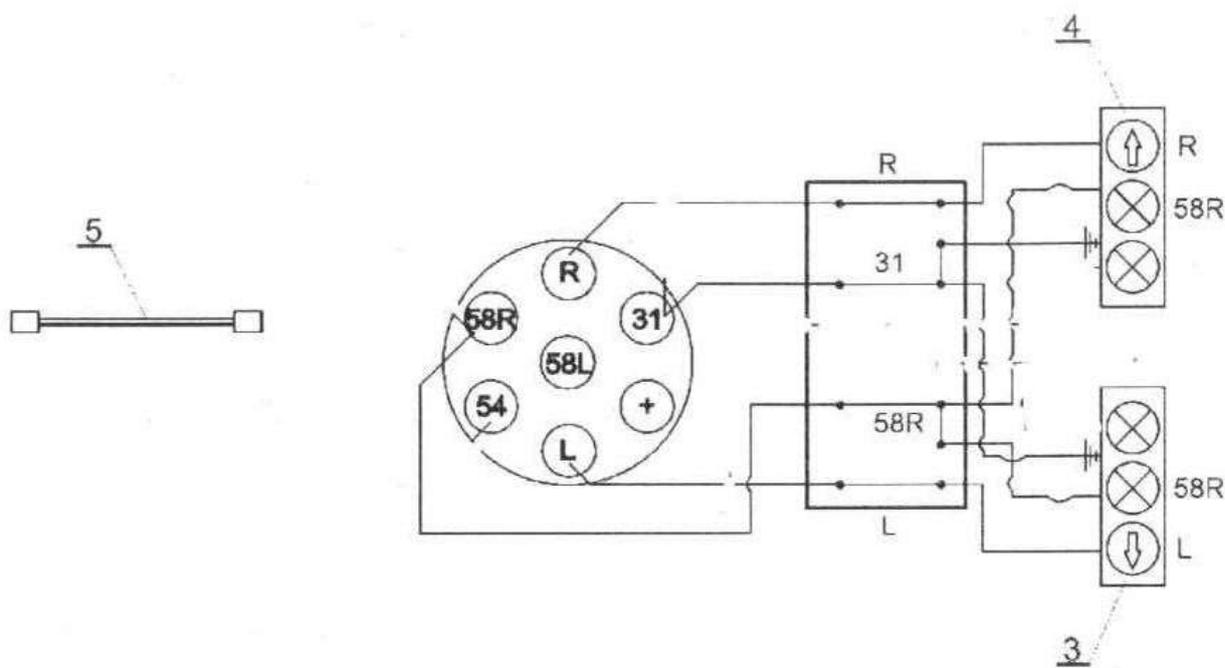


Fig.21 Lighting installation wiring diagram

3 - right composite lamp, 4 - left group light, 5 - connection cable

6. 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.

7. 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.

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

8. 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.

9. Indicative 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				
STOP OPEN	NORMAL SOWING kg/ha									STOP CLOSED	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					
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					

10. Indicative Sowing Chart for Fertilizers

Dispenser setpoint	UREA 1,05 kg/dm ³	NPK Granulate 1,10 kg/dm ³	PHOSPHATES 1,20 kg/dm ³
	Dose kg/ha	Dose kg/ha	Dose kg/ha
5	20	21	23
10	38	40	43
15	57	60	65
20	75	79	86
25	97	102	111
30	119	125	136
35	140	147	160
40	163	171	186
45	186	195	213
50	211	221	241
55	233	244	266
60	241	252	275
65	259	271	296
70	281	294	321
75	302	316	345
80	323	338	369
85	343	359	392
90	365	382	417
95	383	401	438
100	406	425	464
105	436	457	498
110	466	488	533

COMMENTS / NOTES

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