


Introduction


Before starting work with the aftercrop seeder it is absolutely required to read carefully the operating manual and follow all the instructions included in this manual.

	<p>CAUTION! Please read this operating manual before performing any maintenance activity!</p>
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This manual describes risks that may occur if the safety rules are not observed when operating and handling the aftercrop seeder. The operating manual also contains a list of precautions to be taken in order to minimize or avoid threats.

The manual also contains the rules for the correct use of the aftercrop seeder and explains what maintenance activity must be carried out with it.

If the information provided in the manual is incomprehensible, please contact the manufacturer directly for clarification.

	<p>CAUTION! The sign warns of a threat. The warning pictogram refers to important information in the manual about the threats. Please read the information carefully, follow the instructions, and be very careful.</p>
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Safety rules

User safety

The aftercrop seeder Wiko-Plon should be operated only by persons who are familiar with their principles of operation and this manual. The aftercrop seeder should be operated with all safety precautions, in particular:

- *When receiving the aftercrop seeder, check if it has not been damaged during transport and it is technical efficient.*

Before starting up the aftercrop seeder please read the operating manual, especially the work and transport safety rules and recommendations for operation and adjustment, and get aquatinted with the operation and of the aftercrop seeder.

Before starting work please get aquatinted with controls of the aftercrop seeder and its general operating rules.

The aftercrop seeder drive is powered directly from the machine battery or via the cigarette lighter socket (depending on the version). When connecting please remember about correct polarity (+/-).

The load in the aftercrop seeder Wiko-Plon may affect the vehicle steering.

The balance of the aftercrop seeder can be disturbed in partial unloading. In this case special care must be taken.

The operating manual must be kept with the aftercrop seeder. When lending the aftercrop seeder, it must be given technically efficient and together with the operating manual.

The vehicle operator must pay attention that no one approaches the working aftercrop seeder at a distance less than 20 m.

When turning or reversing, extra caution must be exercised and proper visibility must be ensured or ask a suitably trained person to help.

Please note that there are many places on the aftercrop seeder that can cause injury (sharp edges, etc.). When working use personal protective equipment such as: protective clothing, protective gloves, footwear, use increased caution when moving near the listed critical points of the aftercrop seeder.

Before driving, please read and follow the instructions given under "Transportation".

The use of fertilizer in the aftercrop seeder is not permitted.

Loading and unloading of the seeder must be carried out with the use of special care.

Transporting animals, foodstuffs or other objects with the seeder is not permitted.

The seeder may be only operated by a person who is certified to drive the vehicle.

Do not allow bystanders to operate the seeder who are not familiar with the operating manual.

Be particularly careful when coupling the seeder to the vehicle.

It is forbidden to stay between the machine and the vehicle while the engine is running.

It is not permissible to operate on slopes exceeding 8°.

It is not permissible to rake contents during the operation of the seeder.

All handling operation must be carried out when the seeder control panel is disconnected from the power and the vehicle engine is switched off.

During the first start-up there must be checked the operation of the seeder

and must be made initial adjustments, not filling the hopper.

Raising and lowering the seeder must be done gently without jerks or vibrations.

For transport on public roads, the aftercrop seeder should be equipped with portable warning plates and a triangular plate for slow-moving vehicles, installed in special holders on the frame.

Take special care when turning the vehicle with the mounted Seeder, during transport and when turning, especially if there are people, animals or objects in the vicinity.

It is not permissible to handle the aftercrop seeder by persons under the influence of alcohol or other intoxicating substances.

The aftercrop seeder should be filled directly in the field.

It is not allowed to carry out sowing procedures if bystanders are less than 6 m away from the seeder.

Mechanical loading is not permitted.

Storing the aftercrop seeder should be made in places where there is no possibility of an accidental injury to people or animals, on a flat surface - preferably under a roof.

Before starting any operations or preparations of the machine for work, please turn off the drive, the vehicle engine and wait until all moving parts of the machine will stop.

Check if all screws and nuts are tightened after the first hour of the operation.

Damaged or worn parts should be replaced with new ones.



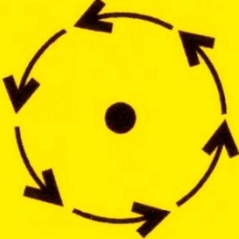
Uncoupling the aftercrop seeder from the vehicle can be done only after turning off the engine and pull out the key from the ignitron.

It is forbidden to attach additional means of transport to the seeder.

Not obeying the above rules can cause danger for the operator and bystanders as well as can lead to the damage of the seeder. The user is responsible for damages resulting from failure in obeying these rules.

The warning pictograms on the aftercrop seeder

Pictograms	Explanation of meaning of the warning pictograms	Location
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	<p>Before starting up the aftercrop seeder please read the operating manual and observe the safety instructions contained therein.</p>	<p>On the aftercrop seeder in a visible place</p>
	<p>Do not approach the rotating spread disc. Do not touch any moving parts.</p>	<p>On the aftercrop seeder in a visible place</p>
<p>12V</p>	<p>The supply voltage of the aftercrop seeder is 12V. Be sure to keep the correct polarity when connecting the device.</p>	<p>On the aftercrop seeder in a visible place</p>
	<p>Risk of cutting, severing and being caught by rotating parts. Instruct bystanders to leave the vicinity of the machine and to take special care during its operation.</p>	<p>On the aftercrop seeder in a visible place</p>

Description of the residual risk

Although the manufacturer - Trade Production Services - takes responsibility for the design and construction in order to eliminate threats, some risk elements during the operation of the seeder Wiko-Plon are unavoidable.

The residual risk results from erroneous or improper behavior of the aftercrop seeder operator.

The greatest danger occurs when carrying out the following operations:

Operation of the aftercrop seeder by persons who are not familiar with the operating manual or who do not have the right to drive the vehicle.

Operation of the aftercrop seeder by persons who are under the influence of alcohol or of any other intoxicating substances.

Staying on the aftercrop seeder during its operation.

Mixing the contents of the hopper of the aftercrop seeder during its operation.

Standing between the aftercrop seeder and the vehicle.

Carrying out the operation and adjustment of the aftercrop seeder while the aftercrop seeder engine is running.

Describing the residual risks the aftercrop seeder is treated as a machine which, until the production is started, has been designed and constructed as per a current technical state.

Residual risk assessment

It is possible to eliminate or reduce the residual risk by following recommendations such as:

- Careful reading of the operating manual.
- It is forbidden to stay on the aftercrop seeder when working and driving.
- It is forbidden to stay between the machine and the vehicle while the engine is running.
- It is forbidden to put hands in inaccessible and forbidden places.
- Adjustments of the operation of the aftercrop seeder is permitted **only** when the drive is **switched off**.
- Maintenance and repairs of the machine may only be carried out by persons properly trained.
- The aftercrop seeder can be operated by a person who holds a licence to drive the vehicles and has read the operating manual.
- Keeping the aftercrop seeder away from children.

Some dangers resulting from the residual risk can be eliminated or minimized by:

- Danger from ejection of spreading material – during the work the operator must use extreme caution and be sure that bystanders do not approach the machine while it is in operation.
- Risk of crushing, injury or hitch - extreme caution must be exercised when raising and lowering the seeder. Always check that there are no bystanders in the vicinity.
- Danger of being pulled in or caught - use extreme caution while rotating drive components are in motion.
- Danger of losing stability - the aftercrop seeder must be connected to the vehicle when filling the hopper. For parking and storage the aftercrop seeder must be placed on a firm and horizontal surface. It must be secured against overturning.

Obeying the above rules and recommendations may eliminate the residual risk during the use of the seeder Wiko-Plon without risk to people and animals.

Intended use of the seeder

The aftercrop seeder Wiko-Plon is intended exclusively for agricultural work or similar work. Using it for other purposes will be considered as misuse. Meeting the manufacturer's instructions regarding the use, maintenance and repairs and the strict compliance with these instructions is the requirement for the correct operation of the appliance. The machine may only be used, operated and repaired by persons who are acquainted with its characteristics and who have been informed of the safety rules.

Accident prevention regulations and all basic health and safety regulations as well as traffic regulations must be always obeyed. Unauthorized modifications made to the machine without the manufacturer's approval release the manufacturer from responsibility for any damage or harm and result in the loss of the guarantee.

The aftercrop seeder is intended for surface sowing of the aftercrop on fields, meadows, stubble and pastures and for spreading salt on roads and sidewalks.

The basic rules of health and safety must always be strictly observed.

Description of the seeder

Construction and operation

The aftercrop seeder is constructed from a frame, allowing connection to any surface by a universal holder with the bolt spacing of 120x230. The hopper made of plastic is mounted on the frame. Dosing the aftercrop takes place through the opening in the bottom of the hopper. On the side of the hopper there is a mechanism for regulation of application rate. The after crop is sowed by the disc with spreading blades. The disc is driven by the 12V DC motor powered by the portable control panel connected to the 12V power supply.

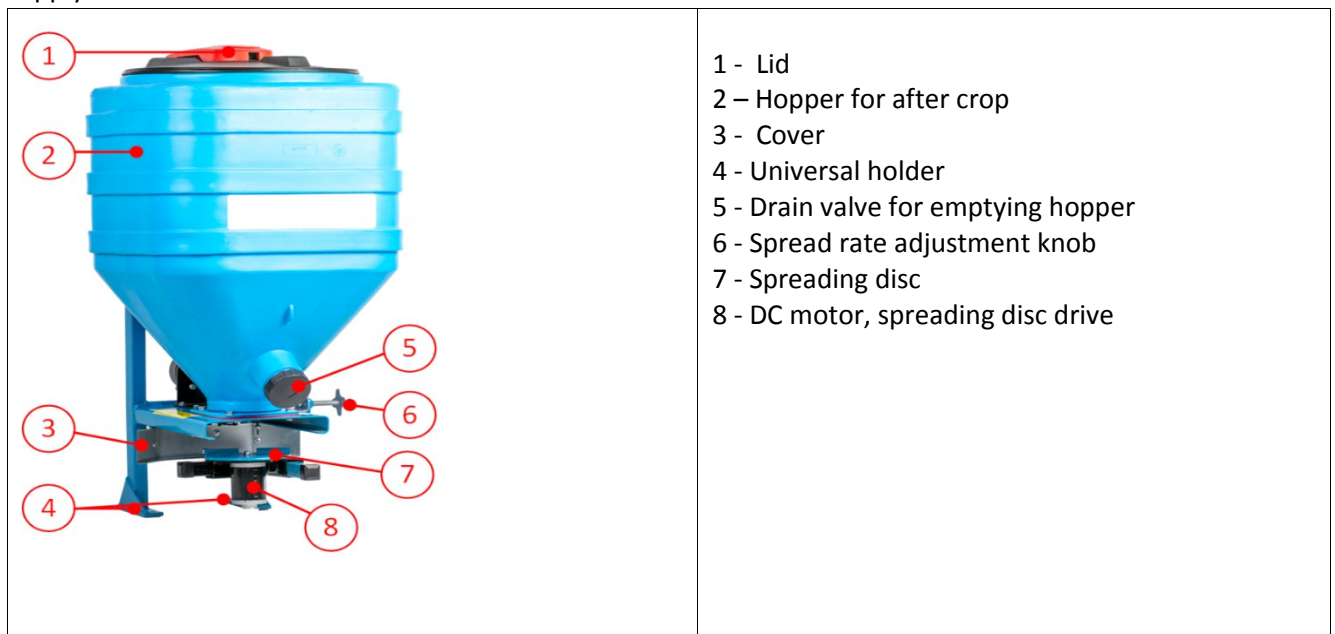


Fig. 2. The aftercrop seeder – the front.

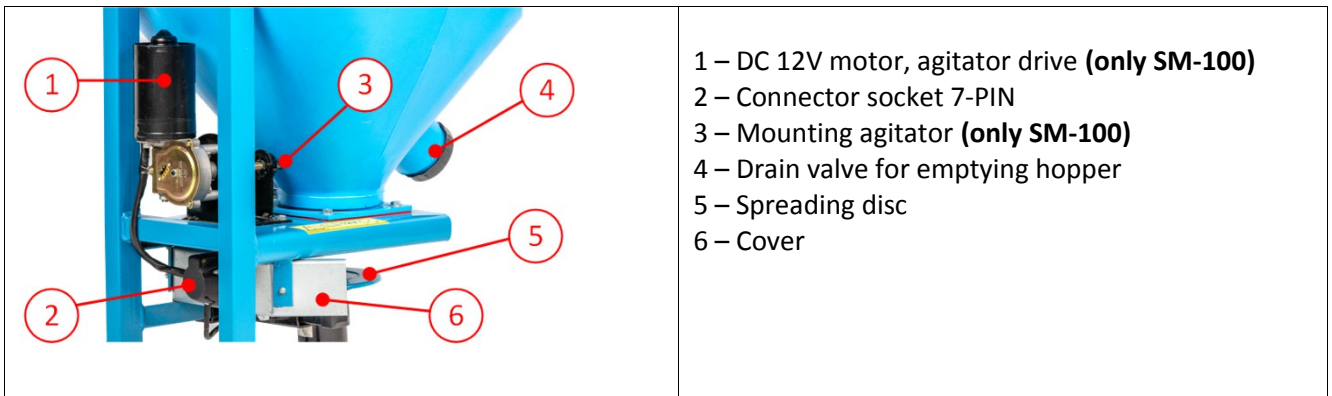


Fig. 2. The aftercrop seeder – the back.

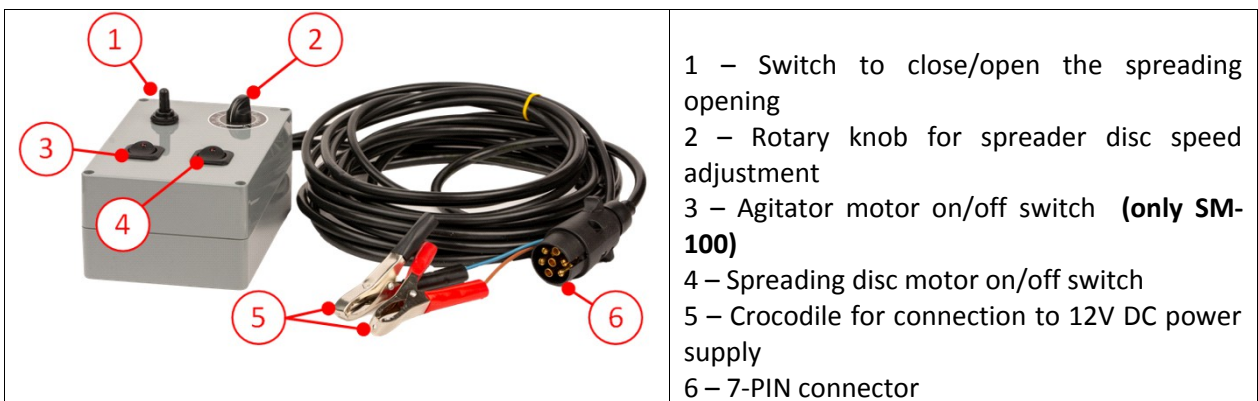


Fig. 4. Portable control panel.

CAUTION!

Before filling the hopper with aftercrop, close the spreading opening.
 The spreading opening is closed using the control panel Fig. 4 (1).

4.2 Technical specification

Technical data of the aftercrop seeder is presented in the Table 1 below.

Table 1. Technical specification of the aftercrop seeder .

No.	Description	Unit of measurement	Parameter	
			BM-100	ZM-100
1	Machine symbol	-	BM-100	ZM-100
2	Machine type	-	attached	
3	Dimensions	mm		
	Height		1050	
	Width		500	
	Depth		550	
4	Seeder weight	kg	28	30
5	Working width of spreading	m	2-12	
6	Dosage range	kg/ha	3-260	
7	Metering unit – type	-	slotted	
8	Seed distributor	-		
	- type		disc	
	- drive type of seed distributor		electric, 12V	

9	Hopper	liter	110
	Dimensions	mm	
	Height		750
	Width		500
	Depth		500
	Permissible payload	lit	100
10	Transport clearance	mm	300
11	Working speed	km/h	4-12
12	Transport speed	km/h	do 15
13	Number of staff	-	1
14	Noise level of the aftercrop seeder in operation	dB	55

• Equipment and accessories

The basic equipment of the aftercrop seeder includes:

- the operating manual, the parts catalogue and the warranty card,
- the seeder,
- the control panel suitable for the type of seeder.

The basic equipment of the aftercrop seeder does NOT include:

- the portable lights and the warning devices,
- the triangular plate for slow-moving vehicles.

These items can be purchased at additional charge from the manufacturer or from equipment stores.

Every user of the aftercrop seeder should have and use the functioning warning signs and the triangular plate for slow-moving vehicles (description in the chapter Transport). Not using these signs during transport can lead to an accident.

The user of the machine is responsible for damages caused by an accident.

Preparing the seeder for work

Preparing the aftercrop seeder for work involves checking its technical condition, especially:

- check the screws connections and retighten the nuts and the screws if too loose,
- check if the sowing disc rotates smoothly without jamming,
- check the completeness and condition of the sowing disc blades and replace with new ones if necessary,
- check the condition of the agitator (only SM-100),
- lubricate the seeder as recommended.



CAUTION!

Improper preparation of the machine for work may result in lowering the quality of the seeder operation.

Filling the hopper

After mounting the aftercrop seeder on the vehicle and carrying out the functional tests, the hopper can be filled.

Fill the hopper manually.



CAUTION!

Fill the aftercrop seeder directly in the field. When transporting the aftercrop seeder with the full hopper there may occur damages of the hopper.

Operation of the seeder

The aftercrop seeder distributes input (seed, salt, sand, etc.) not only behind it but also to the side along the longitudinal axis of the seeder. However, with this kind of operation the amount of spreading material decreases at extreme distances from the symmetry axis of the seeder. Therefore, during work, it is necessary to drive the aftercrop seeder in such a way that “overlapping” is achieved, sowing double strips where the aftercrop is less. During work, the driver should keep the same distance between work passes in the field. The driving speed of the vehicle with the aftercrop seeder during operation should be 4-13 km/h.



CAUTION!

All maintenance operations (e.g. blockage) should be carried out after disconnecting the control panel from the power supply and switching off the engine by removing the ignition key.

Work with the aftercrop

A – mixing the aftercrop

In order to simplify the sowing work, there is a method frequently used - mechanical mixing of the aftercrop. There is no doubt that this is an advantageous procedure. This method speeds up the sowing the aftercrop, ensures a uniform sowing and reduces soil compaction.

B – storage of the aftercrop

The storage of the aftercrop on farms usually requires proper adaptation of temporary rooms. Such rooms must be dry. If there is too much moisture, the aftercrop will crumble and sometimes there will be other unfavorable changes.



CAUTION!

The storage of the aftercrop cannot be combined with the storage of combustible materials and there is the absolute ban to smoke in and around the storage.



CAUTION!

Keep the storage area tidy and carefully remove all rubbish in order to avoid possible blockages of the aftercrop seeder outlet slot.

Principles of the aftercrop seeder adjustments

To carry out the sowing procedure properly, the machine must be carefully adjusted.

The adjustment of the aftercrop seeder includes:

transverse leveling,

longitudinal leveling,

adjusting application rate.

Table A. An exemplary table of sowing with the use of Wiko-Plon (mustard as an example).

Working width [m]		2	4	6	8	
Control knob		20	30	40	60	

setting [-]														
Speed [km/h]		6	8	10	12	6	8	10	12	6	8	10	12	6
Amount [kg/ha]														
Opening throttle [cm]	1,0	30	22	18	14	20	15	12	10	15	11	9	8	10
	1,5	80	68	55	44	60	45	36	30	44	35	36	22	30
	2,0	125	100	80	57	90	68	54	45	67	50	40	35	45
	2,5	210	170	135	100	160	120	96	80	118	90	71	60	80
	3,0	260	210	165	145	205	154	123	103	150	114	91	76	100

The above sowing table is only an auxiliary guide and should be treated as such.

The exact amount of the aftercrop can be checked with a **so-called calibration test of the seeder**.

Transporting the seeder

For transport on public roads, the aftercrop seeder should be equipped with the portable warning signs placed at the rear combined with lamps: red position and stop lamps, orange direction indicators and red reflectors. The triangular plate for slow-moving vehicles must be attached to the machine. In addition, the vehicle, on which the aftercrop seeder is attached, must meet the requirements for road traffic, in accordance with the Road Traffic Licensing Regulations.

During transport the aftercrop seeder should be lifted upwards to a position providing the required transport clearance. When turning, care should be taken to "overlap" the machine.

Keep the warning signs with the lights and the triangular plate clean.



CAUTION!

It is forbidden to travel on public roads without proper mark indication and lighting in accordance with the applicable regulations. The aftercrop seeder to be transported on public roads must be obligatorily fitted with the portable light-warning signs and the triangular plate for slow-moving vehicles. It is forbidden to transport persons and loads on the frame of the machine.

Storage of the seeder

The aftercrop seeder should be stored under a roof on flat and firm surface. Outdoor storage is permissible. Any defects in the paint coating should be repaired. In case of long-term outdoor storage of the seeder, maintenance should be repeated.

The aftercrop seeder should be stored in a place that does not pose a risk to persons and the environment. The warning pictograms and the triangular plate for slow-moving vehicles should be removed from the aftercrop seeder and stored in a dry place to prevent damage. After the storage period the machine should

be lubricated and all the screw connections must be checked.

Maintenance activity

A – after completion of work

After each use, place the aftercrop seeder on a flat and firm surface, empty of the aftercrop, then review the connections of the parts and units. Replace damaged and the worn parts with new or regenerated ones.

All loose screw connections must be tightened. Keep the warning signs and the triangular plate for slow-moving vehicles clean.

B – after season maintenance

At the end of the working season, the aftercrop seeder should be placed on a flat and firm surface and thoroughly cleaned from the aftercrop and contamination. The worn or damaged working parts should be replaced and all loose screw connections tightened.

The aftercrop seeder should be stored under a roof on a flat and firm surface. If there is no such the place, outdoor storage is permissible. Any defects in the paint coating should be cleaned and repaired with a fresh coat of protective paint.

C – lubrication regulations

The basic maintenance activities include the compliance with the lubrication periods and using the proper lubricant grade. Before lubrication all places to be lubricated must be decontaminated. Lubrication should be carried out in accordance with Table 3.

Table no 3. Lubrication places.

No.	Lubrication place	Number of places	Frequency	Type of greases
1	Application rate adjustment mechanism	2	Every 10 working hours	ŁT-43

D – Defects and how to remove them

To ensure long-term and trouble-free operation of the seeder, it must be checked the condition of the screw connections and retighten them if loose. After completion of the work the aftercrop seeder must be cleaned carefully. The worn or damaged operating elements should be replaced.

The most frequent defects and the ways how to remove them are presented in Table 4.

Table no 4. Defects and how to remove them.

No	Symptoms	Reasons	Ways of removal
1	The stream of the aftercrop is not continuous	Blocking of the outlet opening by the aftercrop or contamination	Temporarily increase the outlet opening by opening the sliders
		Hanging of too wet aftercrop in the hopper	Mix the suspended fertilizer in the hopper
2	Spreading disc does not rotate	Cutting of the securing screws	Replace the screws with new ones
		Failure of the engine driving the disc	Replace or repair the engine
		Failure of the switch on the control panel	Replace the switch

	Burnt the fuse in the control panel	Replace the fuse
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Dismantling of the seeder



CAUTION!

Before dismantling the aftercrop seeder control panel must be disconnected from the vehicle power supply.

The disassembly of the machine should be carried out by people who have been previously acquainted themselves with the construction of the machine. These operations must be carried out when the machine stands on level and firm ground.

The disassembly and replacement of working parts must be carried out in accordance with the Tables included in the spare parts catalogue.

In case of the worn parts, follow the instructions in the "Scrapping the seeder" section.

Due to the weight of the components (frame), exceeding 20 kg, when dismantling the aftercrop seeder there should be used lift device.



CAUTION!

Lift device used for the disassembly must be operated only by a person who is suitably qualified and authorized.

All fasteners are made of standardized components suitable for metrical keys. For movement of the keys, there are spaces in order to provide free unscrewing and tightening of the nuts and the screws.

Dealing with the worn parts

Scrapping the seeder

Scrapping the aftercrop seeder should be carried out after complete dismantling of the machine and verification of its components. When dismantling, parts should be grouped according to a material type: plastic parts and metal parts. The plastic parts have to be provided (recycled or disposal) to companies having appropriate facilities for this purposes.



CAUTION!

The incineration of plastic materials in unsuitable facilities leads to environmental pollution and breaking the existing regulations.

Used ferrous metal parts must be taken to a ferrous metal collection point.



CAUTION!

Used products should not be disposed of with household waste. They must be taken to a recycling centre. For instructions in this scope please contact the manufacturer.

Replacement of the worn parts of the aftercrop seeder can be carried out on request by the manufacturer's service. The worn parts must not be put in the trash. Take precautionary and safety precautions when replacing the worn parts by using proper hand and mechanical tools as well as personal protective

equipment (gloves, working clothes, glasses, etc.).

The spare parts catalogue

How to use the catalogue.

The spare parts catalogue contains drawings and diagrams of the assembly of the seeder.

The catalogue should be used in the following way:

- determine whether the part to be repaired belongs to the relevant assembly group according to the tables,
- find the needed part on the assembly chart following the reference number from the assembly drawing.

The spare parts can be purchased from the manufacturer of the seeder, by writing to his address or over phone. In this case it is necessary to give:

- the exact address of the ordering party.
- the serial number of the seeder,
- the symbol of the seeder,
- the production year,
- the exact name of the part or unit,
- the quantity,
- the payment terms.

All standardized components are commercially available on the market.

Table no 5. The spare parts of the seeder

No	Name	Catalogue number or standard	Number of items	Group
1	Hopper 0,110 m3	ZL 110	1	H
2	Seeder frame	110-001-W	1	P
3	Motor dc 12V 100 W	5903246821932	1	H
4	Gear-motor DC 12V 100W or 150W	5903246825695	1	H
5	Central locking actuator 2P	2P	1	H
6	Cover	110-002-W	1	P
7	Spreading disc with blades	110-003-W	1	P
8	Slide knob	110-004-W	1	P
9	Slide	110-005-W	1	P
10	Agitator	110-006-W	1	P
11	Control panel with wires	110-007-W	1	P
12	Socket	7Pin	1	H

Fig. 5 The aftercrop seeder – the front (parts – see Table 5).

Fig. 6 The aftercrop seeder – the back (parts – see Table 5).

QUICK INSTRUCTIONS FOR USE

<ul style="list-style-type: none"> • Securely fasten the universal holder (two feet, screw spacing: 120x230mm - Fig. A1) to a stable 	Fig. A1
	Fig. A2

surface.

- Ensure that the hopper cover is closed.
- Set the spreading opening to the needed amount using the adjustment knob.
- Fill the hopper with the input (the aftercrop, salt, sand).
- Find the 7-PIN socket (Fig. A2).
- Connect the portable control panel to the aftercrop seeder: plug 7-PIN into the 7-PIN socket. (Fig. A3)
- Connect the portable control panel to the 12V DC power supply with the crocodile clips (observe polarity!!!) Fig. A4 or the cigarette lighter plug - depending on the model.
- Check the operation of the close/open slide.
- Check the operation of the spreading disc if it rotates without resistance and if the rotation is adjusted correctly using the rotary knob on the control panel
- Set the spreading range using the application rate adjustment knob and the disc speed on the control panel.
- Start sowing by setting properly the speed of the drive unit.

Fig. A3

Fig. A4