



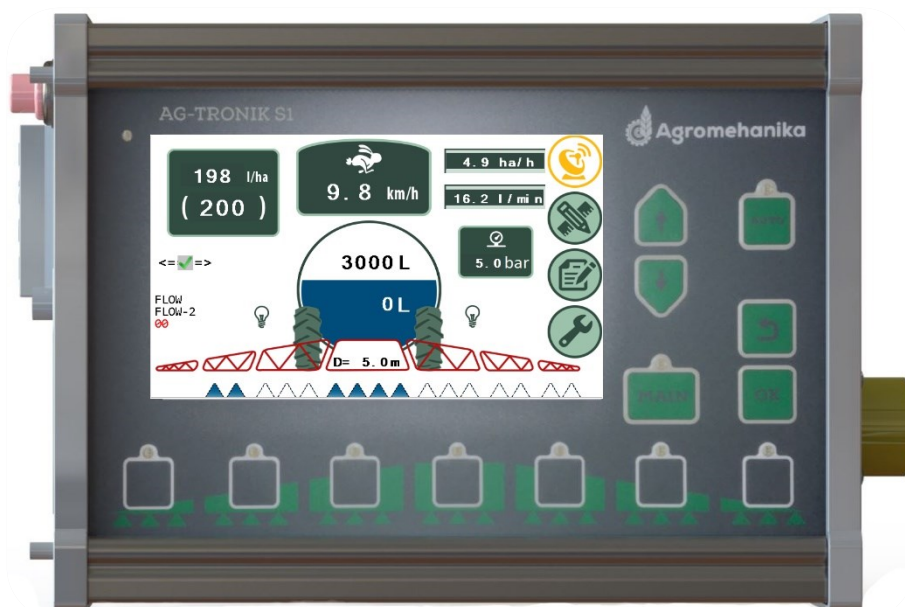
Agromehanika

SINCE 1968

Instructions for use

Remote electronic regulation

AG-TRONIK S1



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1 SAFETY INSTRUCTIONS



1.1. Basic Safety Instructions



Before first use read the instruction manual carefully

- Don't use AG-TRONIK and drive on the road. If so, stop the tractor safely.
- Before maintenance or repair of tractor, disconnect the signal cable between tractor and AG-TRONIK.
- When charging the tractor battery disconnect the signal cable between tractor and AG-TRONIK.
- Don't make any unauthorized changes on AG-TRONIK. Unauthorized changes or improper use may have negative effects on your safety and also lifespan of AG-TRONIK. Unauthorized are all changes that are not introduced in this manual.
- Please follow all generally recognized security-technical, branch, medical and traffic rules.
- This product does not contain parts which could be repaired. Do not open the housing of AG-TRONIK.
- Read the instruction manual of your agricultural device, which you will use with AG-TRONIK

1.2. Structure and meaning of safety advices

All safety advices, which are in this manual, are introduced below.

	 WARNING
	This signal word identifies medium-risk hazards, which could potentially cause death or serious physical injury, if not avoided.

	 CAUTION
	This signal word identifies low-risk hazards, which could potentially cause minor or moderate physical injury or damage to property, if not avoided.

NOTICE
This signal word identifies actions which could lead to operational malfunctions if performed incorrectly.
These actions require that you operate in a precise and cautious manner in order to produce optimum work results.

There are some actions that need to be performed in several steps. If there is a risk involved in carrying out any of these steps, a safety warning will appear in the instructions themselves.

Safety instructions always directly precede the step involving risk and can be identified by their bold font type and a signal word.

1. NOTICE! This is a notice. It warns that there is a risk involved in the next step.

2. Step involving risk.

1.3. User Requirements

- Learn how to operate with terminal correctly. The terminal may not be operated by anyone who has not read the Operating Instructions.
- Please read and carefully observe all safety instructions and warning contained in these Operating instructions and the manuals of any connected vehicles and farm equipment.

1.4. Proper Use

- The terminal is intended exclusively for use in agriculture.
- The manufacturer cannot be held responsible for any installation or use of the terminal that deviates from or exceeds the scope of intended use.
- The manufacturer cannot be held liable for any personal injury or property damage resulting from such improper use. All risks involved in engaging in improper usage, lie solely with the user.
- Intended use also includes compliance with the conditions for operation and repairs prescribed by the manufacturer.
- The manufacturer cannot be held liable for any personal injury or property damage resulting from such non-compliance. All risk arising from improper use lies with the user.
- All applicable accident prevention regulations and all other generally recognized safety, industrial, and medical standards as well as all road traffic laws must be observed. Any unauthorized modifications made to the equipment will void the manufacturer's warranty.

2 PREDSTAVITEV AG-TRONIK-a S1

- AG-TRONIK is processor-controlled device for monitoring and automatic balancing of spray on machines for chemical protection of plants.
- It is used on combination with pressure regulator PR10EC.
- Take a few moments to familiarize yourself with component parts of AG-TRONIK.
- In picture below, zones for monitoring and managing of AG-TRONIK are introduced (Figure 1).



Figure 1

- The areas for managing and monitoring the regulation of spraying are described in table below (Table 1).

	IME	OPIS FUNKCIJE
1	ON/OFF DIODE	Informs whether the AG-TRONIK is ON.
2	TOUCH SCREEN	It enables communication with the device.
3	UP/DOWN	It enables to adjust the pressure in the system.
4	AUTOMATIC MODE	Turn ON/OFF automatic mode.
5	MAIN VALVE	Open / close the main (MAIN) valve.
6	BACK	Exit from sub-window
7	OK	Confirm the entered parameters.
8	SECTIONS	Open / close boom section.

Table 1

- Connectors and buttons for operating with AG-TRONIK are shown in pictures below (Figure 2 and Figure 3)



Figure 2



Figure 3

- Connectors and buttons for operating with AG-TRONIK are introduced in table below (Table 2).

	CONNECTOR FUNCTION	TYPE OF CONNECTOR
1	SPEED SENSOR	4-pin. connector
2	REGULATOR CONECTION	7-pin. connector
3	ON/OFF AG-TRONIK	Mechanical switch
4	GPS CONNECTION	RS232 connector (9-pin.)
5	IMPORT / EXPORT DATA	USB
6	GPS POWER SUPPLY	2-pin. connector
7	AG-TRONIK POWER SUPPLY	3-pin. connector
8	POWER SUPPLY OUT	2-pin. connector
9	FUSE	/

Table 2

3 AG-TRONIK-a S1 CONNECTION

If you are not skilled in such work, we recommend that the electronic regulation is installed by an authorized service of Agromehanika. If you have decided to install it yourself, a brief installation description is given further on.

- Working speed may be acquired by 3 different types of equipment: antenna (standard equipment), Wheel speed sensor (WSS) or GPS device (both additional equipment).
- In subchapters 3.1, 3.2 in 3.3 all three options are introduced.

3.1. Antenna (NMEA) – standard equipment

- Connect power supply in to the corresponding input of the AG-TRONIK (Figure 4).
- Connect regulator cable in to the corresponding input of the AG-TRONIK (Figure 4).
- Connect antenna in to the corresponding input of the AG-TRONIK (Figure 4).

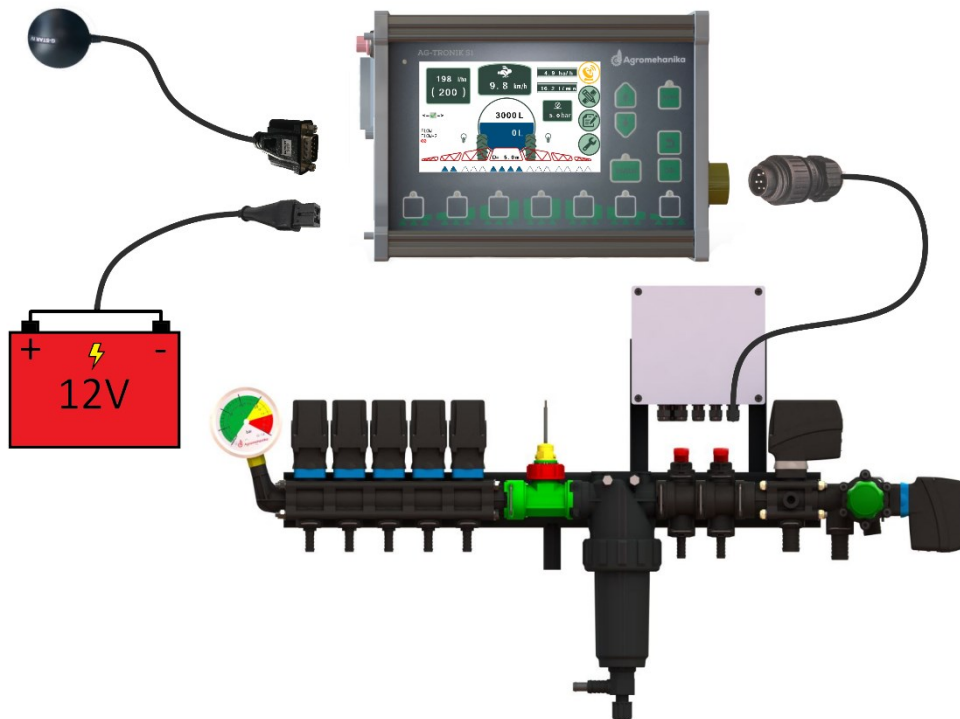


Figure 4

3.2. Speed sensor (additional equipment)

- Connect power supply in to the corresponding input of the AG-TRONIK (Figure 5).
- Connect regulator cable in to the corresponding input of the AG-TRONIK (Figure 5).
- Connect speed sensor in to the corresponding input of the AG-TRONIK (Figure 5).

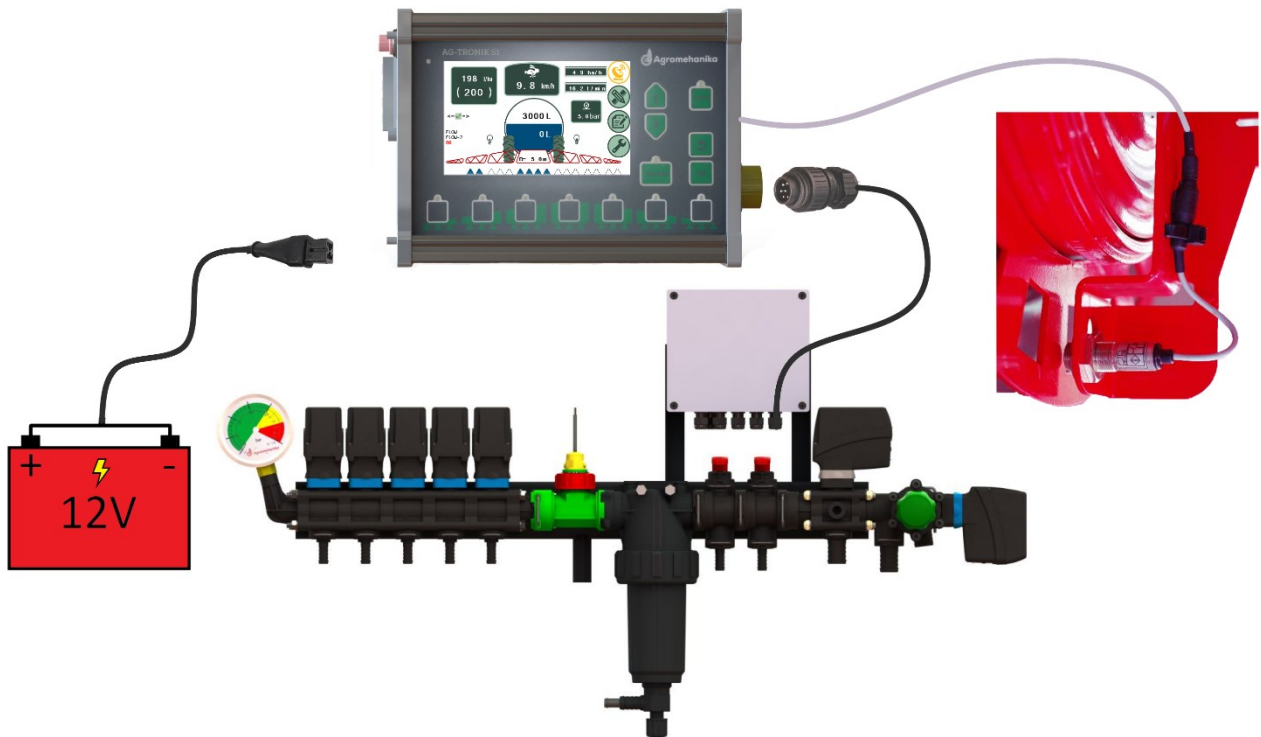


Figure 5

3.3. GPS (additional equipment)

- Connect power supply in to the corresponding input of the AG-TRONIK (Figure 6).
- Connect regulator cable in to the corresponding input of the AG-TRONIK (Figure 6).
- Connect GPS device (both, power and signal cable) in to the corresponding input of the AG-TRONIK (Figure 6).

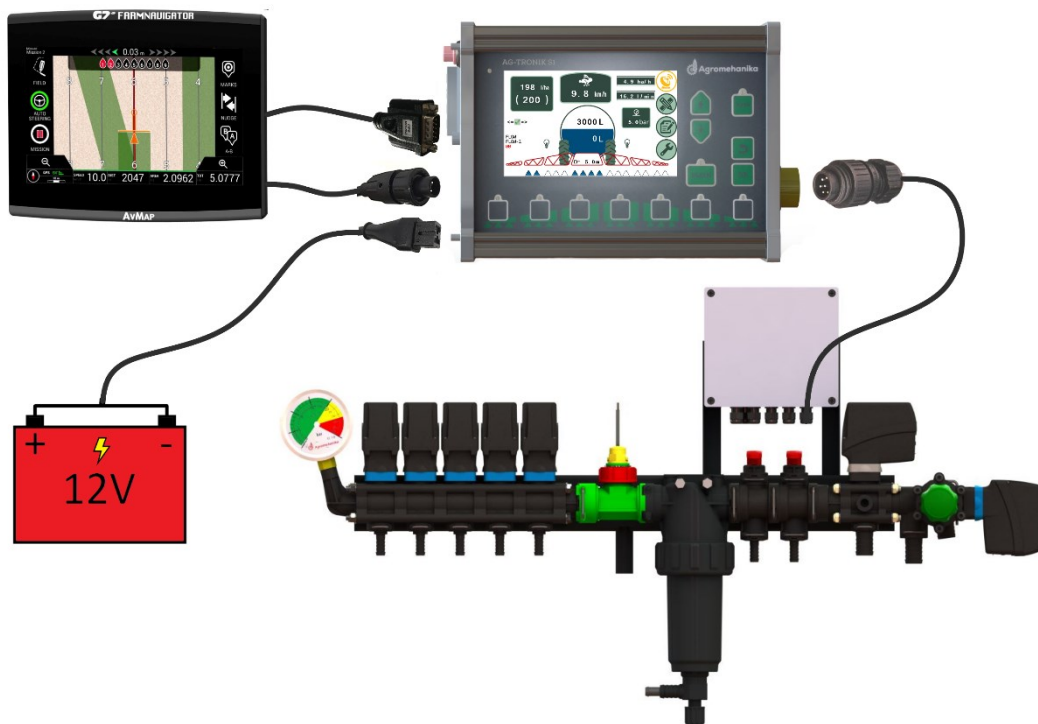


Figure 6

3.4. MOUNTING TO THE VACUUM HOLDER (additional equipment)

- AG-TRONIK and hydraulic control panel may be mounted on the side window of the tractor by using a vacuum carrier (020.00.123).
- Screw the AG-TRONIK with the four screws in the groove on the back side (Figure 7).
- Using the two screws, screw the control panel into the sliding bracket (Figure 7).
- Clean the vacuum holder and tractor window before assembly.

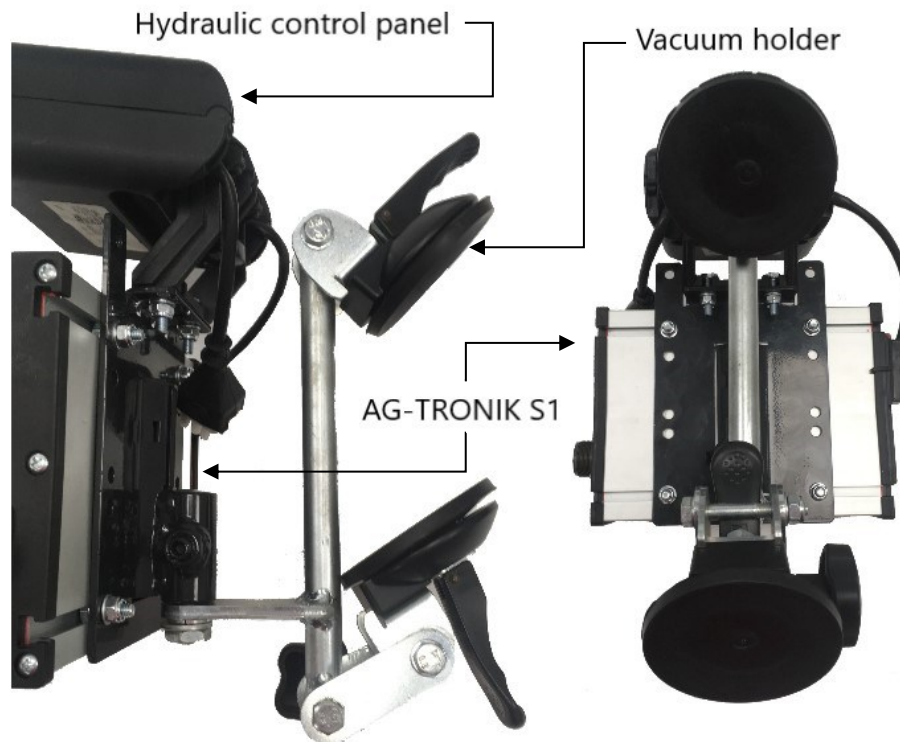


Figure 7

4 BUTTONS OF AG-TRONIK S1

- AG-TRONIK enables a full control of spraying by using buttons and touch screen.
- In subchapter 4.1 buttons of AG-TRONIK are introduced, in subchapters 4.2 and 4.3, setup and information fields are introduced.

4.1. Buttons

- The following table shows the buttons used to control the pressure regulation via AG-TRONIK (Table 3).







NAME	SIMBOL	DESCRIPTION
AUTOMATIC		When the AUTO mode is on, the light is green. When the AUTO mode is in standby mode (at least one of conditions is not fulfilled), the light blinks green. When the AUTO mode is off, the light is red.
MAIN VALVE		When the main valve is open the light is green. When the valve is closed the light is red.
BOOM SECTIONS		Individual section is switched on, when the light above the key is green. When the valve is closed the light is red.
PRESSURE REGULATION		Button for lifting / lowering the pressure. It is active when manual mode and a main valve are activated at the same time.
OK		Button to confirm the command or enter the sub menu.
BACK		Key to cancel input or exit from the sub menu.

Table 3

4.2. Setup fields

- The setup fields are used to enter the spray parameters (Figure 8).
- By pressing the setup fields, the field function is executed, or the new sub window opens where we can enter the parameters.

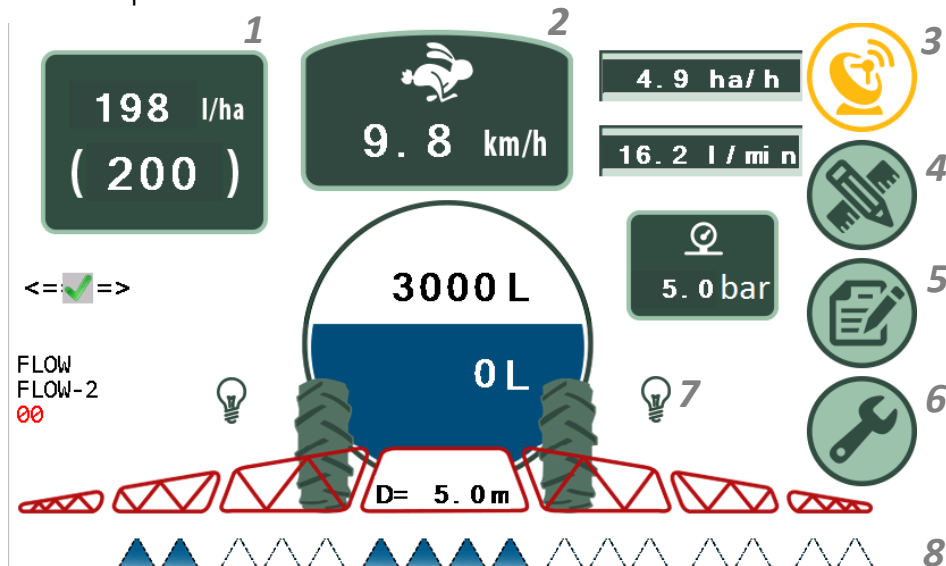


Figure 8

- In the table below, the function of each setup field is described (Table 4).

	NAME	DESCRIPTION
1	HECTARE DOSE	Specifies the desired hectare consumption.
2	SPEED CONSTANT CORRECTION	It is used for speed constant correction when using the wheel speed sensor (optional equipment).
3	GPS	GPS connection settings.
4	GENERAL SETTINGS	Setup of date, time, language, luminance, simulation.
5	WORK	Work allows you to save spraying settings.
6	SERVICE	Service settings are accessible only to authorized persons.
7	LIGHTS	Turn on / off the lights for night spraying.
8	SECTION VALVES	Turning ON / OFF section valves.

Table 4

4.3. Information fields

- Information fields are intended to inform the user about the parameters of spraying (Figure 9).

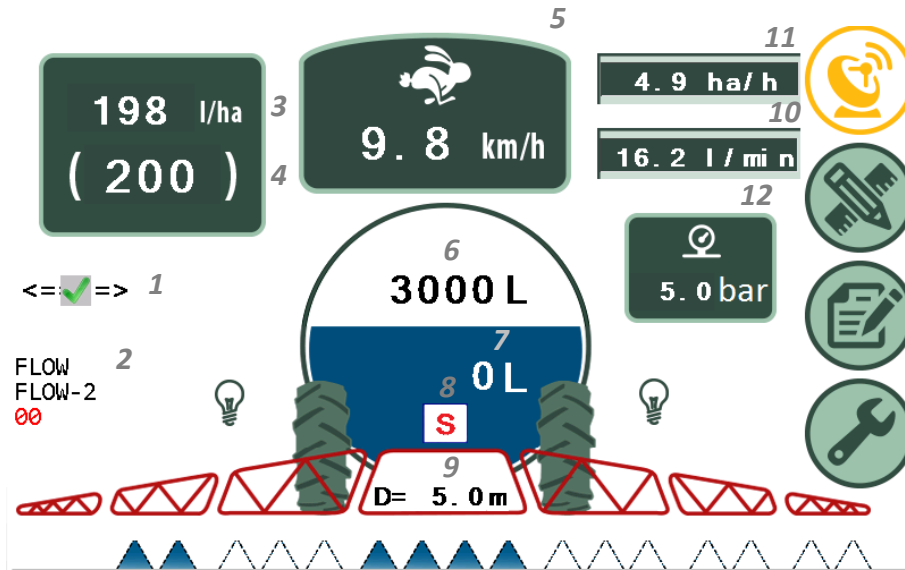


Figure 9

- The following table describes the individual information fields (Table 5).

	NAME	DESCRIPTION OF THE FUNCTION
1	CONNECTION WITH THE REGULATOR	<input checked="" type="checkbox"/> / <input type="checkbox"/> - connection IS / IS NOT provided
2	TYPE OF REGULATION	Flow or pressure regulation. Flow-1 or flow-2
3	HECTARE DOSE - 1	Current or actual hectare consumption.
4	HECTARE DOSE - 2	Desired hectare consumption.
5	SPEED	Displays the current spray speed.
6	CAPACITY OF THE RESERVOIR	Displays the initial amount of the chemical preparation in the reservoir.
7	QUANTITY OF CHEMICAL PREPARATION	Displays the current amount of the chemical preparation in the reservoir.
8	SIMULATION	It informs that the simulation is in progress.
9	BOOM WIDTH	Displays the active boom width.
10	EFFICIENCY OF SPRAYING	Displays the efficiency of spraying.
11	FLOW ON NOZZLES	Displays the current flow of the chemical preparation.
12	PRESSURE	Displays the current pressure of the control system (in the case of a pressure sensor).

Table 5

5 PARAMETER SETTINGS - PROGRAMMING

The use of the screen allows you to control the spray regulation completely. The main menu of the AG-TRONIK screen is presented in the picture below (Figure 10).

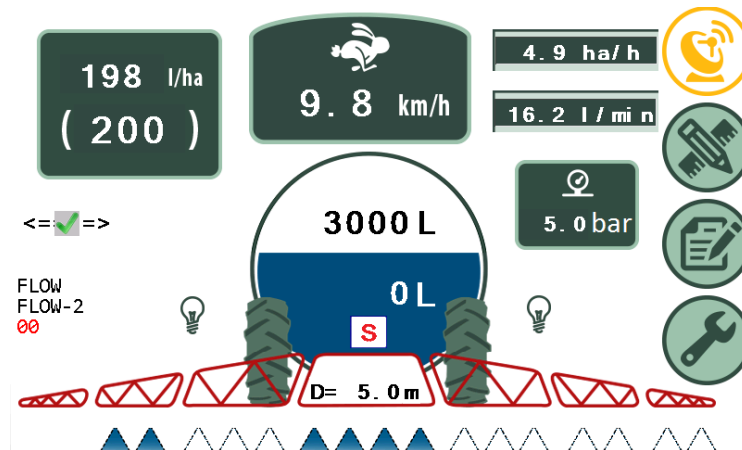



Figure 10

5.1. Filling the Tank

- At each filling of the tank, it is recommended to input the current amount of chemical product in to the AG-TRONIK.
- If we don't input initial quantity of the chemical preparation in to AG-TRONIK or the tank is empty, the display of the reservoir on AG-TRONIK flashes red.
- Enter the current amount of the chemical preparation by pressing  icon on main menu (Figure 10), then press the field marked with the arrow and, finally, enter the filled or initial quantity added to the reservoir (Figure 11).

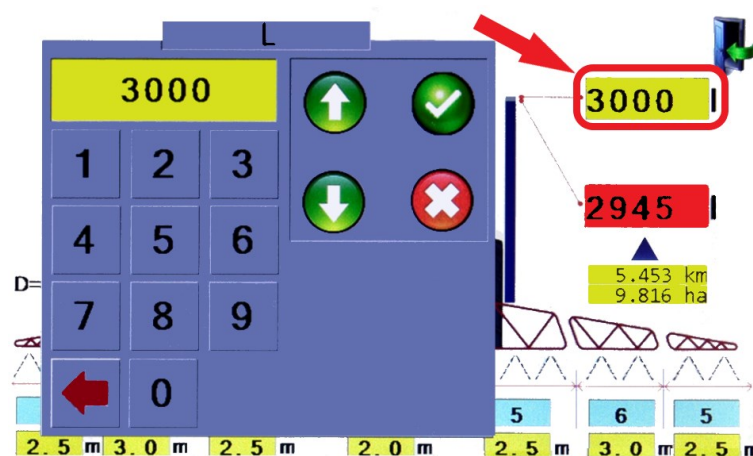



Figure 11

- Confirm the entry of a new amount of chemical preparation by pressing  icon.

5.2. Hectare Dose (HD)







- HD is the basic parameter, which must be set before spraying.
- Enter in the HD input sub window by pressing  icon.
- The HD input subwindow where desired HD is entered (Figure 12).



Figure 12

- Confirm the HD by pressing  icon.
- HD can also be set by pressing  icon on main menu (Figure 10), and then  icon.
- AG-TRONIK at the same time, when we adjust HD with pressing  and  icons, calculates what area and distance can still be sprayed, depending on the amount of chemical preparation in the tank (Figure 13).
- HD can be adjusted so that the entire amount of the chemical preparation is used to treat the field, or HD is set so that we don't run out of the chemical preparation in the end of treatment.

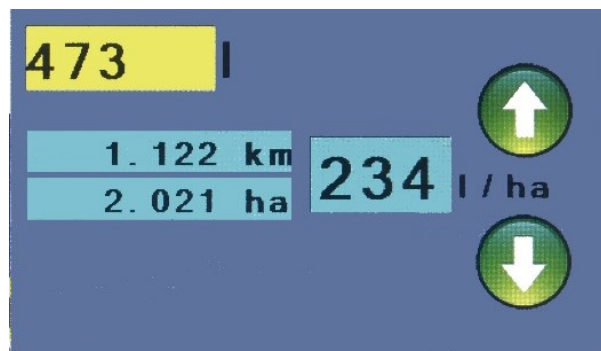


Figure 13

5.3. Speed Constant (SC)

- WARNING! If an antenna or GPS is used, the speed constant is not corrected !
- Correction of the speed constant can be done only if the wheel speed sensor is used!
- WARNING! Speed correction can not be made when driving below 4km / h.

The correction of the speed constant can be done in two ways: the automatic correction of the speed constant (5.3.1) and the manual / direct correction of the speed constant (5.3.2).

5.3.1. Automatic Correction of SC



- The automatic correction of SC is executed by comparing the speed shown by the AG-TRONIK with the speed (reference / actual) on the tractor speed meter or the precise GPS device.
- If the reference speed and velocity on AG-TRONIK are different, press  icon, and enter the reference speed in to velocity input subwindow (Figure 14).



Figure 14

- Confirm SC correction by pressing a  icon.

5.3.2. Manual Correction of SC

- Manual correction of SC is executed by pressing a **500 imp/km** icon and by entering the desired SC in to input subwindow (Figure 15).



Figure 15

- SC may be calculated by using equation stated below ($SC = \frac{N \times 500}{r \times \pi}$)

Equation 1)

$$SC = \frac{N \times 500}{r \times \pi}$$

Equation 1

N ... quantity of marks

r ... wheel radius

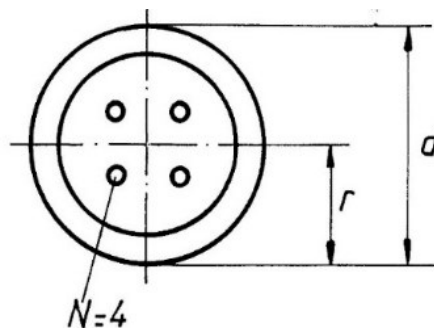



Figure 16

- Confirm SC by pressing a  icon.

- Manual correction of the SC can also be executed by pressing the left wheel of the schematic display of the sprayer (Figure 17)

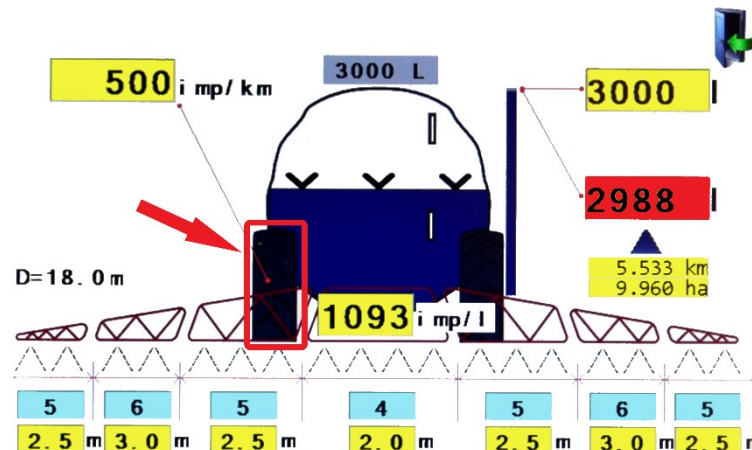


Figure 17

- Enter r (radius of the wheel) and N (number of marks) parameters in to the input sub window and AG-TRONIK will make calculation of SC, instead of you (Figure 18).

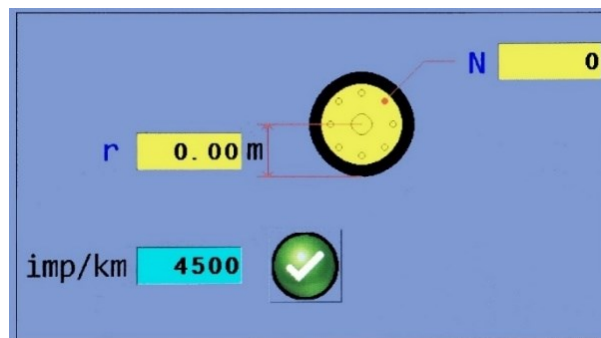


Figure 18

5.4. Flow Constant (FC)

- WARNING!** FC is a parameter that decisively affects the desired HD of spraying, so it must be set up correctly!
- WARNING!** When we want to execute a reliable FC correction, it is essential to enter the initial amount of the chemical preparation at the beginning of spraying.
- NOTICE!** Flow constant is a parameter which is not the same for all types of chemical preparations, so it has to be corrected when using different types of FFS.
- WARNING!** Until at least 100L of the chemical preparation is consumed, no correction of FC is possible. The input field will be colored red.

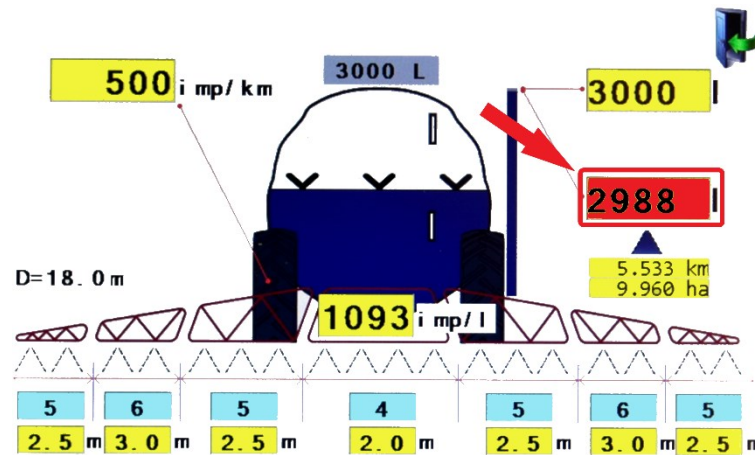


Figure 19


- The FC correction can be made in two ways (automatic FC correction and manual / direct correction of FC)

5.4.1. Automatic Correction of FC

- Automatic correction of FC is executed by comparing the current amount of the chemical preparation from AG-TRONIK, with a reference / actual one, which is read directly from the scale of the tank (tank must be in horizontal position)!
- If the values differ, press the field that shows the current quantity (Figure 19) and enter the reference / actual quantity of the chemical preparation in to the input sub window (Figure 20).



Figure 20

- Confirm the entry of a new amount of chemical preparation by pressing a  icon.

- AG-TRONIK then asks us for permission to correct the FC (Figure 21).
- NOTICE! Check the reasonableness of the changed value of FC [imp/l] !

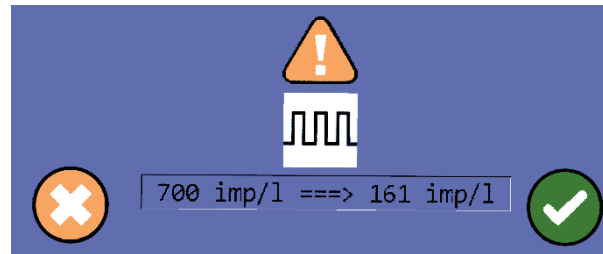




Figure 21

- Confirm the entry of the new FC by pressing a  icon.

5.4.2. Manual / Direct FC Correction

- On the flowmeter, FC for water is written.
- Manual correction of FC is executed by pressing a  icon.
- Enter the new value in to FC input sub window (Figure 22).

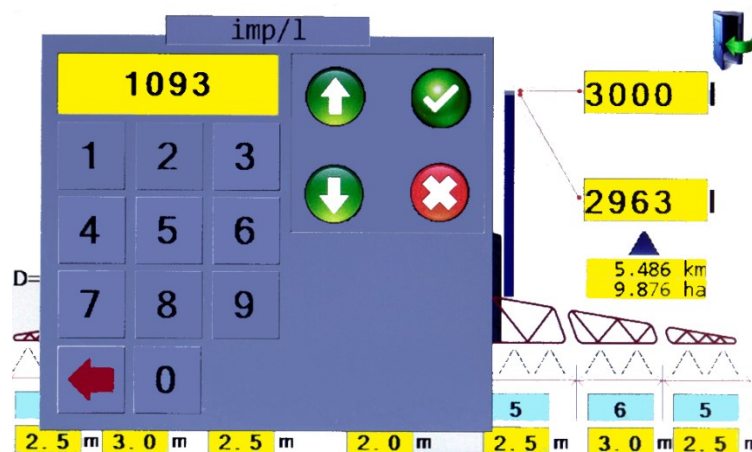



Figure 22

- Confirm the entry of the new FC by pressing a  icon.

5.5. Working Width (WW)

- AG-TRONIK can be used on various machines, so before spraying, it is necessary to enter the working width or number of nozzles of each section of the boom.
- Enter the width of individual sections or number of nozzles in each section by pressing on the



icon on the main menu (Figure 10), which leads to a sub menu (Figure 23).

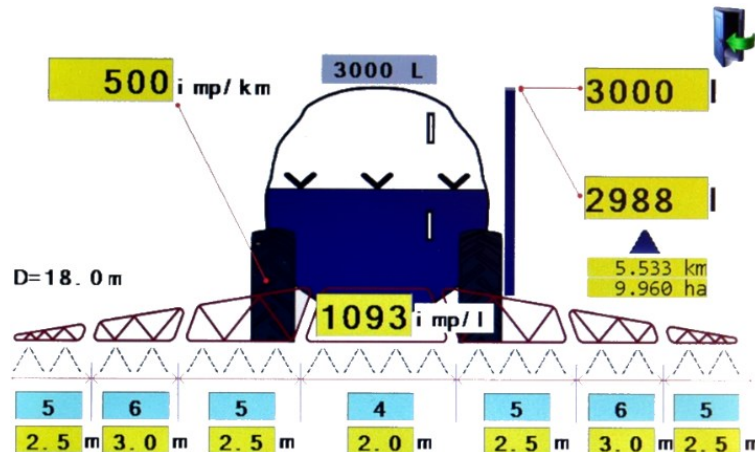


Figure 23

5.5.1. Working Width (m)

- Enter the WW input sub window by pressing a **2.0 m** icon of individual section.
- Enter the value in to WW input sub window (Figure 24).



Figure 24


- Confirm a new WW with a  icon.

5.5.2. Working Width (Nozzles)


- WW is entered by pressing an **4** icon of individual section.
- Actual number of nozzles is entered in to nozzle input sub window (Figure 25).



Figure 25

- Confirm the new number of nozzles by pressing a  icon.

5.6. Nozzle Selection

- Nozzle selection is necessary when we use pressure regulation regime.
- Nozzle selection is made by pressing an  icon.
- Select the nozzle by pressing one of the colored fields with nozzle codes (Figure 26).

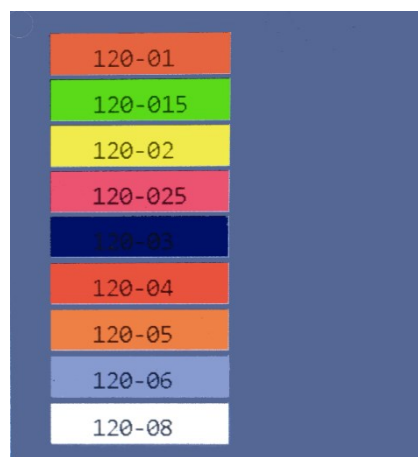


Figure 26

5.7. Antenna, GPS and Speed Sensor

- The following table describes the various states of connection between the AG-TRONIK and the speed sensor or the GPS device (Table 6).






SIMBOL	NAME	DESCRIPTION
	Crossed GPS simbol	AG-TRONIK is not connected to any device.
	Green GPS simbol	Connection between AG-TRONIK and GPS device is established (in AUTO regime).
	Yellow GPS simbol	Connection with Wheel Speed Sensor, NMEA Speed Sensor or GPS device (in MANUAL regime) is established.
	Red GPS simbol	Connection is not stable

Table 6

5.7.1. Speed Sensor NMEA - Antenna

- The GlobalSat antenna serves as a speed measurement sensor.
- When using the GlobalSat antenna, the appropriate connection should be selected.
- From main menu (Figure 27) enter sub window by pressing  icon and select GloabalSat 5Hz (Figure 27).

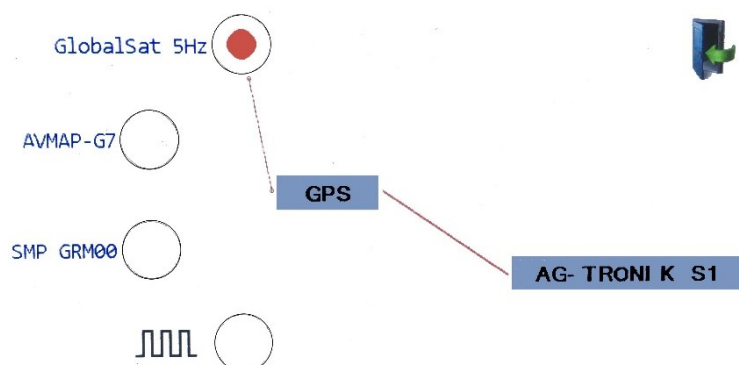



Figure 27

5.7.2. GPS (additional equipment)

- When using GPS device, the appropriate connection should be selected.
- From main menu (Figure 28) enter the sub window by pressing  icon and select AVMAP-G7 (Figure 28 in Figure 29).
- It is possible to choose between two connection regimes between GPS device and AG-TRONIK:
MANUAL: This mode is used when you manage the sprayer manually, but you want the GPS to record the sprinkled area. User has a complete control over sprayer, GPS only sends speed data to the AG-TRONIK (Figure 28). The connection icon in the main menu (Figure 10) is colored yellow.

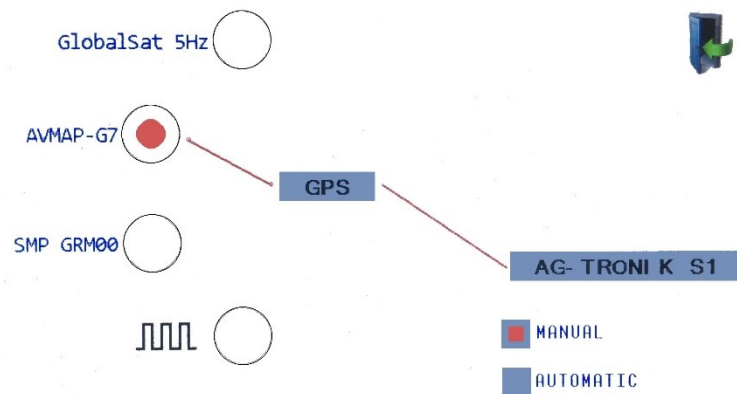


Figure 28

AUTOMATIC: GPS device takes control and management over AG-TRONIK which still manages with the sprayer (Figure 29). The connection icon in the home menu (Figure 10) is colored green.

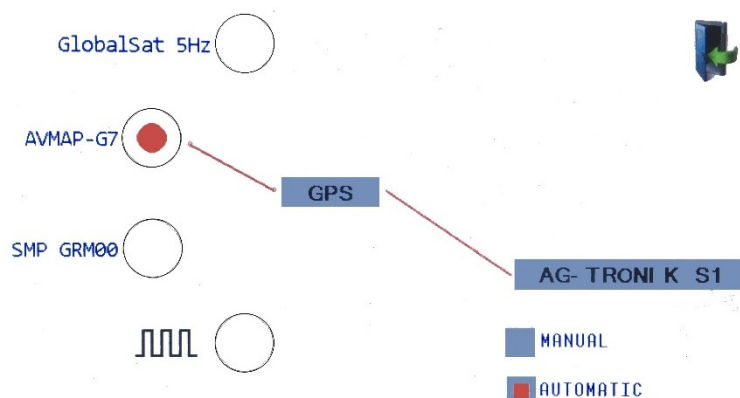




Figure 29

5.7.3. Wheel Speed Sensor (optional)

- Wheel Speed Sensor can be used for measuring the speed .
- When using Wheel Speed Sensor, the appropriate connection should be selected.
- From main menu (Figure 30) enter the sub menu by pressing  icon and select  (Figure 30).

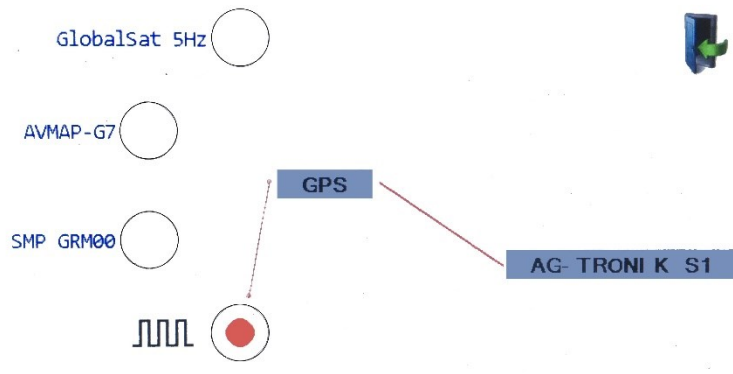


Figure 30

5.8. Settings

5.8.1. General Settings (GS)


- From main menu (Figure 8) enter the GS by pressing  icon (Figure 31).



Figure 31

5.8.2. Minimum Speed (MS)

- The MS determines under / over which speed the main valve is automatically closed / opened.
- MS is set by pressing the yellow field (Figure 32) and entering the desired MS value.

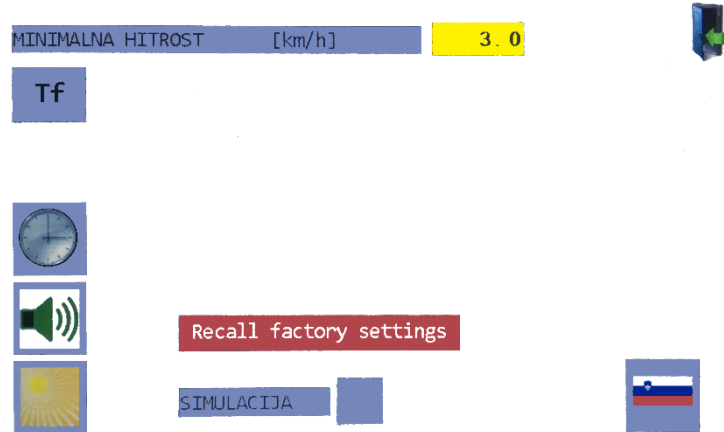


Figure 32

- NOTICE! When controlling (starting / ending) the sprayer manually, with the MAIN valve, set the MS low (0.5km / h).
- NOTE! When you want MAIN valve to open / close at the start / end of the field automatically, set MS close to the speed you are achieving when spraying. (Example: If spraying speed is 8km/h then MS should be set to 6km/h).

5.8.3. Date and Time

- Date and time is set by pressing  icon and entering the right value (Figure 33).

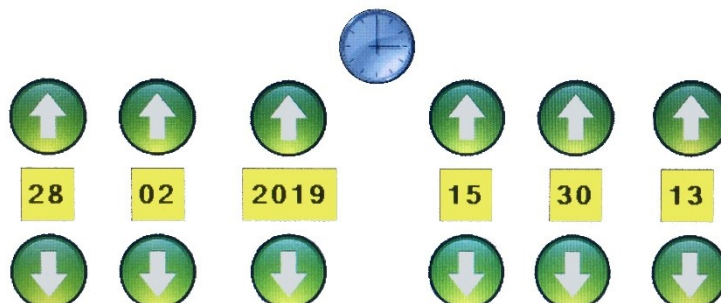



Figure 33

5.8.4. Screen brightness

- Screen brightness is set by pressing  icon, and adapting the light to the conditions by moving the red cursor (Figure 34).

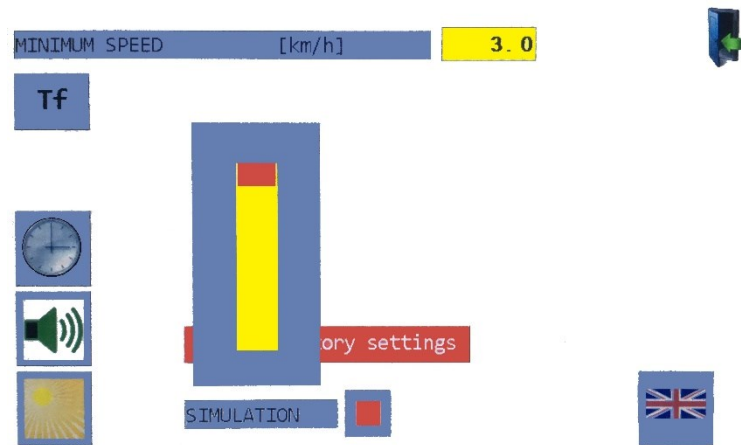


Figure 34

5.8.5. Simulacija

- The simulation is intended for presentation and learning of the AG-TRONIK in operation.
- Simulation is activated by pressing  icon (Figure 35).
- When simulation is activated **S** icon flashes on the main menu.

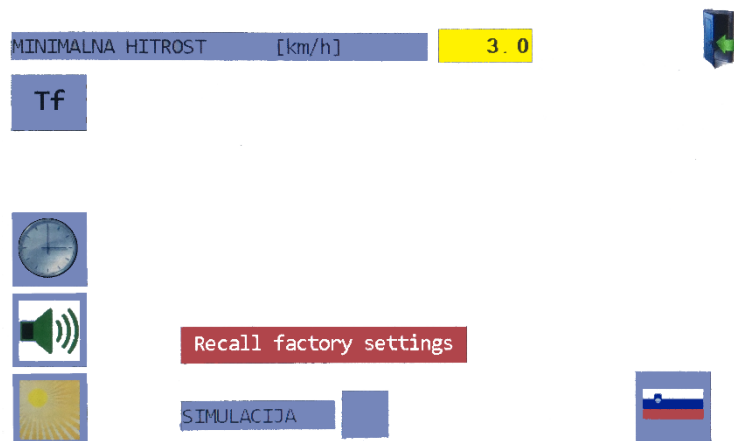









Figure 35

- When simulation is active, we can return to main menu and (Figure 8):
 - Turn on  and  keys, and then regulate pressure with  and  keys.
 - Turn on  key and adjust speed with  and  keys.

5.8.6. Language

- Language is selected by pressing the language selection box (Figure 36).

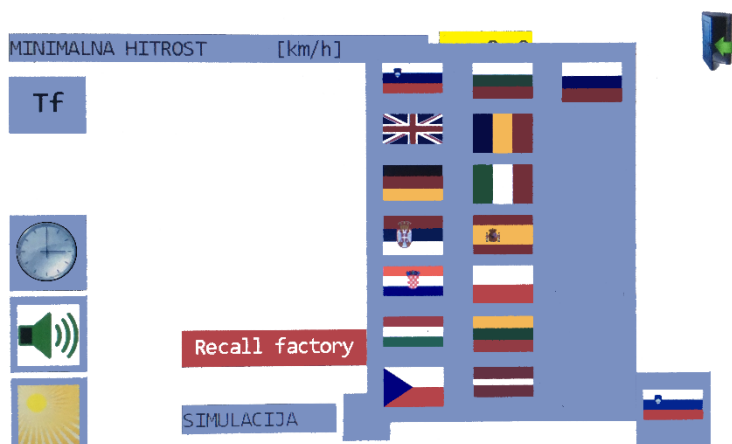


Figure 36

5.9. Service

- Only authorized service personnel of Agromehanika can access the service menu.
- In exceptional cases, you can obtain a password to enter the service menu by contacting your dealer.

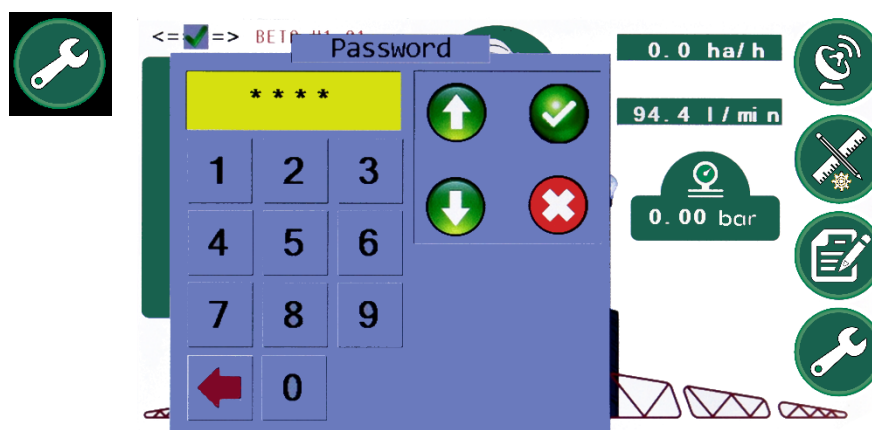


Figure 37

5.10. Flow Analysis

- Flow Analysis is accessible by pressing **0.0 l / mi n** icon.
- The following window opens where we can monitor: number of active nozzles, flow per nozzle and total flow of active nozzles (Figure 38).

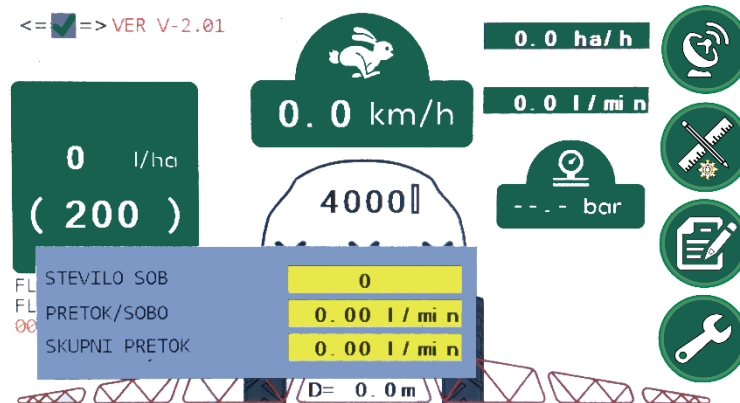


Figure 38

5.11. Daily Counters

- Daily counters are useful for information purposes when we want to check the distance, the amount of chemical preparation or how much surface was treated.
- Daily counters are accessible by pressing **19.2 ha/h** icon on main menu.
- To delete daily counters, select the desired selection box and press CLR (Figure 39).



Figure 39

6 DESCRIPTION OF HANDLING WITH AG-TRONIK S1

The correct values of the parameters must be entered in the AG-TRONIK:

- Hectare dose (desired),
- flow constant (FC),
- section width,
- wheel speed sensor constant (additional equipment).









If the parameters are set correctly, the main spray parameters can be monitored through the display:

- hectare dose (actual),
- speed of treatment,
- boom width (active),
- treated area
- hectare efficiency
- treated distance
- flow (current)

6.1. Manual Regime

In manual mode, spraying is carried out by commands that we imply manually. During work we can increase and decrease the pressure thus, change the hectare consumption - spraying works without the operation of the computer and without automatic regulation.

Handling of Operator:





- By pressing  and  keys, main valve and individual sections are open/closed respectively. Pressure is regulated by pressing  and  keys. Pressure regulation by pressing  and  keys is possible just when  key is on.
- WARNING! In manual mode, the  key must be off.

6.2. Automatic regime

In automatic regime HD is regulated by AG-TRONIK, which needs following conditions to be met:

- Proper hectare consumption (5.1).
- correct selection of WSS constant (only in the case of using WSS) (5.3) and FC (5.4),
- correct width of boom section width or number of nozzles (5.5.1 in 5.5.2),
- correct nozzle selection (Instructions for Use of the Sprayer: General instructions for Spraying),
- correct minimum speed setting (5.8.2),

Handling of Operator:



- Turn on AG-TRONIK, MAIN valve  and individual sections by pressing  key.
- Turn on automatic regime by pressing  key.
- WARNING! In the automatic mode, the  key must be on.

6.3. SPRAYING GUIDELINES

6.3.1. Preparation for Spraying

- Check if the entered parameters in the program are correct,
- partially fill the sprayer with water and test the flowmeter (when opening all the nozzle valves) on the regulator - check the current flow in the AG-TRONIK display,
- the sum of the flow of all operating nozzles must be equal to the flow shown on AG-TRONIK,
- fill the tank with water and go to the spraying site,
- fill the tank with a chemical preparation and mix it. All hand valves for mixing and the MAIN valve are open during preparation of the chemical preparation. If the MAIN valve is closed, mixing through the mixing nozzle does not take place (unless at some machines the mixing is carried out via the mixing pump),
- ensure the correct pressure for spraying,
- if necessary, delete daily counters (ha, km, l).
- check the validity of speed measurement of AG-TRONIK while driving.

6.3.2. Spraying


- Check the minimum speed (MS) before starting the journey and change it if necessary.
- Turn on the section valves , and move to the starting point of spraying.
- Check that the automatic mode is on and start spraying.
- At the moment we start driving, the main valve  is opened, and AG-TRONIK ensures that the desired hectare consumption is achieved as soon as possible.
- If MS is set correctly, AG-TRONIK ensures the automatic opening/closing of the main valve.
- At the end of the row, when the speed is reduced below the MS, the main valve is automatically closed.
- The main valve re-opens when the spraying speed exceeds the set minimum speed.

6.3.3. Completion of spraying

- Immediately after spraying, vital parts should be thoroughly cleaned and rinsed with water.
- Pour clear water through the system for a short time (3-4min).
- This way we make sure that the machine will work for a long time properly.
- **WARNING!** In the event of a breakdown of vital parts due to irregular maintenance of the sprayer, Agromehanika does not take any responsibility!

7. ANALYSIS

7.1. Work

- In the "WORK" recorded information: the name of the work, the type of nozzle type, culture, PPP, start and end of work, working time, distance traveled, time of spraying, set HD, the average HD, the amount of PPP used, cultivated area, cultivated distance, maximum speed, average speed, average flow, spray efficiency, maximum efficiency, FC, SC.
- Enter "WORK" by pressing  icon in a main menu (Figure 8).
- Press desired field to input parameter (Figure 40). All input fields are yellow.







NAME	FIELD_1	 	  START 0: \JOB\ FIELD_1  
NOZZLE	120-01		
TYPE	IDK		
CULTURE	CORN		
CHEMICAL 1	ffs1		
CHEMICAL 2			
CHEMICAL 3			
CHEMICAL 4			
START	07/04/2019 15:08.30		
STOP	07/04/2019 15:09.36		

Figure 40

- In the input sub window, enter the parameter and confirm by pressing "Ent" (Figure 41).



CULTURE	CORN_								
!	?	_	\$	%	&	/	()	=
Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	
Z	X	C	V	B	N	M	bs		
^					:		Ent		

Figure 41


- Begin WORK by pressing  icon, and finish by pressing  icon.

7.2. Printouts

7.2.1. Inserting a USB Key

- Data collected at work can be exported via external media (USB) to PC.
- Insert the USB key into the connector 5 (Figure 3).
- If the key is inserted correctly, in the "WORK" panel  icon appears.

7.2.2. Data Transfer to PC

- To transfer data from AG-TRONIK to the USB key, press  icon.
- In the sub window that opens, we select in to which work file on USB we want to transfer current work from AG-TRONIK (Figure 42).

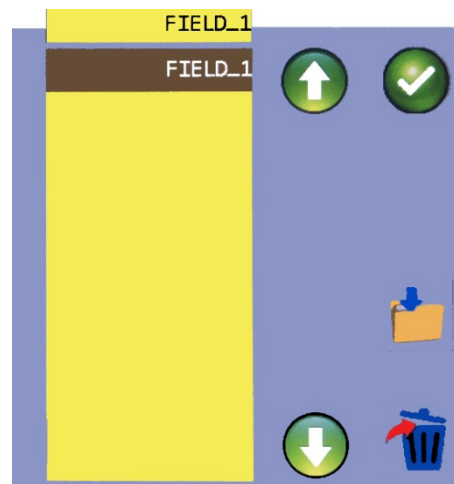



Figure 42

- Save current work to USB by pressing  icon (Figure 43).

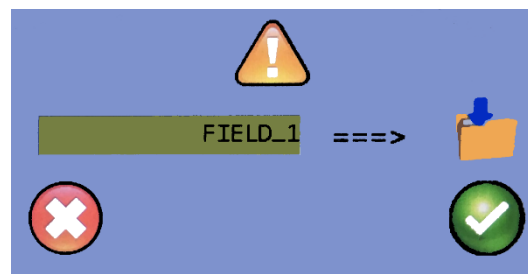




Figure 43

- Confirm action by pressing  icon.

- By pressing  icon, we can also delete certain works (Figure 44).

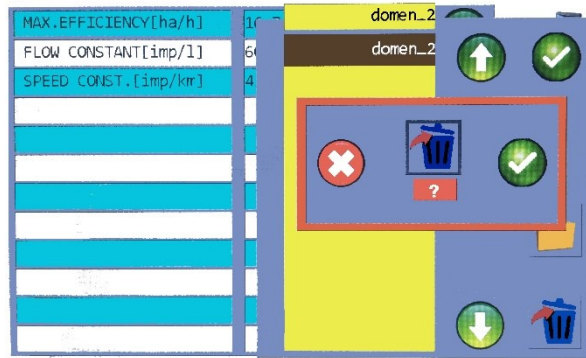


Figure 44

7.2.3. Printout format on PC

```

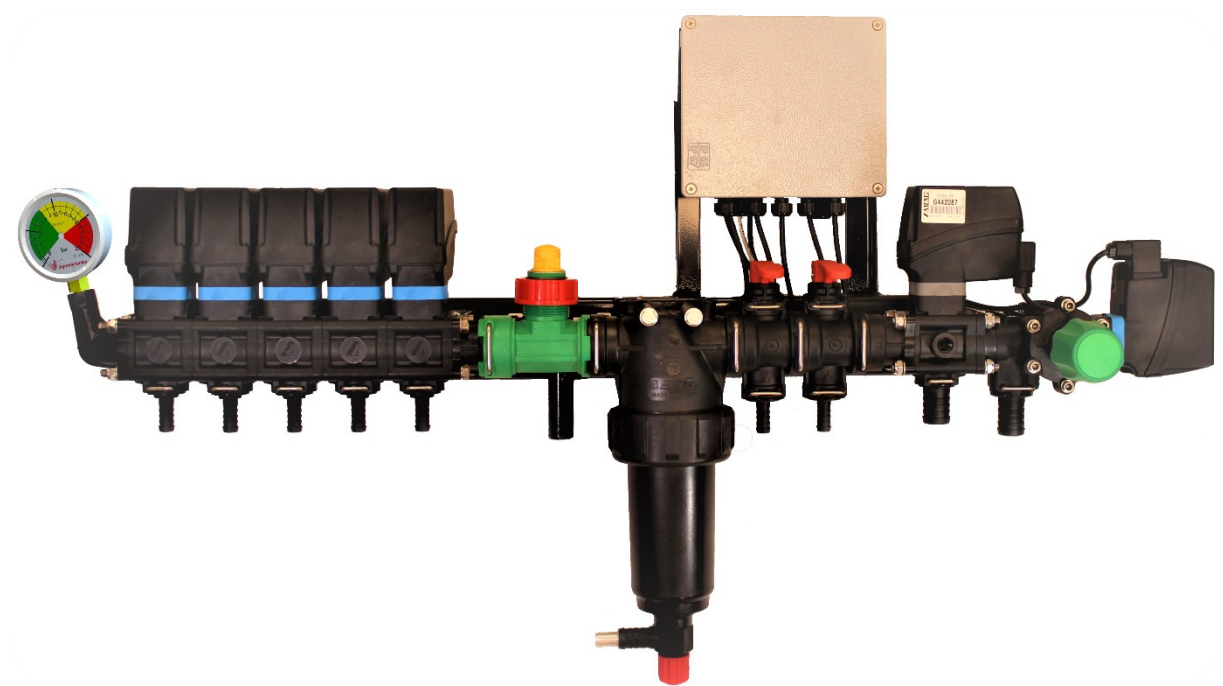
BEGIN*****
NAME          FIELD_1
NOZZLE        120-01
TYPE          IDK
CULTURE       CORN
CHEMICAL 1    ffs1
CHEMICAL 2
CHEMICAL 3
CHEMICAL 4
START         07/04/2019 15:08.30
STOP          07/04/2019 15:10.25
    
```

```

WORK TIME      115
TRAVE.DISTANCE [km] 0.294
SPRAYING TIME  115
SET CONSUMPT. [l/ha] 196
AVERAGE CONSU.[l/ha] 195
CHEMI.CONSUMPTION[l] 103
SPRAYED       [ha] 0.528
SPRAYED DISTANCE[km] 0.294
MAX. SPEED    [km/h] 9.3
AVERAGE SPEED [km/h] 9.2
AVERAGE FLOW [l/min] 53.7
EFFICIENCY    [ha/h] 16.5
MAX.EFFICIENCY[ha/h] 16.7
FLOW CONSTANT[imp/l] 600
SPEED CONST.[imp/km] 4200
END-----
    
```

PR10EC

Remote electronic regulation



8. DESCRIPTION - REGULATOR PR10EC

- Flow regulator PR-3EC is intended for electronic or remote regulation of working pressure on all types, carried and driven sprayers
- Control of all functions of the regulator is done with AG-TRONIK or REMOTE REGULATION, which control electromotors in individual valves or spraying sections.

8.1. Plain Regulation – Components of the Assembly

- The standard pressure regulator consists of only one assembly (Figure 45, Table 7):

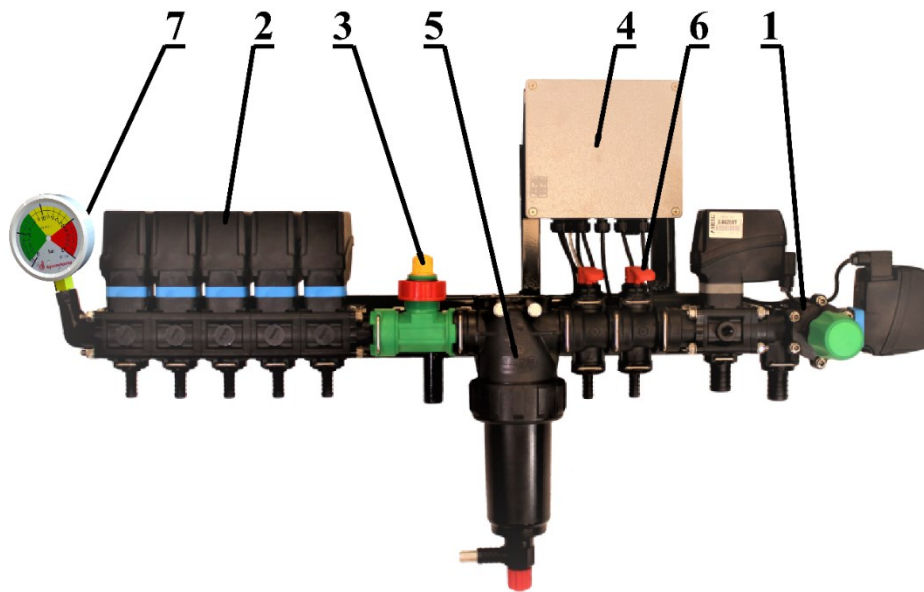


Figure 45

	IME	OPIS FUNKCIJE
1	CENTRAL REGULATION PART	Pressure regulation, pressure relief valve for maximum pressure control and main valve.
2	DIVERSION-REGULATION VALVES	Opening and closing individual sections of the spraying boom.
3	FLOW METER SENSOR	Measures flow and sends data to the AG-TRONIK.
4	ELECTRICAL BOX	Collects data, processes it, and controls valves.
5	SELF-CLEANING FILTER	Refining the liquid before entry into the nozzle.
6	DIVERSION VALVE (manual)	Supplies the liquid in to individual sections.
7	PRESSURE GAUGE	Indicates the operating pressure in the system.

Table 7

8.2. Bypass regulation – components of the assembly

- Bypass pressure regulation version consists of two parts: (Figure 46, Figure 47 and Table 8):



Figure 46

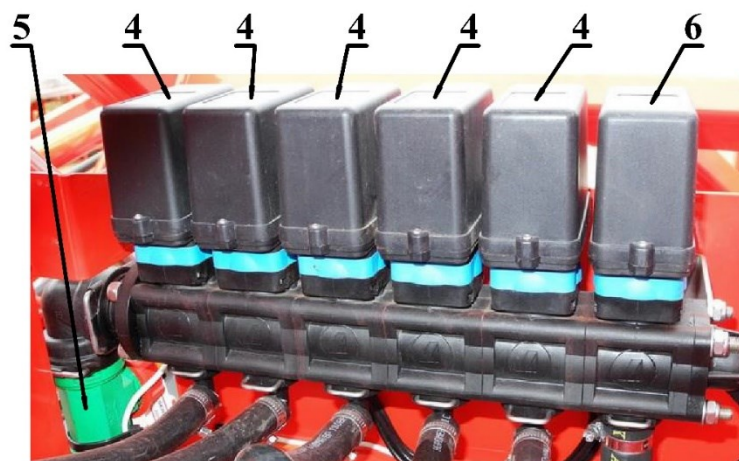


Figure 47

	IME	OPIS FUNKCIJE
1	REGULATION VALVE	Fine regulation of working pressure.
2	PRESSURE GAUGE	Indicates the operating pressure in the system.
3	SELF-CLEANING FILTER	Refining the liquid before entry into the nozzle.
4	DIVERSION-REGULATION VALVES	Opening and closing individual sections of the spraying boom.
5	FLOW METER SENSOR	Measures flow and sends data to the AG-TRONIK.
6	BYPASS VALVE	It has a function of main valve.

Table 8

9. DESCRIPTION OF MAIN COMPONENT PARTS OF THE REGULATOR

9.1. Central-regulation Part

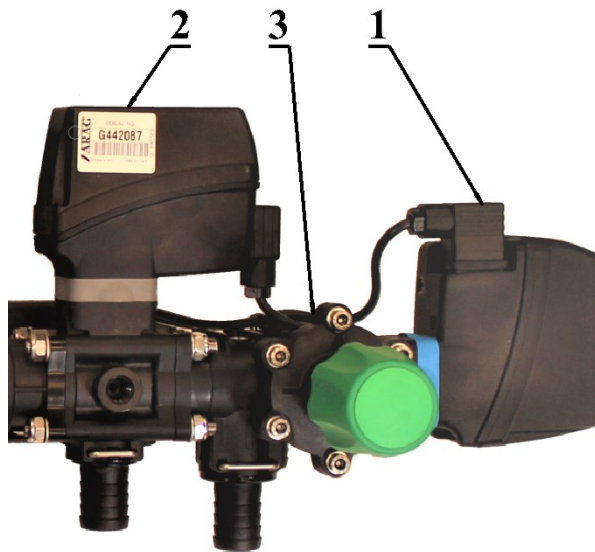


Figure 48

Central regulation system has three main component parts:

- 1 - Main valve
- 2 - Regulation valve from 0 to 10 bar
- 3 - Manual regulation valve (safety valve).

Central regulation valve helps with central opening and closing of complete system - 1, rough regulation of pressure with manual regulation valve - 3 and fine regulation with electromotor regulation valve -2. Control of "MAIN" valve and regulation valve (pressure regulation) is performed exclusively with the help of AG-TRONIK or buttons on AG-TRONIK (6:

33DESCRIPTION OF HANDLING WITH AG-TRONIK S1).

9.2. Self-Cleaning Filter



Figure 49

- Self-cleaning filter additionally cleans spray before entering the nozzles.
- Particles with density of M 50, which remain in filter insert, return to tank through valve on the bottom of the filter (red wheel).
- By turning the wheel counter-clockwise, you open flow through filter valve.
- Valve is closed during spraying.

9.3. Distribution Valve (manual)

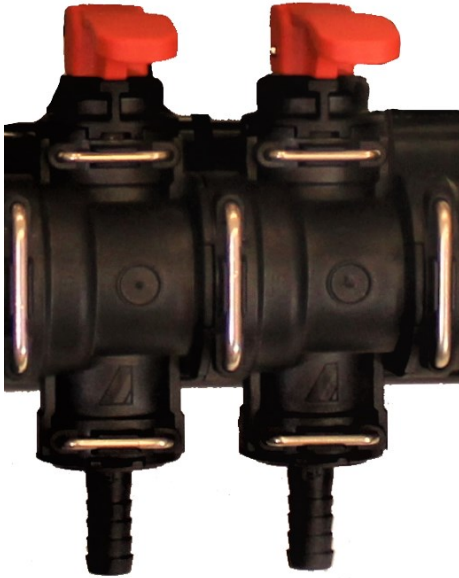


Figure 50

Distribution valve can be used for different purposes, namely:

- hydraulic mixing
- internal washing of tank
- filling container
- spraying stick

Valve is closed, when the lever is in position, displayed in the figure. On the top of lever you can see sign 0.

Open the valve by lifting the red lever.

9.4. Distribution Valve EC



Figure 51

- Distribution valves EC, with the help of built-in electromotors, open and close flow to individual parts of spraying equipment.
- Opening and closing of valves is performed exclusively with buttons on AG-TRONIK (Chapter 4).

9.5. Flow Sensor

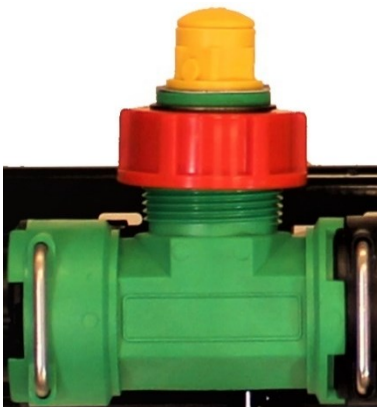


Figure 52

- The flow sensor transmits the pulse of the flowmeter AG-TRONIK.
- The measuring range is 10-100l / min.
- The flowmeter cable is connected to the electrical cabinet.
- The meter is a card where the flow constant (KP) is entered.
- The measurement of the flow is via a turbine installed in the flow meter housing.

- The turbine of the gauge is sensitive to the residue of the spray that remains in the flowmeter after spraying, so after each spraying make sure that the flow meter inside is clean.
- In case of large deviations in the flow constant, the flow sensor is typically caused by the incorrect operation of the flow sensor. In this case, the sensor should be thoroughly cleaned in the part where the sensor turbine is located. Make sure there is no water or chemicals inside the regulator, unscrew the sensor of the flow sensor and clean the sensor turbine with air or running water. After cleaning, detach the sensor into its original position (look at the sensor's orientation!).
- Instead of a turbine flowmeter, a capacitive flowmeter can be mounted, with no rotating parts and thus not sensitive to dirt and sand. The recommended use of a capacitive flow meter is in areas where it is in pure water, which is used for sprinkling a lot of fine sand.



Figure 53

9.6. Regulation Valve with Filter



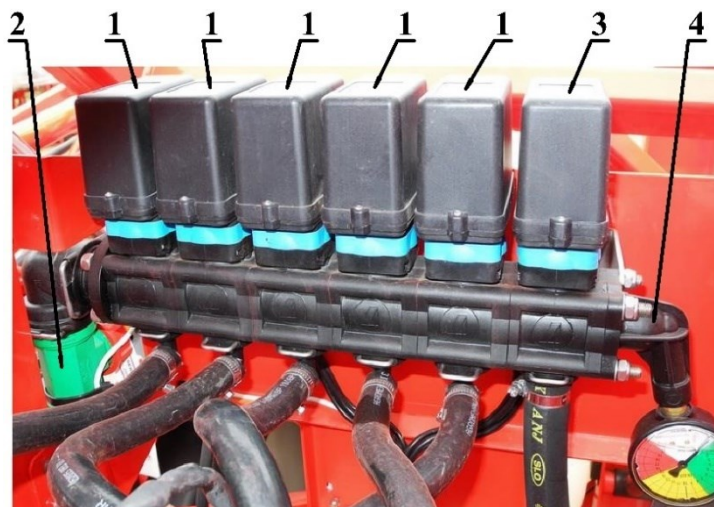
Figure 54

Regulation valve with filter set is composed of three parts:

- 1- regulation valve
- 2- self-cleaning pressure filter
- 3- pressure gauge

The set ensures correct spraying pressure and filtration of chemicals on the spraying device.

9.7. Set of distribution valves (EC-06, EC-08, EC-06RV, EC-08RV)



Set of distribution valves EC consists of:

- 1- distribution valve
- 2- flow meter
- 3- bypass valve
- 4- connection for pressure gauge or pressure switch

Figure 55

- The purpose of the distribution valves is to supply the chemical preparation to individual sections on the spray set. The rear valve in the circuit is a circulation valve and assumes the function of the main valve.
- The distribution valves can control the pressure up to 20 bar, and the flow rate depends on the size of the output pin.
- The return line from the circulation valve is connected to the suction line collector.
- The HPX sprayer series has a relief valve on the underside of the distribution valves, which ensures that the pressure in the distribution lines is relieved after the closure (Figure 48).

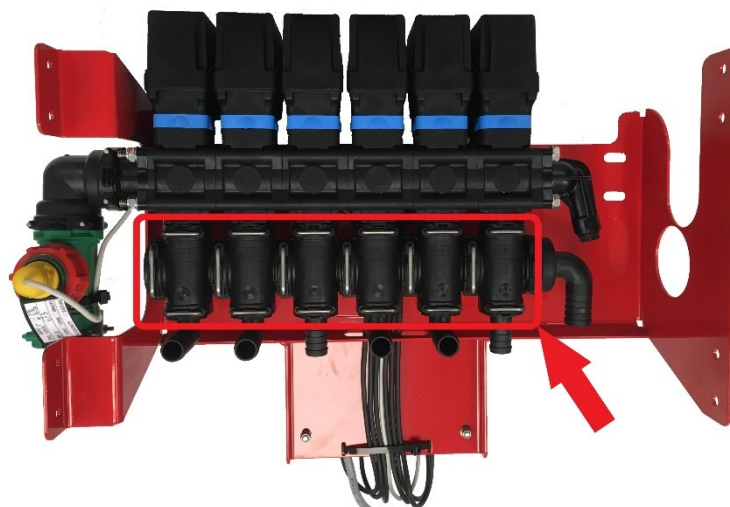


Figure 56

9.8. Manometer

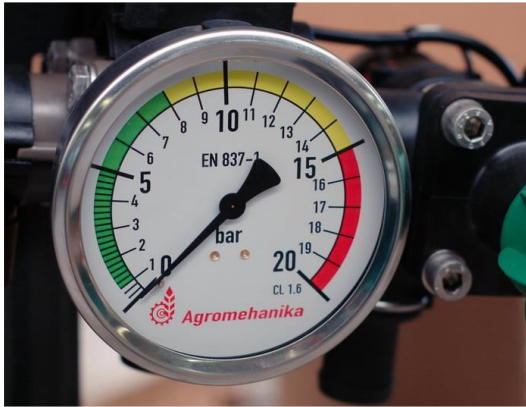


Figure 57

- As standard, pressure regulator is fitted with pressure gauge with diameter of 63 mm, class 1.6
- Pressure gauge is filled with glycerin, which stabilizes the indicator. During winter time, it is recommended to unscrew pressure gauge and store it in a warm place, if the sprinkler is exposed to temperatures below freezing point.

9.9. Pressure Sensor (additional equipment)

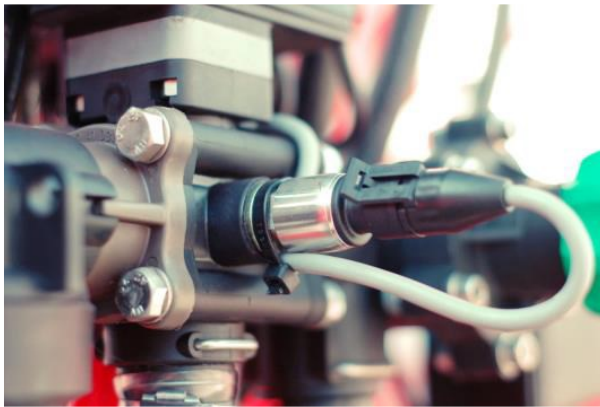


Figure 58

- Instead of measuring flow with flow gauge, flow can be indirectly measured with pressure sensor.
- Pressure sensor is installed in pressure gauge position.
- Measuring and readout of pressure are shown on basic image of display of AG-TRONIK.
- Pressure sensor indirectly measure flow according to nozzle flow.
- The pressure sensor (signal and power cable) in the electrical cabinet connects to the location indicated in the figure (Figure 58).

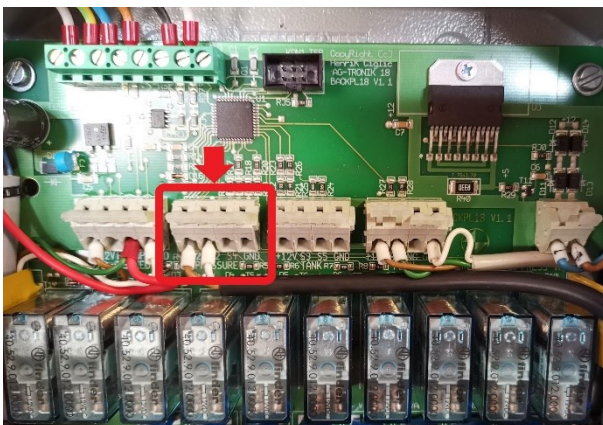


Figure 59

9.10. Electrical Connection Cabinet

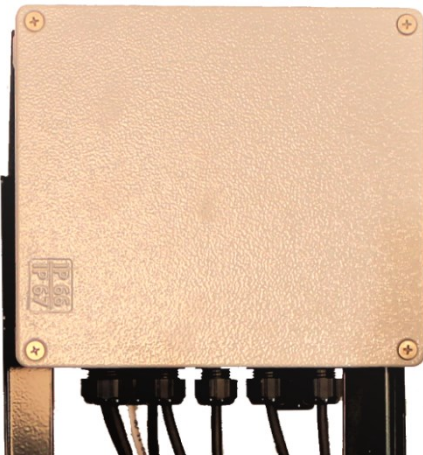


Figure 60

- All sensors and motors are connected in electrical connection cabinet, where processor part of AG-TRONIK is also fitted.
- On command cabinet of AG-TRONIK are display, buttons and circuit, required for communication with electrical connection cabinet.
- If there is a serious motor fault and the fuse does not engage, fault must be remedied by authorized service of Agromehanika.

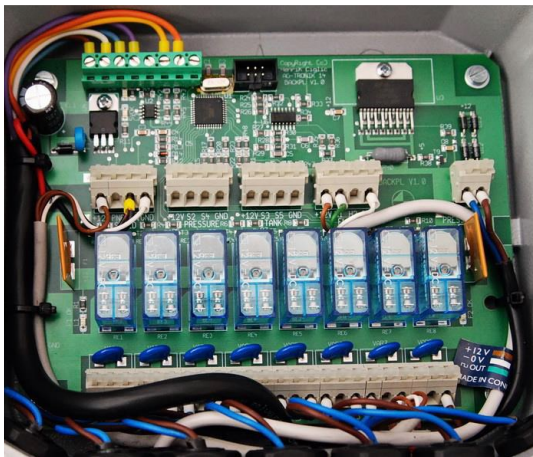


Figure 61

- Speed sensor is connected to bottom part of connection cabinet (4-pole connector) for driven sprinklers.
- For carried sprinklers, it is connected to AG-TRONIK.
- Flow sensor is connected to connection cabinet through connection clamps.



Figure 62

- Connector for connection of speed sensor, installed on the tractor.
- Connector on AG-TRONIK can also be used, if your tractor has an output signal for speed and you have used connection cable 018.60.530.

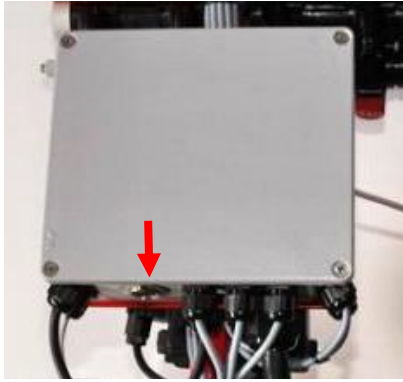


Figure 63

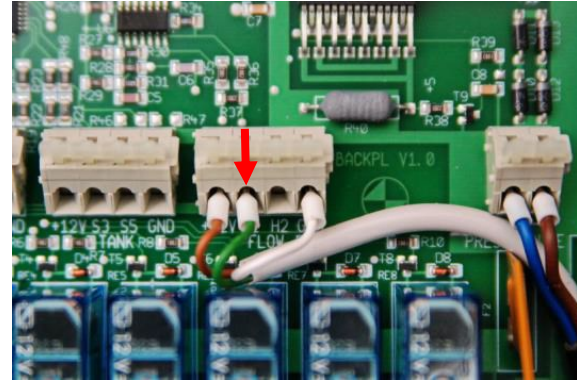


Figure 64

- Speed sensor is connected to bottom part of connection cabinet (4-pole connector) for driven sprinklers.
- For carried sprinklers, it is connected directly to AG-TRONIK.

9.11. Speed Sensor (additional equipment)



Figure 65

- Speed measurement, if performed through induction no-contact sensor.
 - On driven sprinklers, the sensor is installed on rear right wheel axle
 - On carried sprinklers, it is installed on tractor housing and measures passages of wheel nuts.
 - Distance of sensor from mark is also important, which should be between 3 and 5 mm
 - You can also use the signal from the tractor, for which you need a connecting cable (018.60.530)
- Enter the correct speed constant in AG-TRONIK (Chapter 5.3).



Figure 66



Figure 67

10. WIRING DIAGRAM

In the following, two wiring diagrams are presented, which are used by Agromehanika in its products:

- Regulation with MAIN valve (Figure 68)
- Bypass regulation (Figure 69)

10.1. Regulation with MAIN Valve

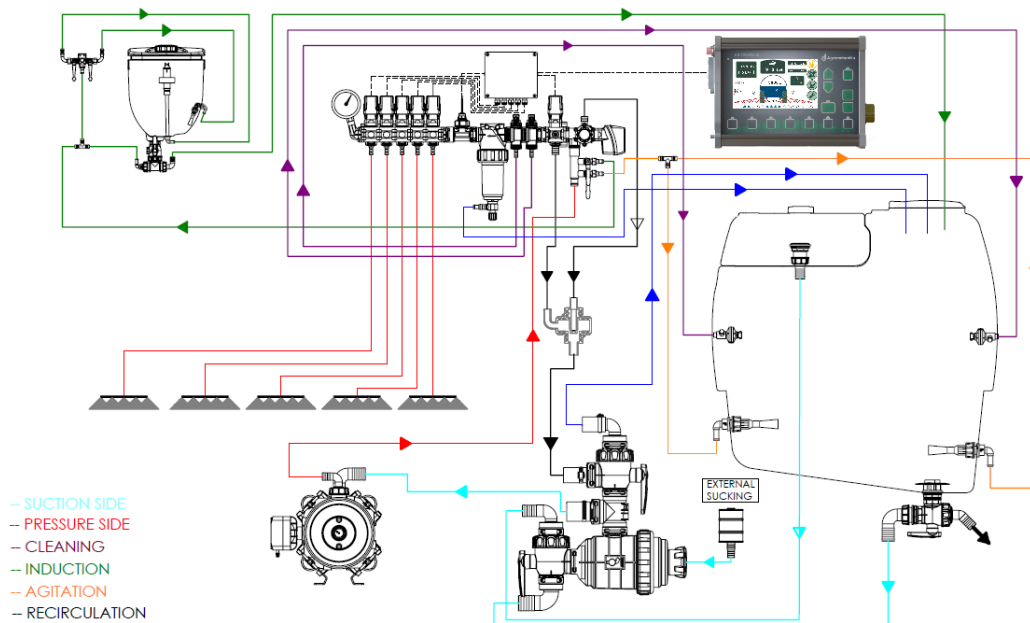


Figure 68

10.2. Bypass Regulation

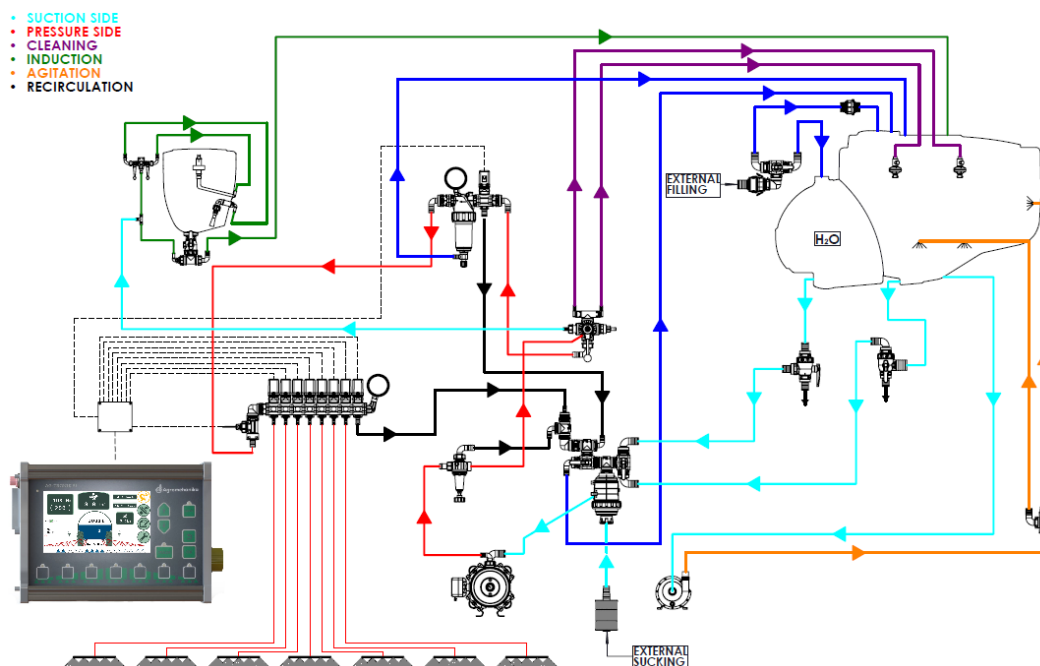


Figure 69

11. MAINTENANCE

- After each spraying, the regulator must be thoroughly washed with clean water, because only this helps to keep the regulator in good condition, operation errors are fewer, which reduces the costs of service.
- Occasionally clean the external part of the regulator and grease rotating and sliding parts. Most appropriate agent is WD-40 or similar maintenance agents.
- During winter, all water must be emptied out of the regulator, the valves must be left open or keep the regulator in a warm place. If you fill the sprayer during winter with antifreeze or agent against freezing of windows, open valves and buttons on valves to prevent freezing in dead, inaccessible places of the regulator.
- It is obligatory to unscrew the manometer and keep it in a warm place.

12. SETTING THE PARAMETERS IN THE AG-TRONIK

- Technicians of Agromehanika input parameters, required for spraying in AG-tronik and save these parameters in factory setting. AG-tronik is accompanied with a sheet of parameters – settings, input as factory settings.
- If the speed sensor is installed subsequently or you have installed a speed sensor on tractor wheel, then the parameter of speed constant is unknown and has to be input manually.

PARAMETER	VALUE	NOTE
<i>Imp/l</i>		
<i>D1</i>		
<i>D2</i>		
<i>D3</i>		
<i>D4</i>		
<i>D5</i>		
<i>D6</i>		
<i>D7</i>		
<i>D</i>		
<i>Imp/km</i>		
<i>l/ha</i>		