



IBX100 ELECTRONIC CONTROL UNIT



4679004
46790042
4679013

Object Pool rel. 5.2.X

USE AND MAINTENANCE



= Generic danger



= Warning

ECU = IBX100 remote control unit**VT** = Virtual Terminal**OP** = Object Pool**TC** = Task Controller**WARNING:**

THE NATIVE CONTROLS INSIDE YOUR VIRTUAL TERMINAL HAVE THE PRIORITY ON ALL THE CONTROLS DERIVING FROM THE IBX100. PLEASE, KEEP THIS IN MIND WHEN PROGRAMMING AND USING THE PRODUCT.



THIS MANUAL CONTAINS INDICATIONS ON HOW TO PROGRAM AND USE THE SOFTWARE INSTALLED ON ISOBUS CONTROL UNITS:

IBX100 SPRAYER.

PLEASE REFER TO THE INSTALLATION MANUAL FOR ALL RECOMMENDATIONS REGARDING RISKS AND INTENDED USE.

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• MANUAL USE MODES

THE INSTALLATION MUST BE CARRIED OUT BY AUTHORIZED AND SKILLED PERSONNEL ONLY. ARAG IS NOT RESPONSIBLE FOR ANY OPERATION SPECIFIED IN THIS MANUAL CARRIED OUT BY UNAUTHORIZED OR UNSKILLED PERSONNEL.

• LIMITATIONS

The descriptions of the assembly phases refer to a "general" Virtual Terminal, so specific models will not be mentioned, unless a certain installation procedure concerns exclusively one VT type.

1 RISKS AND PROTECTIONS BEFORE ASSEMBLY



Use **ONLY** clean water for treatment tests and simulations: using chemicals during simulated treatment runs can seriously injure persons in the vicinity.

2 INTENDED USE

The equipment you have purchased is a standard ISOBUS system compliant with ISO11783 to be applied to a crop spraying boom.

This device is designed to work on agricultural machinery for spraying and crop spraying applications.

The machine is designed and built in compliance with ISO 14982 standard (Electromagnetic compatibility - Forestry and farming machines), harmonized with EMC - 2014/30/EU Directive.

3 PRECAUTIONS



- Do not aim water jets at the equipment.
- Do not use solvents or fuel to clean the case outer surface.
- Do not clean equipment with direct water jets.
- Comply with the specified power supply voltage (12 VDC).
- In case of voltaic arc welding, remove connectors from the device and disconnect the power cables.
- Only use ARAG genuine spare parts and accessories.



THE PRODUCT DOES NOT FEATURE EMERGENCY STOP DEVICES: THE MACHINE MANUFACTURER MUST PROVIDE ALL NECESSARY SAFETY DEVICES FOR THE EQUIPMENT. IT IS THE MANUFACTURER'S RESPONSIBILITY TO ENSURE THAT THE MACHINE IS SAFE TO USE, ALSO BY MEANS OF ACOUSTIC AND/OR VISUAL SIGNALING DEVICES.

4 PACKAGE CONTENT

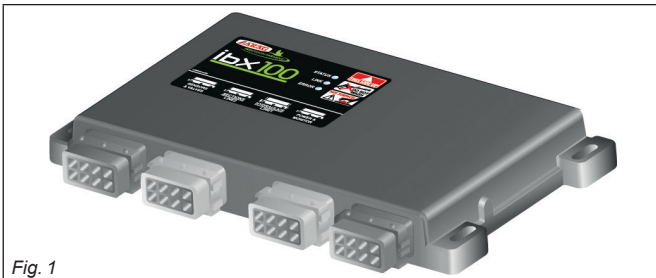


Fig. 1

- Control unit



Harnesses must be ordered separately
(Ref. ARAG general catalog).

5 SETTING

5.1 Tests and checks before setting



Before setup, check:

- that all components are correctly installed;
- the correct connection to the power source;
- the component connection.

Failure to correctly connect system components or to use specified components might damage the device or its components.

6 FOREWORD



Images and the relevant description texts contained in this manual are given as a reference as they can vary depending on the VT used. If the descriptions do not correspond to the text displayed in your VT, refer to the manual attached to the latter.

6.1 "OBJECT POOL" loading



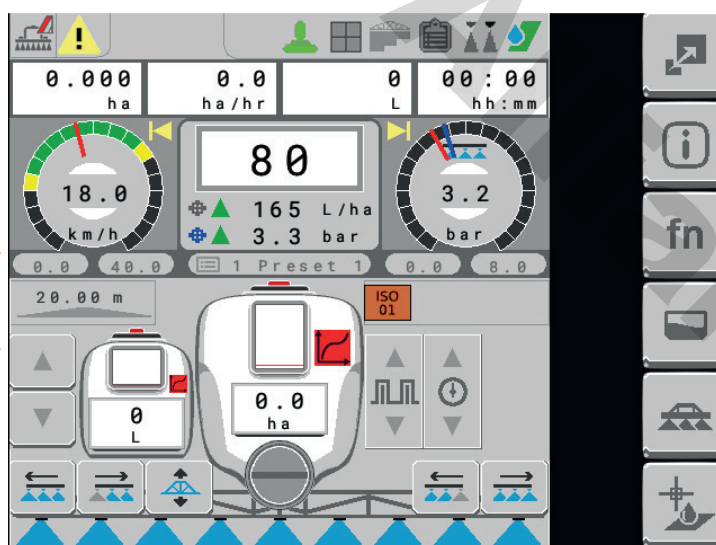
Press to display the OP selection page.

D: ECU OP.



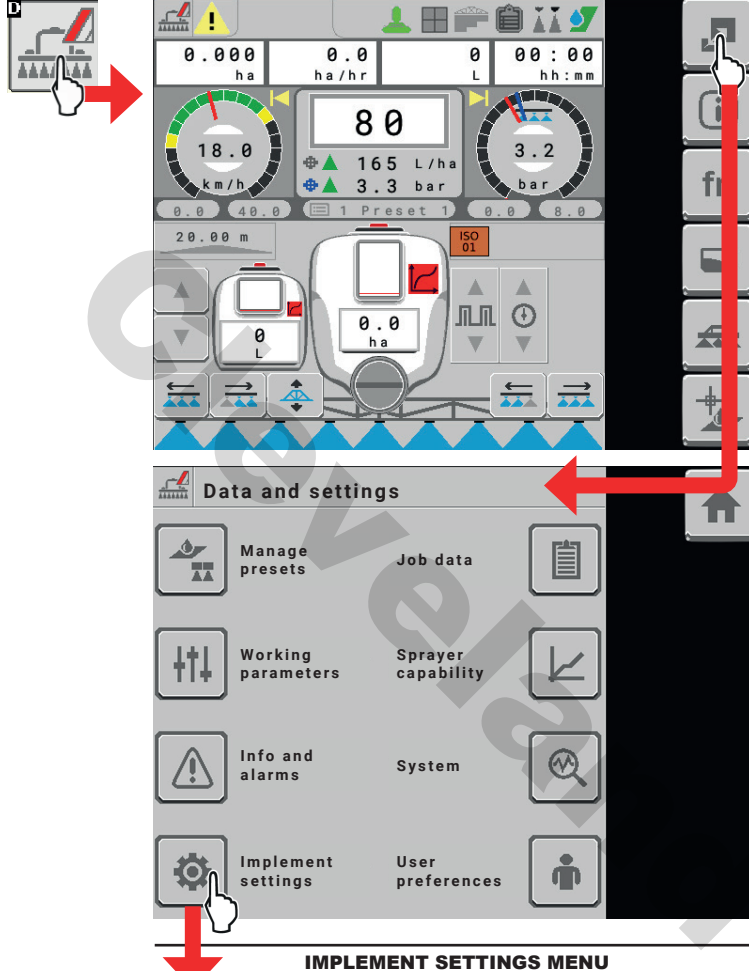
Press to enter the "HOME" main screen.

Wait for the ECU OP to be fully loaded.



7 HOME > DATA AND SETTINGS > IMPLEMENT SETTINGS

ACCESS TO MENU:



IMPLEMENT SETTINGS MENU

- Basic settings
- Boom
- Flowmeters
- Pressure sensor
- Valves
- Nozzles data
- Speed
- Rev counter
- Tank
- Hydraulic functions
- Device calibration
- Implement geometry
- System configurations
- Rate controller
- Flowmeter presets

Control layout:

	Goes back to main screen
	Saves the changes to current page
	Goes back to previous menu, or scrolls the pages of a menu (previous page)
	Scrolls the pages of a menu (next page)
	Quits without confirming the changes
	Saves the changes

					Cancel
1	2	3			Exits
4	5	6			
7	8	9			
	0				Confirm

The interface depends on the VT used.

SECTION VALVE

MODE

ADDITIONAL VALVE IMPLEMENT SETTING MENU

Fence

seleTRON

MODE

ADDITIONAL SELETRON IMPLEMENT SETTING MENU

Fence

flowTRON

MODE

ADDITIONAL FLOWTRON IMPLEMENT SETTING MENU

Turn compensation

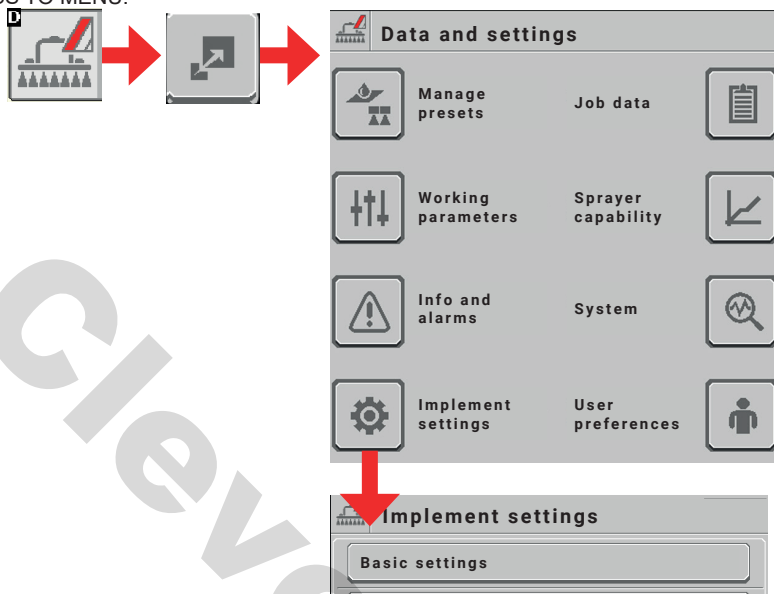
The computer can be set-up with all the data required to ensure a correct distribution of the treatment product.

THE BASIC SETTINGS (PAR. 7.1) AFFECT WHICH AND HOW MENU ITEMS ARE DISPLAYED, HENCE WHICH ADVANCED SETTING IT IS POSSIBLE TO CONTROL. The gray items (if any) cannot be edited. This operation must be done only once only, when installing the computer.

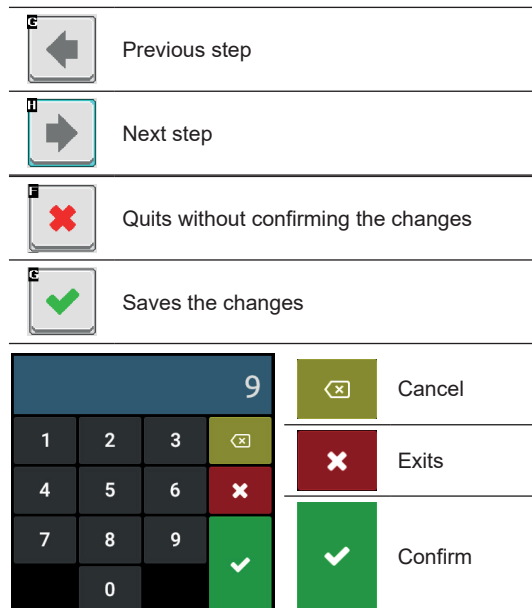
* Flowtron mode is available only under license to be entered on the **License Registration** page, par. 8.10.5 on page 56.

7.1 Home > Data and settings > Implement settings > Basic settings

ACCESS TO MENU:



Control layout:



Upon first switching on, enter the device basic settings.

The VT guides you through the configuration: follow the suggested steps and select the desired options until **Confirm change to settings** is displayed. Confirm to complete the configuration.

BASIC SETTINGS MENU

SECTION VALVE	MODE
 - Sprayer technology Valves: System with electric section valves with gear motor.	 ON
 - Sprayer technology Seletron: system with Seletron valves.	 ON
 - Sprayer technology Flowtron: system with FLOWTRON valves. • Number of CSD Flowtron: number of CSD Flowtron nodes installed on the system.	 ON
- Rate control type: indicate the actuator used by the system to regulate the amount of product intended for the boom, needed to achieve the application rate set by the user.  • Electric prop. valve: select this option when there is an electric proportional valve installed in the system that regulates the increase or decrease in product quantity. • Pump control: select this option when regulation of the flowrate is made by acting directly on the rotation speed of a centrifugal pump. In this case, IBX100 is able to control in PWM (Pulse Width Modulation) a hydraulic proportional valve that regulates the amount of oil to be sent to the pump so as to increase or decrease its rotation speed. • Electric diaphragm valve: select this option when a diaphragm regulating valve is installed in the system. 	- Rate control type: indicate the actuator used by the system to regulate the amount of product intended for the boom, needed to achieve the application rate set by the user.  • Electric prop. valve: select this option when there is an electric proportional valve installed in the system that regulates the increase or decrease in product quantity. • Pump control: select this option when regulation of the flowrate is made by acting directly on the rotation speed of a centrifugal pump. In this case, IBX100 is able to control in PWM (Pulse Width Modulation) a hydraulic proportional valve that regulates the amount of oil to be sent to the pump so as to increase or decrease its rotation speed. • Electric diaphragm valve: select this option when a diaphragm regulating valve is installed in the system. 
- Pressure control type: indicate the actuator used by the system to keep pressure in the circuit constant.  • Electric prop. valve: select this option when there is an electric proportional valve installed in the system that regulates the increase or decrease in product quantity. • Pump control: select this option when regulation of the flowrate is made by acting directly on the rotation speed of a centrifugal pump. In this case, IBX100 is able to control in PWM (Pulse Width Modulation) a hydraulic proportional valve that regulates the amount of oil to be sent to the pump so as to increase or decrease its rotation speed. • Electric diaphragm valve: select this option when a diaphragm regulating valve is installed in the system. 	ON

CONTINUES

> > > Home > Data and settings > Implement settings > Basic settings

- **Main valve type:** type of main control valve installed on the control unit.

- **None**
- **2 Ways** (drain valve).
- **3 Ways** (main valve).

SECTION VALVE

- **Boom settings:** select the configuration of section valve lock.
- **Single** one valve for each section.
- **Dual** 2 valves for each section (with this configuration, each spray point in the boom is equipped with dual nozzle).

seleTRON

- **Spraying spot type:** Seletron type • 1 single.
- 2 dual.
- 4 fourfold.

- **Flowrate reference sensor:** select which sensor is used by IBX100 to receive the information on instantaneous sprayed flowrate (l/min - GPM) for automatic regulation of the application rate (l/ha -GPA).

- **Flowmeter:** instantaneous sprayed flowrate is measured by the flowmeter.
- **Pressure sensor:** instantaneous sprayed flowrate (l/min - GPM) is calculated through the pressure data received from the pressure transducer (together with the number and type of programmed nozzles).
- **Both:** instantaneous sprayed flowrate (l/min - GPM) is measured by the flowmeter when the value is within the flowmeter measurement range. Outside the flowmeter reading range the system uses the pressure sensor.

- **Flowrate reference sensor:** select which sensor is used by IBX100 to receive the information on instantaneous sprayed flowrate (l/min - GPM) for automatic regulation of the application rate (l/ha -GPA).

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- **Both:** instantaneous sprayed flowrate (l/min - GPM) is measured by the flowmeter when the value is within the flowmeter measurement range. Outside the flowmeter reading range the system uses the pressure sensor.

Terminal nozzle type

- **None**
- **"Fence":** allows enabling the use of the "Fence" nozzles, see par. 10.13.

Terminal nozzle type

- **None**
- **Buffer zone:** allows enabling the use of nozzles at the "Buffer zone" see par. 10.13.
- **"Fence":** allows enabling the use of the "Fence" nozzles, see par. 10.13.

flowTRON

Terminal nozzle type

- **None**
- **"Fence":** allows enabling the use of the "Fence" nozzles, see par. 10.13.

- **Tank level source:** indicate the method used to measure the amount of product in the tank.

• **Manual:** select this option when there is no sensor in the system to measure the amount of product available in the tank. The operator must manually enter the value of the quantity loaded into the tank. During treatment, the IBX100 system will automatically calculate the amount of product distributed and subtract it from the amount previously entered, returning an indication of the residue in the tank.

• **Filling flowmeter:** select this option when a flowmeter that measures the amount of product loaded into the tank is installed in the system. During treatment, the IBX100 system will automatically calculate the amount of product distributed and subtract it from the amount in the tank to have an indication of the residue in the tank.

• **Single tank level:** select this option when a level sensor is installed in the system to measure the amount of product loaded into the tank. During treatment, the sensor measures the amount of product in the tank in real time.

By selecting this option in the HOME page, this icon  will be displayed on the tank.

The icon with red background indicates that NO calibration curve is present.

Par. 7.11.3 on page 22 includes the instructions to create it; when the calibration curve is present, the red icon will disappear.

• **Dual tank level:** select this option when there are two tanks in the system and a level sensor is installed for each of them.

Each sensor measures in real time the amount of product in the tank on which it is installed.

By selecting this option another tank will be displayed alongside the first one with this icon .

The icon with red background indicates that NO calibration curve is present.

It is not possible to create a calibration curve for tank 2, you can only transfer the calibration curve via VT with FileServer (par. 7.11.5 on page 24) or Visio ISOBUS functions. If the calibration curve is present the red icon will disappear.

BASIC SETUP PROCEDURE IS NOW COMPLETE: WHEN RETURNING TO THE HOME PAGE, THE SYSTEM RESTARTS AUTOMATICALLY. CONTINUE WITH THE PROGRAMMING OF THE IMPLEMENT SETTINGS MENU (CHAP. 7) BY MOVING TO THE NEXT ITEM: Boom.

7.2 Home > data and settings > implement settings > Boom

Boom settings

Tecnologia irroratrice Seletron

1 Number of sections 9

2 Spray spots spacing 50.00 cm

3 Spots per section Set

Number of spray spots 40 *

Boom width 20.00 m

4 Max TC sections num. 255

5 Terminal nozzle type Buffer zone

Fig. 2

Section settings 1 / 2

Section	Spots	Status
1	4	3a ✓ 3b
2	4	✓
3	5	✓
4	5	✓
5	4	✓
6	5	✓
7	5	✓
8	4	✓

Fig. 3

1 Indicate the number of sections making up the boom.

2 Indicate the distance between spraying points (nozzle holders).

3 Indicate the number of spraying points (nozzle holders) installed on each boom section.

3a Repeat the setup for each section (Fig. 3).

3b It allows to enable/disable specific boom sections. Repeat the setup for each section, by disabling the disconnected outputs.

4 The displayed number of Valves / Seletron / Flowtron FCV that can be managed depends on the type of VT connected to the system. The VT could be able to manage just a limited number of sections, therefore, should it not be possible to manage each valve (either of a boom section or on the nozzle) individually, the VT will group them so as to exploit the maximum number of permitted sections.

5 Displays the terminal nozzle type (basic settings, chap. 7.1).

* The system automatically calculates the number of spraying points and the boom length according to the values entered in points 1 and 2 (Fig. 2).

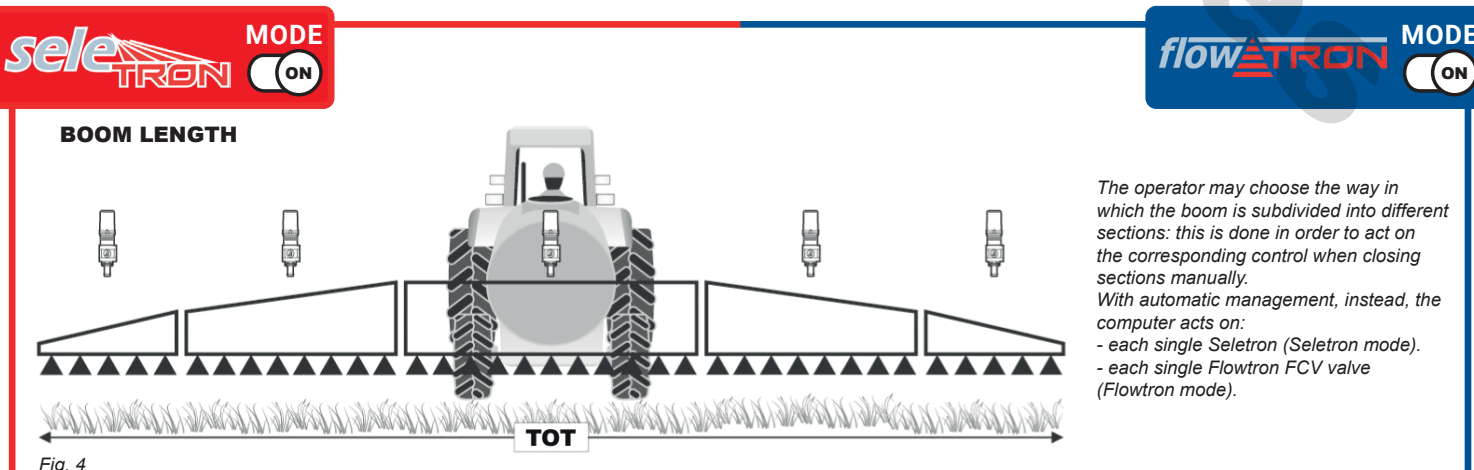
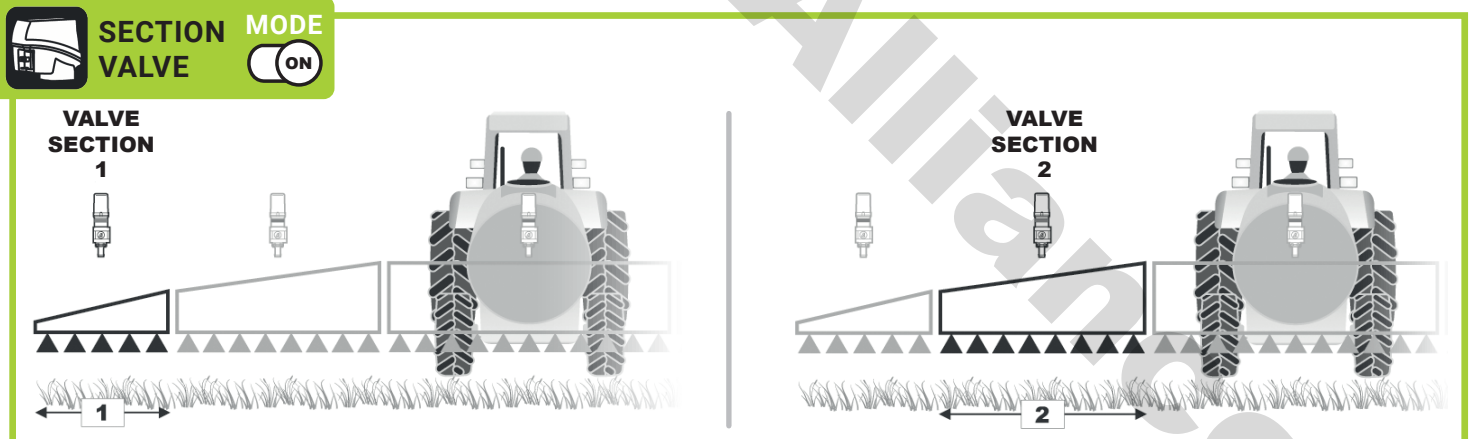


Fig. 4

7.3 Home > data and settings > implement settings > Flowmeters

* **Flowmeter** 1 / 2

Type Orion 4621 X A4 XXXX

4 Constant 300 pls/L

Minimum flowrate 10,0 L/min

Maximum flowrate 200,0 L/min

Select from list 1

Fig. 5

Flowmeter selection

Type Orion 4621 X A4 XXXX

Constant 300 pls/L

Minimum flowrate 10,0 L/min

Maximum flowrate 200,0 L/min

Select flowmeter 3

Fig. 6

◆ **Filling flowmeter** 2 / 2

Type Orion 4621 X A4 XXXX

Constant 300 pls/L

Minimum flowrate 10,0 L/min

Maximum flowrate 200,0 L/min

Select from list

Fig. 7

This menu allows setting both flowmeter and filling flowmeter (if set).

1 Set installed flowmeter by selecting it from the list in Fig. 6 (use keys 2 to scroll items, and key 3 to confirm).

If the installed flowmeter is not included in the list, select **Other** so as to manually enter the features.

4 Set the **Constant**.



Minimum flowrate and Maximum flowrate items can be modified only if, in point 1, the flowmeter has been set to **Other**.

◆ Use keys 5 to move between the pages **Flowmeter** (Fig. 5) and **Filling flowmeter** (Fig. 7).

List of available flowmeters and preset data:

ORION FLOWMETERS

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
4621 x A0 xxxx	6000	22710	0.5	0.10	10	2.6
4621 x A1 xxxx	3000	11355	1	0.30	20	5.3
4621 x A2 xxxx	1200	4542	2.5	0.70	50	13.2
4621 x A3 xxxx	600	2271	5	1.30	100	26.4
462x x A4 xxxx	300	1135	10	2.60	200	52.8
4622 x A5 xxxx	150	568	20	5.30	400	105.7
4622 x A6 xxxx	100	378	30	7.90	600	158.5

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
Other*	625	2366	10	2.60	200	52.8

* Default values can be modified for **Other** item only.

WOLF FLOWMETERS

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
462 x 2 xxx	1025	3880	2.5	0.7	50	13.2
462 x 3 xxx	625	2366	5.0	1.3	100	26.4
462 x 4 xxx	250	946	10.0	2.6	200	52.8
462 x 5 xxx	132	500	20.0	5.3	400	105.7
462 x 7 xxx	60	227	40.0	10.6	800	211.3

ORION WR FLOWMETERS

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
462W100	6000	22710	0.3	0.08	100	26.4
462W200	3000	11355	0.5	0.13	200	52.8

7.4 Home > data and settings > implement settings > Pressure sensor

Pressure sensor

Type 466113.200

Maximum pressure 20

Status 4 ☒

Select from list 1

Fig. 8

Pressure sensor selection

Type 466113.200

Maximum pressure 20

Select sensor 3

Fig. 9

Depending on the basic settings (**Flowrate reference sensor**, chap. 7.1), the pressure sensor, once properly configured, can perform different functions:

- **Pressure sensor:** the pressure measured by the sensor is used to regulate the application rate.
- **Flowmeter:** the pressure sensor displays ONLY the operating pressure.
- **Both:** the pressure sensor displays the job pressure when the machine works within the flowmeter limits. When the flowmeter operates outside the limits the pressure measured by the sensor is used to adjust the application rate.

1 Set installed pressure sensor by selecting it from the list in Fig. 9 (use keys **2** to scroll items, and key **3** to confirm). The relevant configuration data will be automatically loaded (Fig. 8).

If the installed sensor is not included in the list, select **USER** so as to manually enter the features.

4 Activate pressure sensor.



Maximum pressure item can be modified only if, in point 1, the sensor has been set to USER.

The table below indicates the values that are automatically set selecting the sensor code. If the installed sensor is not displayed, select **USER** and enter the relevant values.

ARAG PRESSURE SENSOR		
Type	Maximum pressure	
	bar	PSI
466113.200	20.0	290
466113.500	50.0	725
USER	20.0	290



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

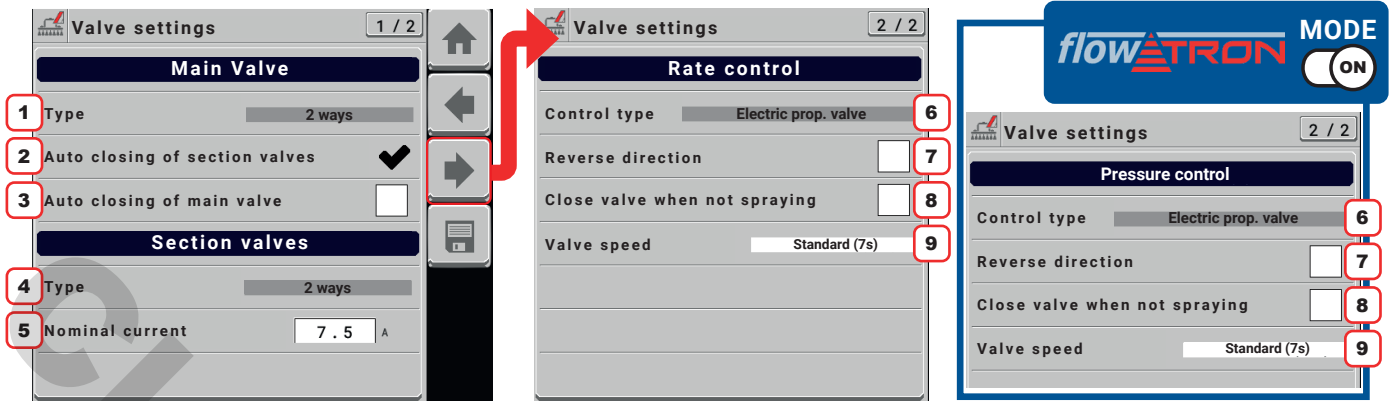


Fig. 10

It allows configuring the main valve, section valves and pressure regulating valve.

1 Main control valve installed. Available options are:

- **None, 2 Ways** (drain valve).
- **3 Ways** (main valve).

The **Main Valve > Type** item displays the valve selected during programming **Home > Data and settings > Implement settings > Basic settings** (chap. 7.1).

If it is necessary to modify it, go back to the relevant menu.

It can not therefore be modified on this screen.

2 Allows enabling/disabling the auto closing of section valves when the main control valve is closed.

On a Seletron and Flowtron type system, auto closing of section valves is active by default ("**M**" type).

- **"M" operating mode** (option ☒):
the section valves are closed or opened by operating the main control valve based on the settings of the controls relating to the single section valves, namely:
- if section controls are set to OFF, when main control is operated, the sections will stay closed.
- if the control of one or more section valves is set to ON, when main valve is closed or opened, the section valves will be closed or opened as well.

☒ **ENABLED MODE CAN NOT BE MODIFIED:**
this condition occurs when no main valve is installed on the system or the one installed is a 2-way valve.

- **"P" operating mode** (option ☐):
the section valves are controlled independently.
Main valve control functions do not affect section valve opening or closing.

3 When all section valves are closed and this option is enabled, the main valve is automatically closed as well.

(☒ Main valve automatic closure enabled / ☐ Main valve automatic closure disabled).

☒ **ENABLED MODE CAN NOT BE MODIFIED:**
this condition occurs when no main valve is installed on the system.



4 Indicate the type of installed section valves. Available options are:

- **2 Ways** (valves without metered by-passes).
- **3 Ways** (valves with metered by-passes).



4 On a Seletron or Flowtron system, section valves are of the **2 Ways** type (without metered by-passes) and are automatically set.

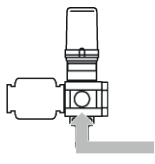
5 It is the estimation of the current value expected on each Seletron or Flowtron line.

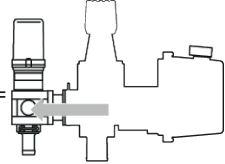


> > > Home > Data and settings > Implement settings > Basic settings

- 6 Read-only item. The application rate control type / (pressure: for Flowtron mode only) was preset earlier in paragraph 7.1 on page 7.
- Electric prop. valve
 - Pump control
 - Electric diaphragm valve

7 Indicate the type of installed regulating valve. Available options are:

☒ Reverse direction enabled = 

☐ Reverse direction disabled = 

8 It allows controlling a regulating valve, which must be closed when stopping the product output.

9 Installed regulating valve speed. Available options are:

- Standard 7s
- Fast 3.5s
- Ultra fast 2s

 Item available ONLY when entering in Home > Data and settings > Implement settings > Basic settings > Pressure control type > Electric prop. valve (par. 7.1).

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

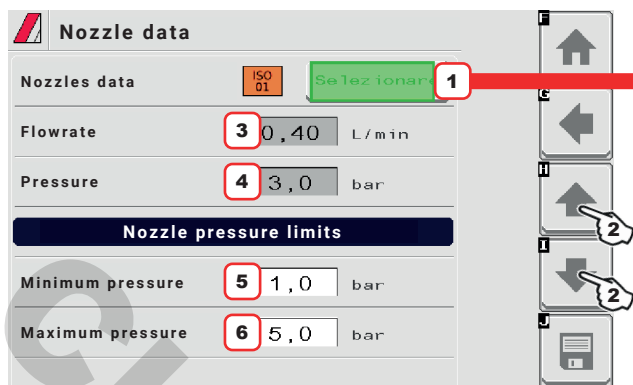


Fig. 11

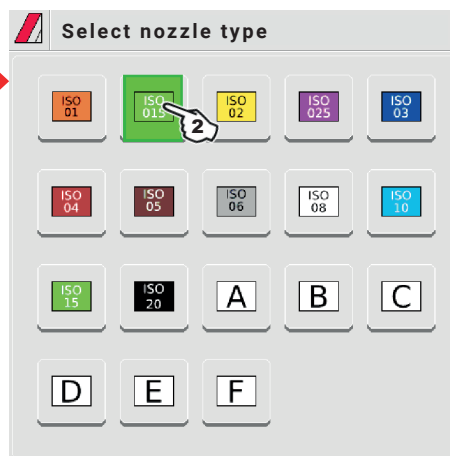


Fig. 12

It allows setting the characteristic data of 12 ISO and 6 "User" (A ÷ F) nozzle types.

- 1 - 2 Select the nozzle to be set (Fig. 11 / Fig. 12); enter the characteristics (Fig. 11).
If necessary, repeat the setup for each nozzle.
- 3 - 4 Set the reference flowrate and pressure for the selected nozzle.
The flowrate of the nozzle being used allows IBX100 to calculate the pressure without a pressure sensor.
*The values for **Flowrate** and **Pressure** can be modified for "User" nozzles ONLY, not for ISO nozzles.*
- 5 - 6 Set the pressure limits for the selected nozzle.
Enable the proper function in the menu **Info and alarms** (par. 8.6) if you want the computer to trigger an alarm when the nozzle is outside the set range.
For the procedure to be followed when an alarm occurs, please refer to par. 11.3.

The **Sprayer capability > Nozzles configuration** menu allows verifying that the settings for the selected nozzle have been made correctly . If there are errors in the configuration the device shows this symbol .



SECTION VALVE MODE



MODE



When using an implement with or twin or fourfold Seletron technology or a sprayer with dual boom valve technology, it is possible to customize the selection of the pressure at which to change nozzle or nozzle combination based on the pressure values for the selected nozzles.

When setting a treatment, make sure to couple compatible nozzles.

For example:

- Compatible nozzles: the flowrate at 1 bar - 14 psi of the ISO025 nozzle is LOWER than the flowrate at 5 bar - 73 psi of the ISO02 nozzle (Fig. 128).
- NON-compatible nozzles: the flowrate at 1 bar - 14 psi of the ISO05 nozzle is HIGHER than the flowrate at 5 bar - 73 psi of the ISO02 nozzle (Fig. 129).

In the same way, the overall flowrate of both nozzles at MINIMUM pressure shall be LOWER than the flowrate of the high flowrate nozzle at MAXIMUM pressure.

E.g. Fig. 128 and Fig. 129



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

7.7 Home > data and settings > implement settings > Speed

Fig. 13

Allows setting the speed data.

1 It allows selecting the source for speed calculation.

2 Wheel sensor (ECU): when this option is enabled, speed is calculated through the pulses coming from the speed sensor, installed on the wheel and **connected to the ECU through proper harness**. The wheel constant must be entered during the setup procedure.

3 *Tractor wheel [PGN65096]: the IBX100 control unit receives the vehicle driving speed via the ISOBUS line. The speed value is provided by the Tractor-ECU according to the rotation speed of the wheel or a mechanical part of the tractor.

NOTE: Tractor-ECU can be a standard ECU in the ISOBUS tractor, installed by after-sales service (ARAG IBX20 TECU) or emulated by the VT in the cabin.

4 *Tractor radar [PGN65097]: the IBX100 control unit receives the vehicle driving speed via the ISOBUS line. The speed value is provided by the Tractor-ECU that detects the data sent by the radar installed on the tractor.

NOTE: Tractor-ECU can be a standard ECU in the ISOBUS tractor, installed by the after-sales service (ARAG IBX20 TECU) or emulated by the VT in the cabin.

5 Simulated speed: allows enabling simulated speed in order to carry out regulation tests even when the machine is stationary.

6 GPS NMEA2000 [PGN129026]: the speed value is provided, via the ISOBUS communication line, in GPS NMEA2000 data format.

7 Tractor GNSS [PGN65256]: the IBX100 control unit receives the vehicle driving speed via the ISOBUS line. The speed value is provided by a GNSS device.

*** several systems use these messages to transmit the speed data of the vehicle detected by the GPS receiver installed in the system to all devices connected on the ISOBUS line.**

8 Enter the wheel constant value calculated with the suitable formula.

The wheel constant can be calculated with a good approximation by detecting the distance traveled by the wheel with the speed sensor. The longer the distance traveled, the more accurate the wheel constant calculation.

$$K_{\text{wheel}} = \frac{\text{distance traveled (cm)}}{\text{no. of detection points} \times \text{wheel rpm}}$$

<distance traveled> distance expressed in cm covered by the wheel along measurement travel.

<no. of measurement points> number of measurement points (e.g., magnets, bolts, etc.), mounted on wheel.

<no. of wheel revolutions> number of wheel revolutions required to travel measurement distance.

Take measurements with tires at the operating pressure. This test must be performed on medium-hard terrain; for application to very soft or very hard terrain, rolling diameter may vary, leading to inaccurate output calculation; when this is the case, repeat the procedure. During the test, cover the distance with the tank filled up to half capacity with water.

9 Enter the simulated speed value.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

7.8 Home > data and settings > implement settings > Rev counter

Fig. 14

1 It allows enabling/disabling the rev counter status (☒ rev counter enabled / ☐ rev counter disabled).

2 Indicate the constant of the installed rev counter.

3 - 4 Enable the appropriate function of the **Info and alarms** menu (par. 8.6) if you want the VT to generate an alarm when, during spraying, the measured RPM are outside the set range. For minimum speed, the control is active only when the spraying is active (**main switch ON**). For the procedure to be followed when an alarm occurs, please refer to par. 11.3.

5 Real-time displaying of the actual datum.

7.9 Home > data and settings > implement settings > Tank

Fig. 15

Allows setting the tank values:

1 Indicate the reserve level value under which the alarm is triggered.

The tank alarm is triggered when, during spraying, the tank level falls below the set value (enable the appropriate function in the **Info and alarms** menu, par. 8.6).

For the procedure to be followed when an alarm occurs, please refer to par. 11.3.

2 Indicate tank capacity.

WHEN THE VALUE IS ON GRAY BACKGROUND, IT CANNOT BE CHANGED. In this case the level sensor is installed and a tank profile is present in the IBX100 or a tank calibration is required.

3 Define whether the operator is enabled to close the tank reserve level alarm message during spraying.

- **Continuous:** the operator CANNOT close the alarm. The alarm will be displayed until it is solved (by performing a new filling).
- **User cancel:** the operator can close the tank reserve level alarm message.

4 Select the tank volume display step among those proposed: 1 / 5 / 10 / 25 / 50 / 100.

The **Sensitivity display** menu is ONLY present when entering in **Home > Data and settings > Implement settings > Basic settings > Tank level source > Single tank level**.

5 Indicate the tank 2 reserve level value under which the alarm is triggered.

The tank 2 alarm is triggered when, during spraying, the tank level falls below the set value (enable the appropriate function in the **Info and alarms** menu, par. 8.6).

For the procedure to be followed when an alarm occurs, please refer to par. 11.3.

6 Indicate tank 2 capacity.

WHEN THE VALUE IS ON GRAY BACKGROUND, IT CANNOT BE CHANGED. In this case the level sensor is installed and a tank profile is present in the IBX100.

The system allows displaying the status of another tank if another level sensor is installed.

7.10 Home > Data and settings > Implement settings > Hydraulic functions

Fig. 16

1 IBX100 Hydraulic ECU allows enabling / disabling the hydraulic IBX100 presence.

- **Not used:** a hydraulic IBX100 is not present and hydraulic functions are managed by IBX100 Sprayer.
- **Hydraulic only:** a hydraulic IBX100 is present, which manages the hydraulic functions and communicates with IBX100 Sprayer.
- **Hydraulic plus:** a hydraulic IBX100 is present with TTC and/or BLC accessories. By enabling this function, hydraulic IBX100 will send information about TTC and BLC to IBX100 Sprayer, which will display such information in the spraying screen.



WARNING: function available on IBX100 ISOBUS HYDRAULIC Arag from SW versions newer than 2.0.0;

By enabling this checkbox, page 14 (2/2) will no longer be available.

2 Select this option if the boom lock status detection sensor has been installed in the system.

- **LOCK = Switch open:** the installed boom lock detection sensor closes the contact when the boom is unlocked.
- **LOCK = Switch closed:** the installed boom lock detection sensor closes the contact when the boom is locked.

The following symbols appear on the Home screen

- **None:** System with no sensor for detecting boom lock status.



SECTION VALVE MODE



3 Control mode of the hydraulic outputs installed on the farming machine:

- **Standard 12 V outputs:** all hydraulic outputs, including the output that controls the pilot valve, are configured to control ON-OFF hydraulic valves.
- **PWM flow control:** all hydraulic outputs are configured to control ON-OFF valves, with the exception of one output (connector 2A and 2C wiring 7 functions and connector 3A and 3C wiring 9 functions) configured to control a hydraulic proportional valve in PWM. This PWM output will come into operation when one of the ON-OFF outputs is activated.
- **Quad PWM output:**
 - wiring 7 functions: the outputs corresponding to TILT (CA and CC connectors), LIFT (AA and AC connectors), 2 (2A and 2C connectors) and 3 (3A and 3C connectors) will be configured to control in PWM respective proportional hydraulic valves
 - wiring 9 functions: the outputs corresponding to TILT (CA and CC connectors), LIFT (AA and AC connectors), 3 (3A and 3C connectors) and 4 (4A and 4C connectors) will be configured to control in PWM respective proportional hydraulic valves



Function **ONLY** available with System configurations > Auxiliary inputs > Hyd 7 / 9 (par. 10.7).



MODE



3 Control mode of the hydraulic outputs installed on the farming machine:

- **Standard 12 V outputs:** The item displayed is **READ ONLY**: In Seletron and Flowtron modes **NO** hydraulic output control is provided.



MODE



CONTINUES

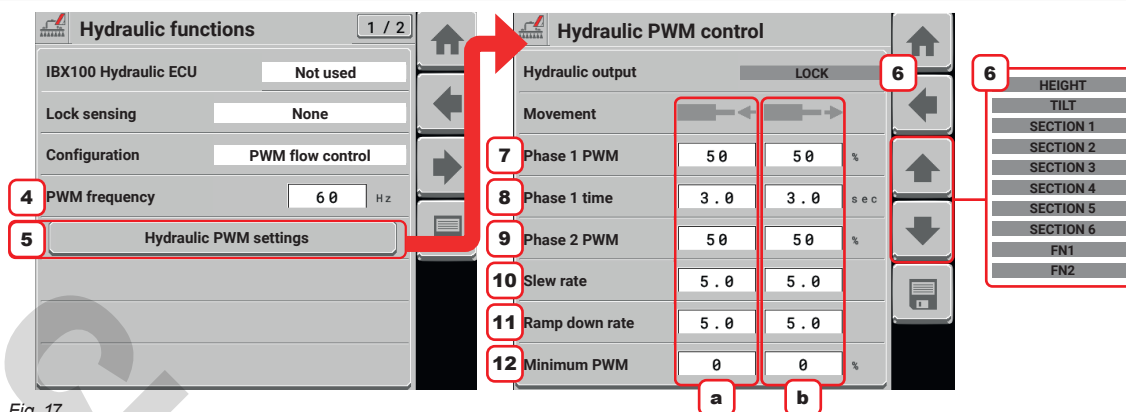


Fig. 17



All of the following points will be available ONLY with the system in PWM flow control mode or Quad PWM output mode.

4 Enter the PWM frequency of the hydraulic proportional valve used.

5 Press this button to access pages **6** of configuration of the hydraulic proportional command and scroll through the pages to set values **7/8/9/10/11/12** for each.

Hydraulic control allows the setting of two separate PWM phases for both opening and closing movement.

7a Set the percentage of the PWM that will be applied to the proportional valve to control the retraction movement of the hydraulic cylinder in phase 1.

7b Set the percentage of the PWM that will be applied to the proportional valve to control the forward movement of the hydraulic cylinder in phase 1.

8a Set the phase 1 time for the hydraulic cylinder retraction movement control.

8b Set the phase 1 time for the hydraulic cylinder forward movement control.

9a Set the percentage of the PWM that will be applied to the proportional valve to control the retraction movement of the hydraulic cylinder in phase 2.

9b Set the percentage of the PWM that will be applied to the proportional valve to control the forward movement of the hydraulic cylinder in phase 2.

10a Set the PWM value update threshold for the hydraulic cylinder retraction movement control.

10b Set the PWM value update threshold for the hydraulic cylinder forward movement control.

11a Set the PWM value update threshold for the hydraulic cylinder retraction movement control.

11b Set the PWM value update threshold for the hydraulic cylinder forward movement control.

12a Set the minimum PWM value that will be applied by IBX100 to the hydraulic proportional valve to control the retraction movement of the hydraulic cylinder.

12b Set the minimum PWM value that will be applied by IBX100 to the hydraulic proportional valve to control the forward movement of the hydraulic cylinder.

CONTINUES



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

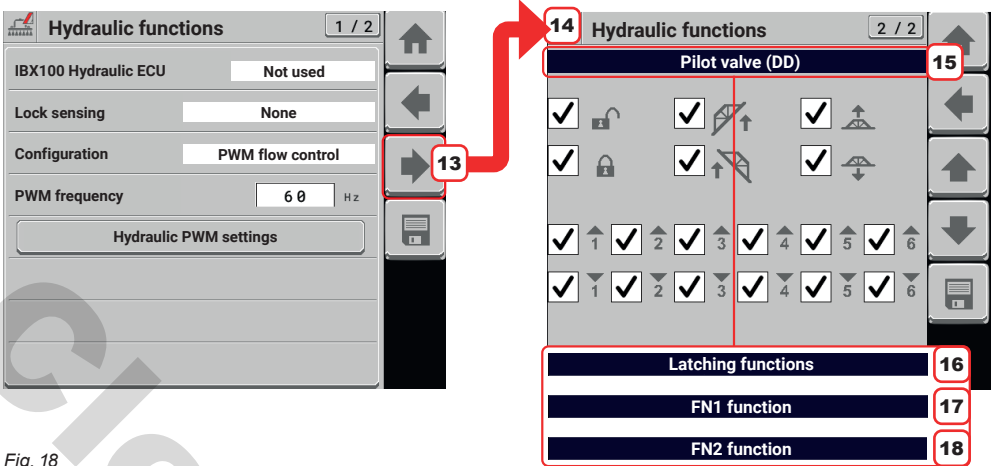


Fig. 18

13-14 Press the right arrow button **13** to access the hydraulic function configuration pages **14**. Scroll through the function pages with the up and down arrows.

The right arrow **13** is only displayed if the IBX100 Sprayer manages the hydraulic functions, therefore, in the **IBX100 Hydraulic ECU** item of the previous page, **Not used** has been selected (par. 7.10 on page 17)

15 Operating a hydraulic function on IBX100 ISOBUS activates the hydraulic valve related to that movement along with the pilot valve (DD). Selecting functions on this page deactivates the pilot valve (DD) control for the selected hydraulic function.

16 Select the hydraulic functions that are to be controlled with switch latching functions. The related switch will have 2 positions.

17 It allows multiple boom movements to be grouped into one control: FN1.

18 It allows multiple boom movements to be grouped into one control: FN2.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

7.11 Home > data and settings > implement settings > Device calibration

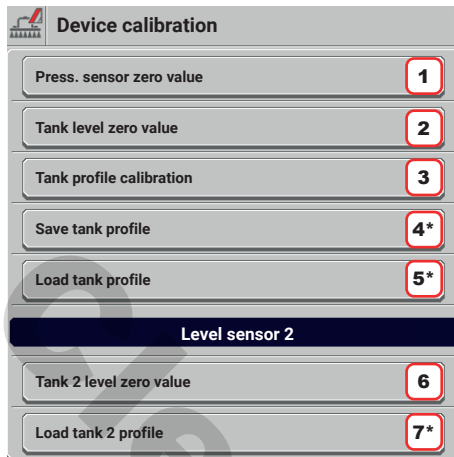


Fig. 19



* The button is visible only if the VT supports the ISOBUS File server feature.
To view the curve just loaded, it is necessary to restart the IBX100 as described in the par. 8.10.

Allows starting calibration for the devices connected to the VT.

1 Allows performing the zero calibration of the pressure sensor (par. 7.11.1) if enabled in **Home > Data and settings > Implement settings > Basic settings > Tank level source > Single tank level**.

2 Allows performing the zero calibration of the single tank level (par. 7.11.2).

3 allows performing the calibration of the tank profile (par. 7.11.3).

4* Allows exporting a tank calibration curve previously created and stored in IBX100 internal memory (function available only if VISIO ISOBUS is present in the system or the ISOBUS File Server feature is active on VT in use) (par. 7.11.4).

5* Allows a previously created tank calibration curve stored on an external USB memory to be imported into the IBX100 internal memory (function available only if VISIO ISOBUS is present in the system or the ISOBUS File Server feature is active on VT in use) (par. 7.11.5).



The **Level sensor 2** menu is **ONLY** present when entering in **Home > Data and settings > Implement settings > Basic settings > Tank level source > Single tank level** in chapter (par. 7.1 on page 7).

6 Allows performing the zero calibration of the level sensor 2 (par. 7.11.2).

7* Allows a calibration curve to be imported into the IBX100 internal memory, which will be associated with the second tank previously stored on an external USB memory (function available only if VISIO ISOBUS is present in the system or the ISOBUS FileServer feature is active on VT in use) (par. 7.11.5).



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

7.11.1 Home > Data and settings > Implement settings > Device calibration > Press. sensor zero value

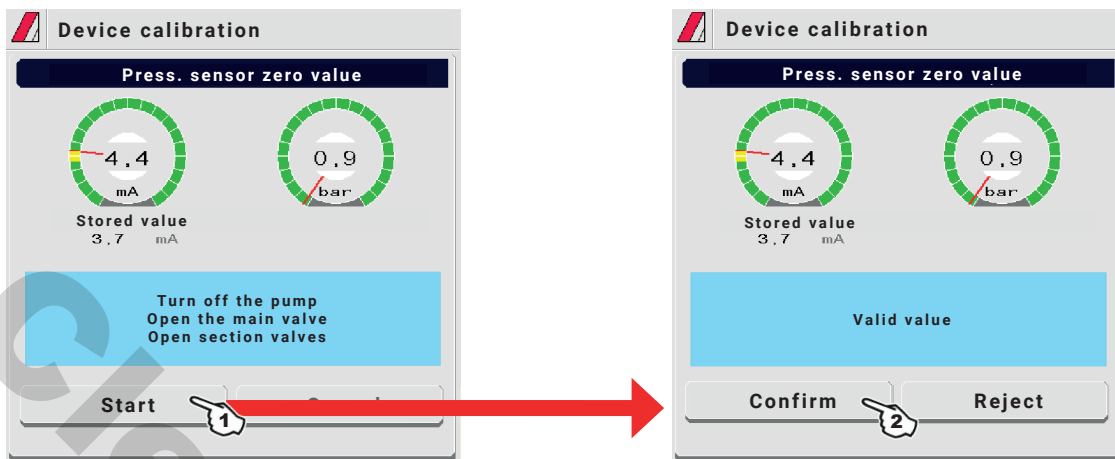


Fig. 20

**Value too low!
Value too high!
Unstable signal!**
If this alarm is displayed, anomalous pressure values have been detected: check the conditions described at the beginning of the paragraph (absence of residual pressure, pump disabled). If the problem persists, check the correct sensor connection and operation.

In case a pressure value other than zero is displayed **despite the absence of pressure inside the circuit**, it is necessary to perform zero calibration of the sensor.



Before carrying out any operation disable the pump by disconnecting it from the power supply. Make sure that the pump is correctly disabled, then open the main valve and all section valves.

- 1 Start the procedure by pressing **Start**.
- 2 Press **Confirm** to reset the pressure sensor residual signal.

7.11.2 Home > Data and settings > implement settings > Device calibration > Tank level zero value / Tank 2 level zero value

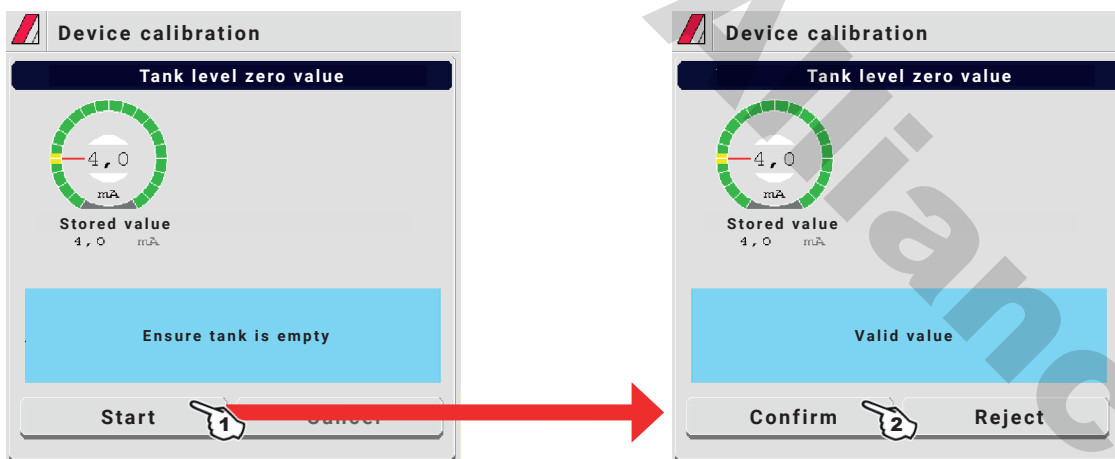


Fig. 21

**Value too low!
Value too high!
Unstable signal!**
If this alarm is displayed, anomalous values have been detected: check the conditions described at the beginning of the paragraph (absence of residual fluid, level sensor enabled). If the problem persists, check the correct sensor connection and operation.



ALWAYS PERFORM THIS OPERATION WHEN A LEVEL SENSOR OF THE SYSTEM IS REPLACED.

If the VT detects the presence of fluid inside tank, **even if empty**, set the single tank level to zero.



To use this menu the single tank level must be active (basic settings, par. 7.1 on page 7). PERFORM THE ADJUSTMENT WITH EMPTY TANK.

- 1 Start the procedure by pressing **Start**.
- 2 Press **Confirm** to reset the level sensor residual signal.

7.11.3 Home > data and settings > implement settings > Device calibration > Tank profile calibration

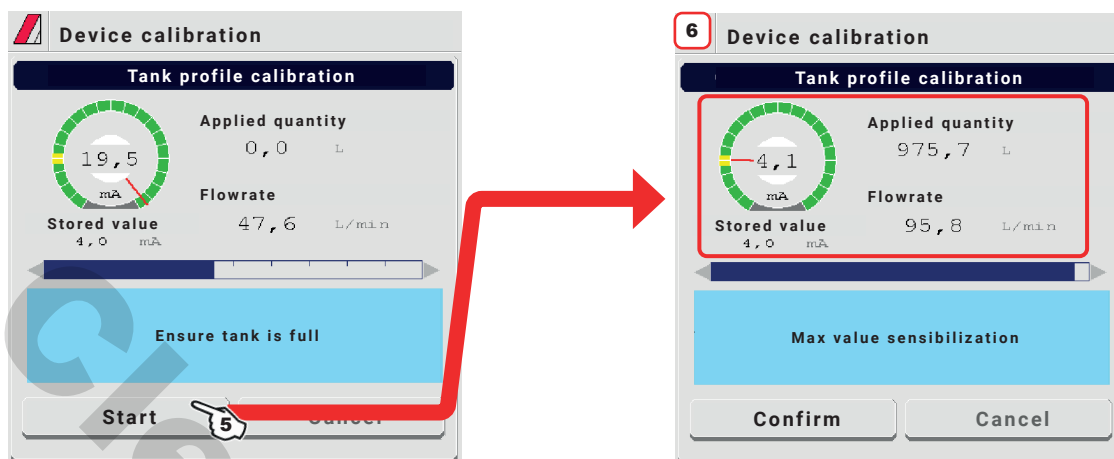


Fig. 22

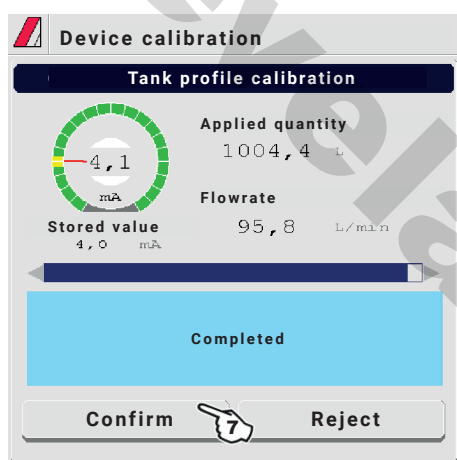


Fig. 23

The calibration of the tank profile is **ONLY** possible if a flowmeter is installed on the system.



Before starting the procedure carry out the following operations:

- 1 Make sure the main control is in OFF position.
- 2 From the "Home" page, press **fn** (Functions) and disable menu **Automatic application rate**.
- 3 Fill the tank with clean water **WITHOUT ADDING CHEMICAL SUBSTANCES**. The tank must be full.
Visually check the reached level.
- 4 Set the output to the maximum value by operating the regulating valve switch (nearly 7 s).
THE FLOWRATE MUST BE WITHIN THE FLOWMETER OPERATING RANGE.
- 5 Start the procedure by pressing **Start**.
- 6 Start the spraying system: open, in succession, all section valves and the main control (**ON**).
The display will show in real time the quantity of sprayed water and the calibration status.
- 7 When the tank is empty press **Confirm** to end the procedure:
the value read by the level sensor must be lower than 5.0 mA and at least 10 liters must have been sprayed.

In the HOME page, the icon with red background  indicates that there is NO calibration curve.
When the calibration curve is present, the icon with the red background will disappear.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

7.11.4 Home > data and settings > implement settings > Device calibration > Save tank profile

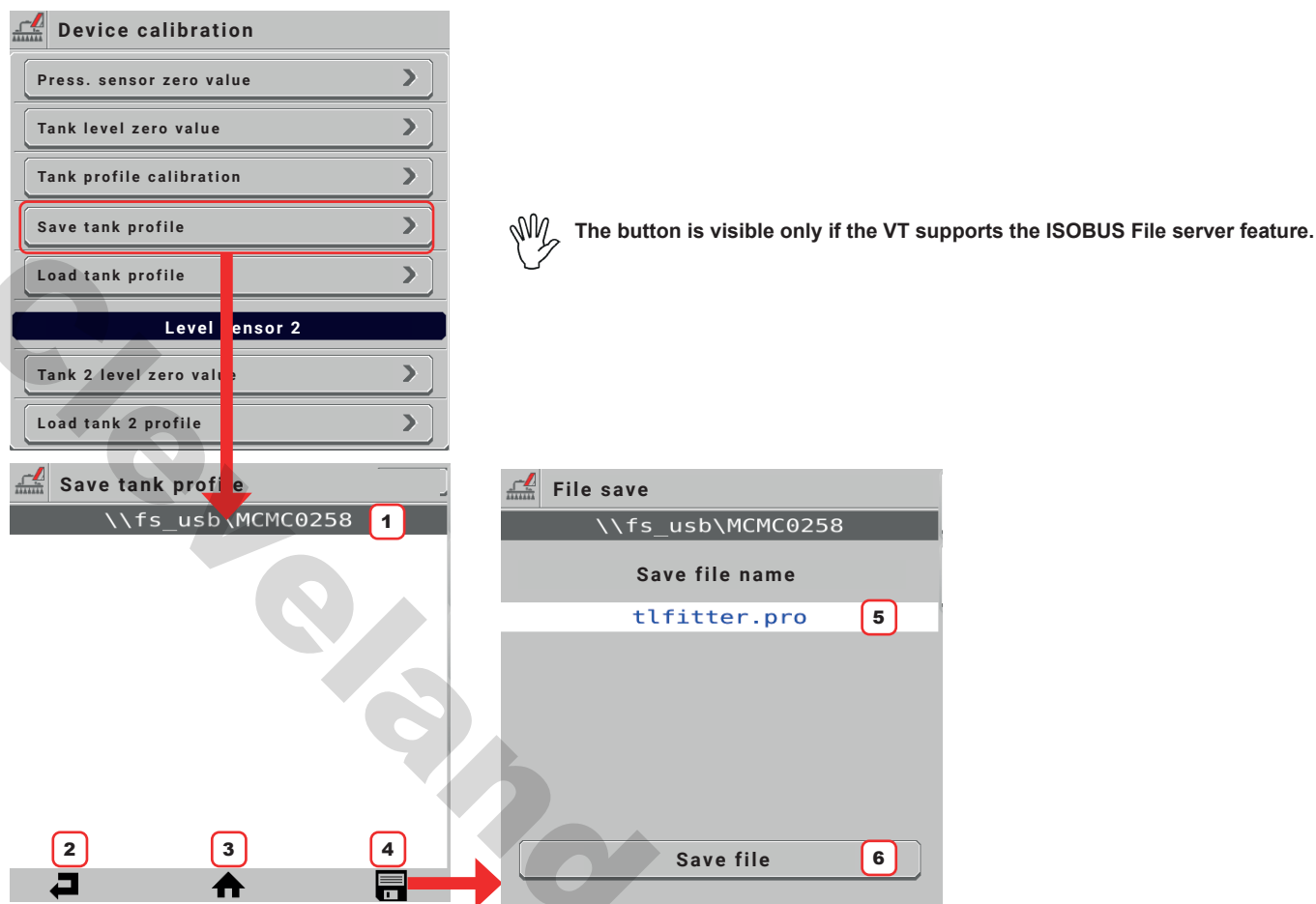


Fig. 24

Saves the tank profile calibration file in the IBX100 internal memory.

Press **Save tank profile** to enter the File server management menu from which you can select the folder to which to export the tank profile file (e.g. to a USB pendrive).

1 Current folder path.

MCMC0258 is the initial folder automatically created by the client file server and refers to ARAG because 0258 is the code that identifies ARAG as the ISOBUS component manufacturer.

2 BACK. Goes back to the previous folder.

3 HOME. Returns directly to the home folder (MCMC0258) - This function may not be available in all Virtual Terminals.

4 SAVE. Selects the current path and accesses the file saving page.

An existing file can be overwritten by selecting it from those listed.

A blue rectangle will indicate the selected file.

5 Type the name you want to assign to the tank profile file to save.

DO NOT CHANGE THE FILE EXTENSION. FILE EXTENSION MUST ALWAYS BE .pro

If the name assigned to the backup file to be saved is the same as that of a file already present in the selected folder, the latter will be overwritten and permanently lost.

6 Save file: Saves the file to the external memory connected to the VT.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

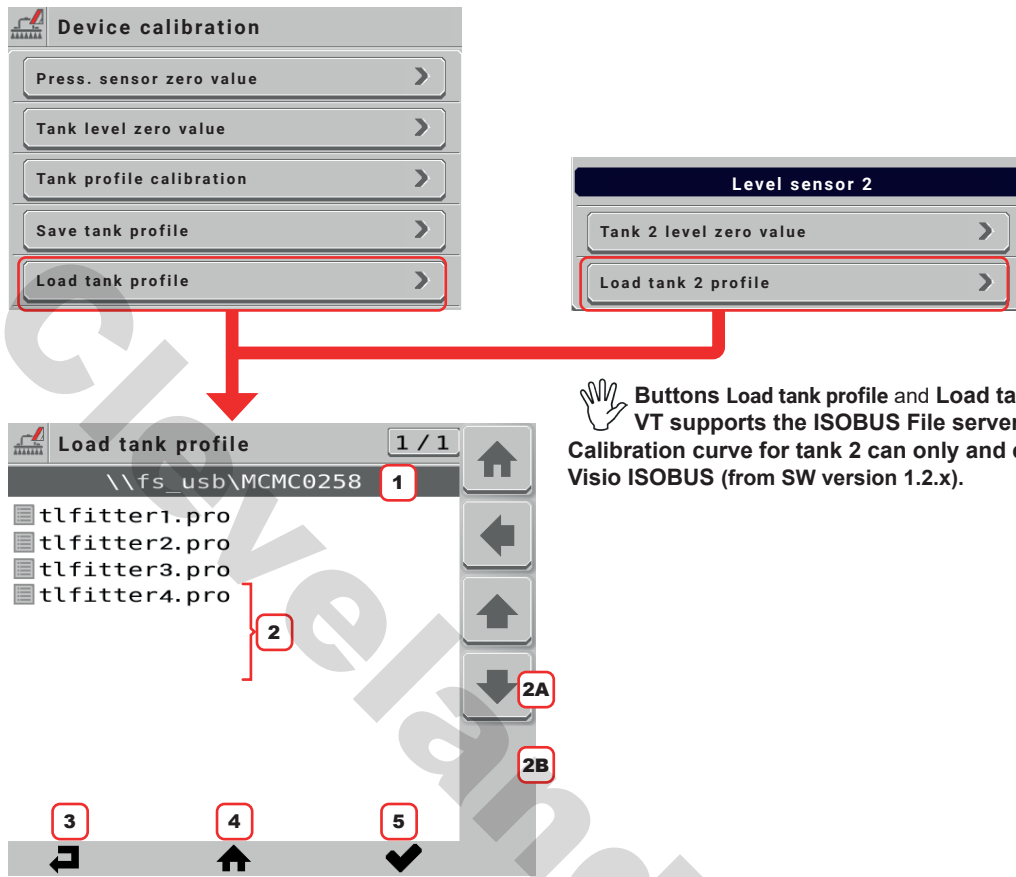


Fig. 25

Allows importing a tank profile calibration file present in an external memory connected to the Virtual Terminal.

Press **Load tank profile** / **Load tank 2 profile** to enter the File server management menu from which you can select the folder from which to import the Tank profile file.

1 Current folder path.

2 List of files contained within the current folder.

In order to be loaded, the backup file must have the extension .pro and must be inside the folder MCMC0258. This folder refers to ARAG because 0258 is the code that identifies ARAG as the ISOBUS component manufacturer.

2A - 2B Buttons to select the file to load.

3 BACK. Goes back to the previous folder.

4 HOME. Returns directly to the home folder (MCMC0258) - This function may not be available in all Virtual Terminals.

5 COPIA. Confirms the copy of the selected tank profile file to the internal memory of IBX100.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

Geometry settings1 / 2

Type

ISO730 3 point mounted1

Dimensions

Boom positionREAR2

Axle to connect. point4.000 m3

Boom to connect. point5.000 m4

Boom lateral offsetRIGHT5

Boom lateral offset0.000 m6

Center section

Longitudinal offsetTO REAR7

Length:0.000 m8

Unknown

ISO 6489-3 DrawBar

ISO730 3 point semi-mount

ISO730 3 point mounted

ISO6489-1 Hitch hook

ISO6489-2 Clevis coupl. 40

ISO6489-4 Piton coupling

ISO6489-5 CUNA coupling

ISO 24347 Ball type hitch

Self propelled

Check Virtual Terminal settings: if a specific menu is available (varying based on your VT) to program machine geometry, it has the priority over the ECU menu.

Fig. 26

1 Select the type of implement connection.

- 2 Indicate the position of the implement relative to the tractor:
- **REAR**: the implement is connected to the rear of the tractor.
 - **FRONT**: the implement is connected to the front of the tractor.

 This option is available only if a mounted or self propelled implement has been selected in the Type item.

3 - 4 See figures on the following page.

5 Allows entering the distance between the center longitudinal axis of the implement and the application point, item 6. Setting **LEFT** / **RIGHT** enables item 6 **Boom lateral offset**, where the actual value (in meters "m" / feet "ft") of the boom lateral offset can be entered (See figures on the following page).

Available options:

- **NO**
- **LEFT**
- **RIGHT**

7 Allows entering the distance between the point of application of the nozzles on the center section and those on the two half-booms, item 8.

Setting **TO REAR** / **TO FRONT** in item 7, enables item 8 **Length**, where the value (in meters "m" / feet "ft") of the actual longitudinal offset with respect to the wing application point can be entered (See figures on the following page).

Available options:

- **NO**
- **TO REAR**
- **TO FRONT**

CONTINUES

 Goes back to main screen

 Goes back to previous menu, or scrolls the pages of a menu (previous page)

 Quits without confirming the changes

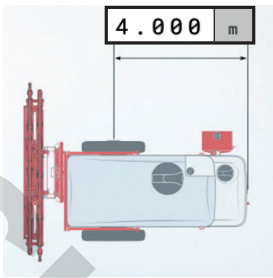
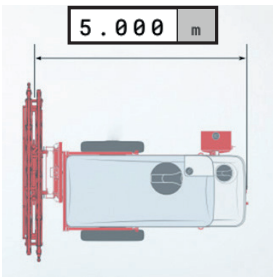
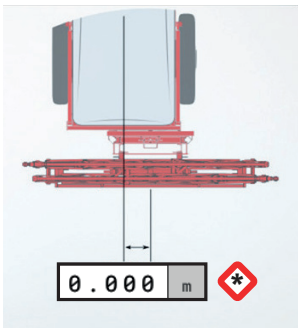
 Saves the changes to current page

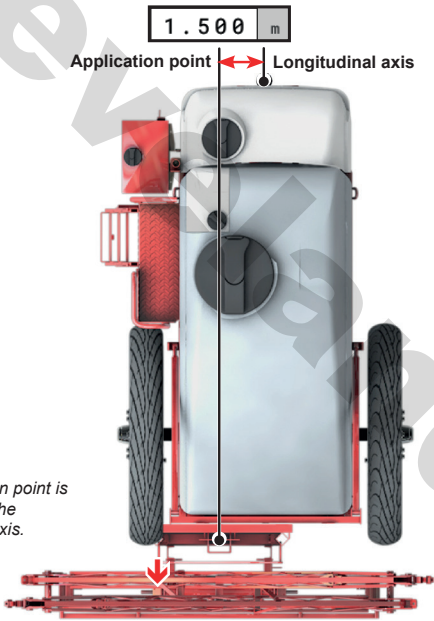
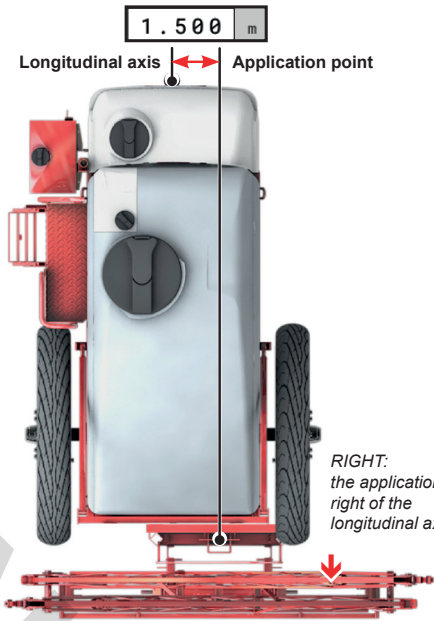
 Scrolls the pages of a menu (next page)

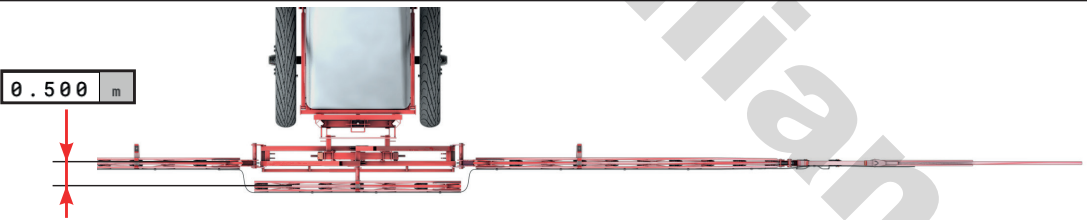
 Saves the changes

> > > Home > Data and settings > implement settings > Implement geometry

3 - 4 Enter the selected implement dimensions:

Axle to connect. point	Boom to connect. point	Boom lateral offset
 Fig. 27	 Fig. 28	 Fig. 29

 Boom lateral offset: LEFT	 Boom lateral offset: RIGHT
 Fig. 30 LEFT: the application point is to the left of the longitudinal axis.	 Fig. 31 RIGHT: the application point is to the right of the longitudinal axis.

Longitudinal offset
 Fig. 32



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

7.13 Home > data and settings > implement settings > System configurations

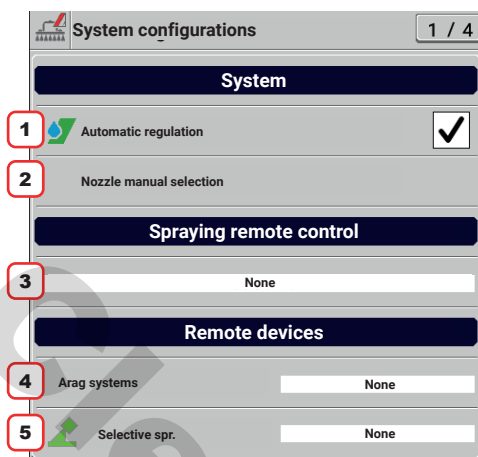


Fig. 33

Set the device system options.

1 Setting this item makes **visible / not visible** the **Application rate regulation** function of the **Automatic functions** menu (par. 10.5).



SECTION VALVE

MODE



MODE



2 The setup of this item enables manual nozzle selection.
The item is present only if:

- in **Basic settings** the **Sprayer technology > Valves, Boom settings > Dual** options are active and in the active **Preset** two nozzles are selected.
- in **Basic settings** the **Sprayer technology > Seletron** options are active, **Spraying point type > 2 or 4**.



Manual nozzles selection



Automatic nozzles selection

Nozzles selection modes are described in par. 10.5.1 Home > Automatic functions > Nozzles selection.

3 Select the type of spraying remote control connected to the VT.

• **None** (DEFAULT).

• **Spraying disabled (ECU)**

Allows managing the external general control connected to the IBX100.

- MAIN CONTROL ON: Open contact.
- MAIN CONTROL OFF: Closed contact.

• **Spraying enabled (ECU)**

Allows managing the external general control connected to the IBX100.

- MAIN CONTROL ON: Closed contact.
- MAIN CONTROL OFF: Open contact.

• **Spraying enabled (Tecu)**

allows managing the external general control through a Tecu device (ref. to the relevant instruction manual).

4 The VT can access the functions of the connected device (ref. to relevant instruction manual).

• **None** (DEFAULT).

• **Visio-ISOBUS**

The VT displays in real time the tank filling (par. 10.6) carried out with the connected Visio ISOBUS.

Vision functions available:

- Filling check with flowmeter.
- Filling check with level sensor.

It allows the transfer of a system backup and of the tank profile between IBX100 and a USB pendrive or vice versa.

• **Syncro-ISOBUS**

From the dedicated page, the user can remotely manage the functions of Syncro (par. 10.12).

5 The VT can access the functions of the connected device (ref. to relevant instruction manual).

• **None** (DEFAULT).

• **Carbon Bee**

Select this option if a vision system for selective spraying is available in the system.

7.13.1 Home > Data and settings > Implement settings > System configurations > Auxiliary inputs

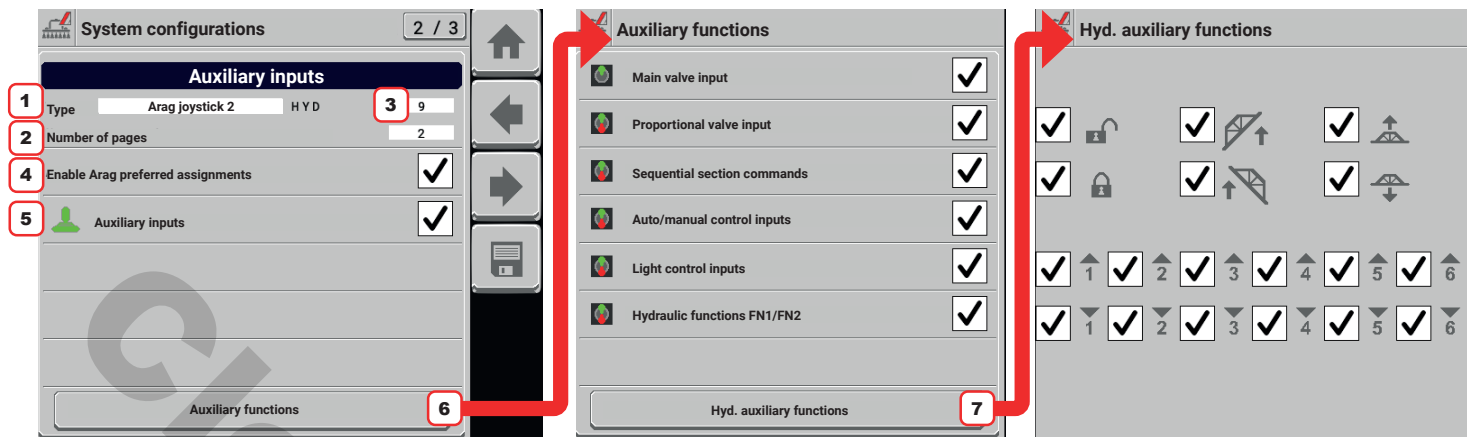
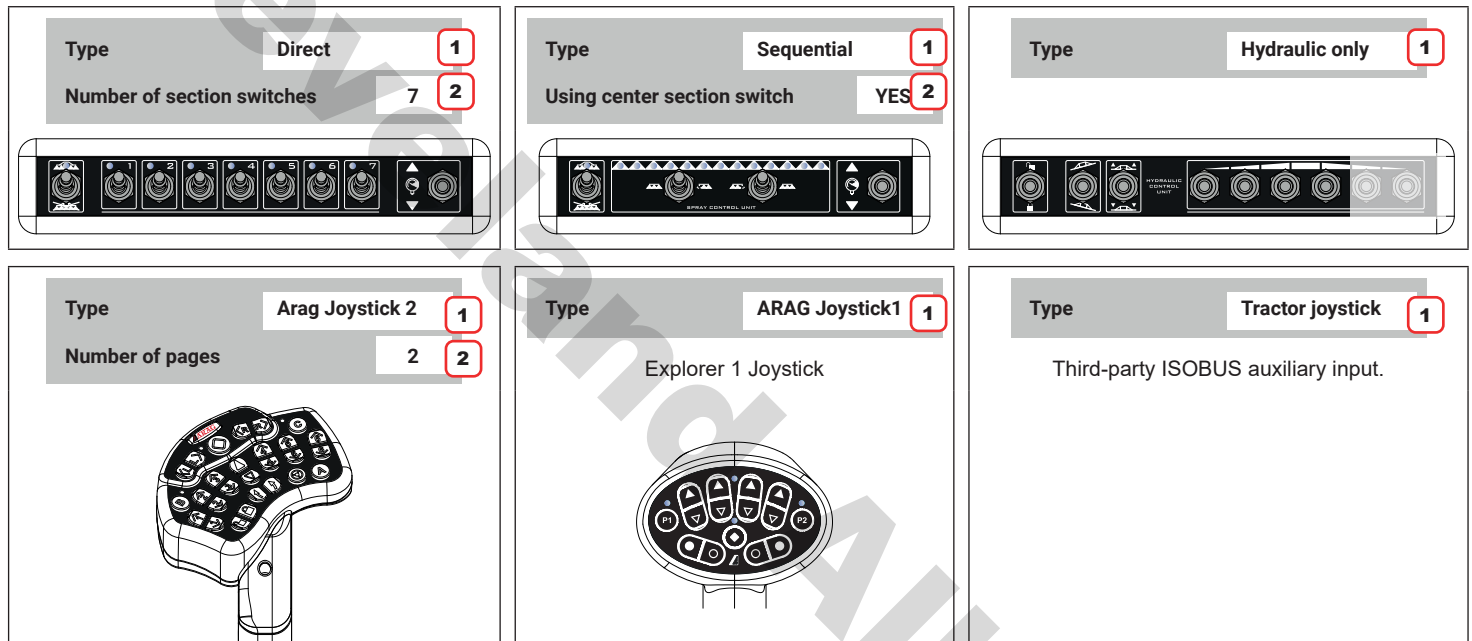


Fig. 34



Type: Select the type of auxiliary control (Auxiliary Input) connected to the system.

1 Direct → **2 Number of section switches** (item available ONLY for direct control panel).

Indicate the number of section switches. Available options: 0 / 4 / 5 / 6 / 7 / 9 / 11 / 13

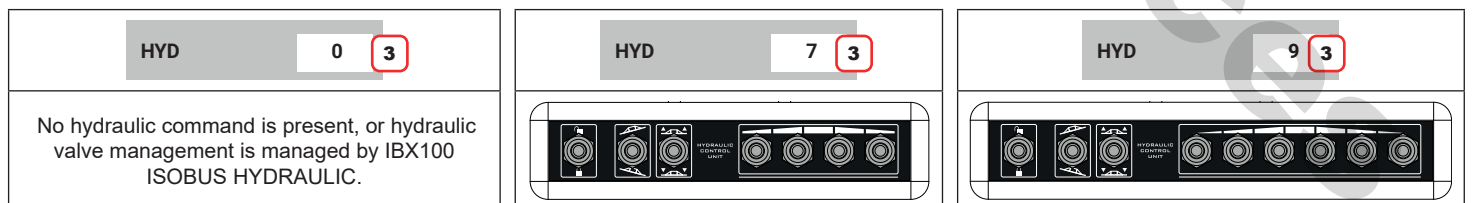
1 Sequential → **2 Using center section switch** (item available ONLY for sequential control panel):

If the sequential panel has the control of the center section (total number of sequential switches 2 + 1 direct) choose **YES**.

If it does not have it (total number of sequential switches 2) choose **NO**.

1 Arag joystick 2 → **2 Number of pages** (item available ONLY for Joystick Explorer 2 in the 27-key version).

Select the number of pages you wish to configure.



3 Select the number of hydraulic sections connected to the system.

Select 7 or 9 hydraulic functions only if IBX100 Sprayer manages the hydraulic functions, i.e. if the use of hydraulic IBX100 has been set as not used (par. 7.10 on page 17).

Select 0 if a hydraulic IBX100 is present.

The hydraulic functions must be entered in the corresponding hydraulic IBX100 menu.

CONTINUES

> > > Home > Data and settings > Implement settings > Hydraulic functions

4 Enable / Disable the prompt for the system to load the ARAG default functions (NOT available for the **Tractor Joystick** auxiliary control).

Disabled option ☐: allows you to independently assign functions for the connected Auxiliary Input.

On the right side appears the button  that allows to delete any custom assignments. Once deleted, they need to be reassigned.

5 Enable / disable the auxiliary input selected in point 1.

6 Press this button to access the auxiliary functions page:

Enable / Disable the displayed controls, linked to the selected Auxiliary Input type.

7 By enabling this item, the IBX100 control unit shows the function that can be associated with the main valve.

8 By enabling this item, the IBX100 control unit shows the function that can be associated with the proportional valve.

9 By enabling this item, the IBX100 control unit shows the function that can be associated with the sequential commands.

10 By enabling this item, the IBX100 control unit shows the function that can be associated with the selection of the Auto / Man command.

11 By enabling this item, the IBX100 control unit shows the function that can be associated with the boom lighting or the flasher.

12 By enabling this item, the IBX100 control unit shows the function that can be associated with the sequential commands.

The page is displayed only if IBX100 Sprayer manages the hydraulic functions, i.e. if the use of hydraulic IBX100 has been set as not used (par. 7.10 on page 17)

13 Press this button to access the auxiliary hydraulic functions page:

Enable / Disable the displayed controls, linked to the selected hydraulic function type.

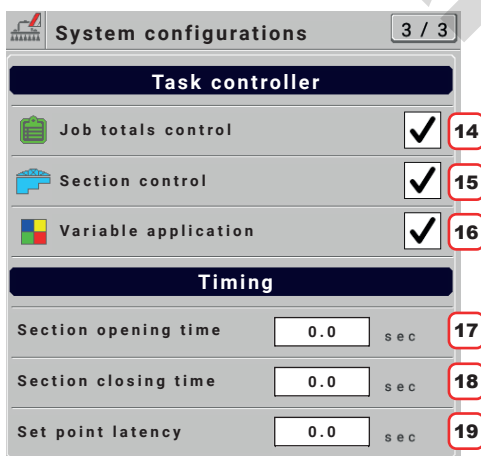


Fig. 35

Scroll the pages of **System configurations** menu to set

- **Task controller**: allows enabling the relevant functions and communication with the virtual terminal.

To work correctly the Virtual Terminal must have an active and properly registered Task controller license.

- **Timing**: allows setting the opening and closing times of the actuators (section valves and SELETRON) present in the system and controlled by IBX100.

14 By enabling the function, IBX100 will send the job data to the Virtual Terminal.

15 By enabling the function, IBX100 will automatically manage the sections avoiding overlapping.

16 By enabling the function, IBX100 will be able to receive information on the variable application rate from the Virtual Terminal, to be applied through prescription maps.

17 Indicate the time between the moment when the command is sent to the valves and the actual moment in which product output starts.

18 Indicate the time between the moment when the command is sent to the valves and the actual moment in which product output stops.

19 Regulation parameter for variable applications (with the use of prescription maps): this datum is used to indicate the advance time of application rate regulation when the machine approaches the area changeover of the prescription map.

SECTION
VALVEMODE
ONsele
TRONMODE
ON

Fig. 36

Allows configuring the activation of the alarms relating to application rate display and regulation.

1 Percentage difference between instantaneous application rate and target application rate below which the system stops regulating and considers the application rate connected.

2 Percentage difference between instantaneous application rate and target application rate below which the system displays the target application rate instead of real application rate.

flow
TRONMODE
ON

Fig. 37

Allows configuring the activation of the alarms relating to application rate display and regulation.

1 Percentage difference between instantaneous pressure and target pressure below which the system stops regulating and considers the pressure connected.

2 Percentage difference between instantaneous application rate and target application rate below which the system displays the target application rate instead of real application rate.

3 Percentage difference between instantaneous pressure and target pressure ABOVE which the system triggers an alarm message.

4 Percentage difference between instantaneous pressure and target pressure below which the system displays the target pressure instead of real pressure.

CONTINUES

> > > Home > data and settings > implement settings > Rate controller

Regulation settings 2 / 2

Type 5 Pump

6 Aggressiveness

7 Pump control PWM settings

Minimum PWM	25	%	8
Starting PWM	40	%	9
Not Spraying PWM	30	%	10
Maximum PWM	70	%	11

Fig. 38

5 Displays the type of actuator used by the system to regulate the pressure (selected in the basic implement settings).

6 Checks the power applied to the selected actuator to regulate the system pressure.

☐ It reduces aggressiveness. / ☐ It increases aggressiveness.

The ideal calibration is achieved when the pressure remains constant even with minor variations in driving speed.

7 Item available only if the actuator type for preselected application rate regulation is Pump control.

8 Minimum PWM: set the desired minimum value for hydraulic proportional valve control.

This setting will determine the minimum rotation speed of the pump.

9 Starting PWM: set the desired value that IBX100 will apply to the hydraulic proportional valve when the pump status changes from OFF to ON. Once the pump is started, the system will automatically set the PWM value, and thus the proportional valve state, to the situation that meets the working conditions.

10 Not Spraying PWM. set the desired value for hydraulic proportional valve control when all sections are closed.

This setting will determine the rotation speed of the pump when the treatment is closed.

11 Maximum PWM: set the desired maximum value for hydraulic proportional valve control.

This setting will determine the maximum rotation speed of the pump.



SECTION
VALVE

MODE
ON

sele
TRON

MODE
ON

7.15 Home > data and settings > implement settings > "Fence"

"Fence"

Flowrate 1,60 L/min 1

Pressure 3,0 bar 2

Fig. 39

Allows setting the characteristic data of the "Fence" nozzle.

1 - 2 Set the reference flowrate and pressure for the "Fence" nozzle.
These data allow the correct adjustment of the application rate when "Fence" nozzles are enabled.



Goes back to main screen



Goes back to previous menu, or
scrolls the pages of a menu (previous
page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next
page)



Saves the changes

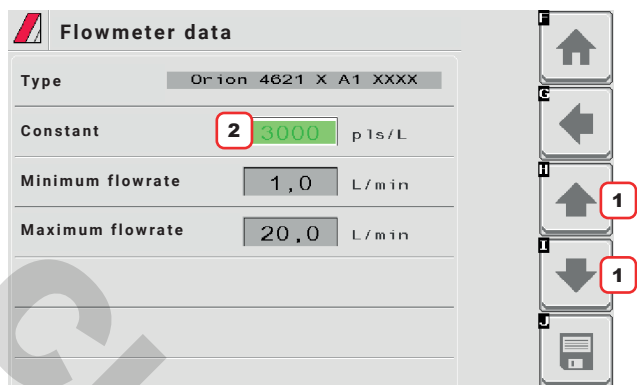


Fig. 40

Allows setting flowmeter data.

1 Select the flowmeter to be set with keys.

2 Set the **Constant**.



The items **Minimum flowrate** and **Maximum flowrate** can be modified only when the option **Other** is enabled.

List of available flowmeters and preset data:

ORION FLOWMETERS

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
4621 x A0 xxxx	6000	22710	0.5	0.10	10	2.6
4621 x A1 xxxx	3000	11355	1	0.30	20	5.3
4621 x A2 xxxx	1200	4542	2.5	0.70	50	13.2
4621 x A3 xxxx	600	2271	5	1.30	100	26.4
462x x A4 xxxx	300	1135	10	2.60	200	52.8
4622 x A5 xxxx	150	568	20	5.30	400	105.7
4622 x A6 xxxx	100	378	30	7.90	600	158.5

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
Other	625	2366	10	2.60	200	52.8

WOLF FLOWMETERS

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
462 x 2 xxx	1025	3880	2.5	0.7	50	13.2
462 x 3 xxx	625	2366	5.0	1.3	100	26.4
462 x 4 xxx	250	946	10.0	2.6	200	52.8
462 x 5 xxx	132	500	20.0	5.3	400	105.7
462 x 7 xxx	60	227	40.0	10.6	800	211.3

ORION WR FLOWMETERS

Type	Constant		Minimum flowrate		Maximum flowrate	
	pls/l	pls/gal	l/min	GPM	l/min	GPM
462W100	6000	22710	0.3	0.08	100	26.4
462W200	3000	11355	0.5	0.13	200	52.8



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page

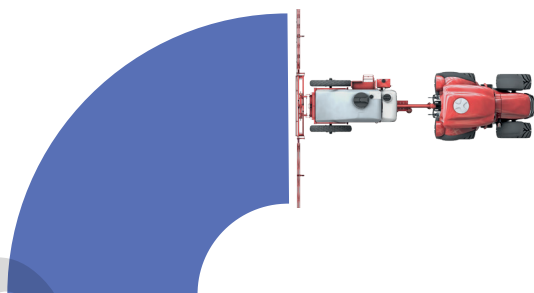


Scrolls the pages of a menu (next page)

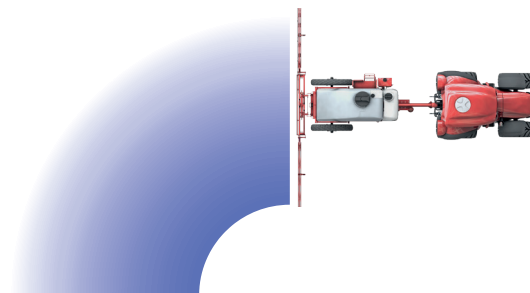


Saves the changes

7.17 Home > Data and settings > Implement settings > Turn compensation



Example of turn compensation **enabled**.



Example of turn compensation **disabled**.

This function allows keeping smooth application rate for the entire spraying even if the path is not straight.

The system modulates the Duty Cycle (ratio of opening and closing time of Flowtron FCV valves) by increasing it in the outer part of the turn (longer route) and decreasing it in the inner part of the turn (shorter route).



The menu is displayed only if Turn compensation item is activated in the menu "8.5 Home > Data and settings > Working parameters" on page 41.

Depending on the input source for measurement of the selected curvature datum (**Two wheel sensors / ISOBUS PNG 44032**), please refer to the relevant subparagraph.

7.17.1 Home > Data and settings > Implement settings > Turn compensation > Curvature source > Two wheel sensors

Turn compensation	
Curvature source	Two wheel sensors 1
Implement track width	0,000 m 2
Sensor alarm delay	5.0 s 3
Curvature source aligned with boom	☐ 4
Left wheel speed	0.0 km/h 5
Right wheel speed	0.0 km/h 6
Current curvature	0.0 km-1 7



Correct operation of Turn compensation feature requires updating the Flowtron CSD control units to version 1.1.1 or newer. Flowtron CSD control units can be directly updated from IBX100 ISOBUS FLOWTRON in chapter "8.12 Data and settings > System > Upgrade CSDs firmware" on page 67.

Fig. 41

1 Select Two wheel sensors option when the vehicle driving speed is detected through wheel sensor "7.7 Home > data and settings > implement settings > Speed" on page 15 or Sensor and radar.



To detect the implement curving angle it is necessary to install a second wheel sensor. The two sensors must be installed on the two (right and left) wheels of the sprayer so as to detect the speed difference between inner and outer wheel when turning. The left wheel sensor must be connected to the sensor harness connector marked with letters **S**, while the right wheel sensor must be wired and connected to pin B7 of "**SENSORS**" connector. The wheel constant must be the same for both sensors.

2 Enter the wheel base.

3 Enter the number of seconds after which **Compensation sensor problem** alarm will be displayed.

4 Enable this menu item if the curvature source is aligned with the boom. For example, if the curvature source is set to **Two wheel sensors**, and two GPS sensors are installed along the boom, this option must be enabled.

5 - 6 Indicates the current speed of the left / right wheel.

7 displays the current curvature data.

7.17.2 Home > Data and settings > Implement settings > Turn compensation > Curvature source > ISOBUS PNG 44032

Fig. 42



Correct operation of Turn compensation feature requires the presence of Flowtron CSD control units with firmware version 1.1.1 or newer. Flowtron CSD control units can be directly updated from IBX100 ISOBUS FLOWTRON in chapter "8.12 Data and settings > System > Upgrade CSDs firmware" on page 67.

1 Allows IBX100 to receive the curvature data from the ISOBUS communication line.



WARNING: make sure that the ISOBUS tractor to which IBX100 is connected is equipped with a VT or a TECU able to provide this value (ARAG DELTA80T and DELTA70T VTs can send this data).

2 It is possible to select the device present on the tractor from which IBX100 will receive the curvature data.

It is also possible to display in real time whether the IBX100 is receiving the curvature message  / or not .

- **Any** IBX100 prepares itself to receive the curvature data from any device (whether it is a Virtual Terminal or a TECU).
- **VT** IBX100 prepares itself to receive the curvature data from the Virtual Terminal only.
- **TECU** IBX100 prepares itself to receive the curvature data from the TECU only.

3 Enter the instance number of the device from which you want to receive the curvature data (option not available if in point **2** **ACCEPT ALL** is selected).

4 Enable this menu item if the curvature source is aligned with the boom.

5 displays the current curvature data.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

8 DATA AND SETTINGS

8.1 Data and settings > Manage presets (Section valves or Seletron mode)



Fig. 43

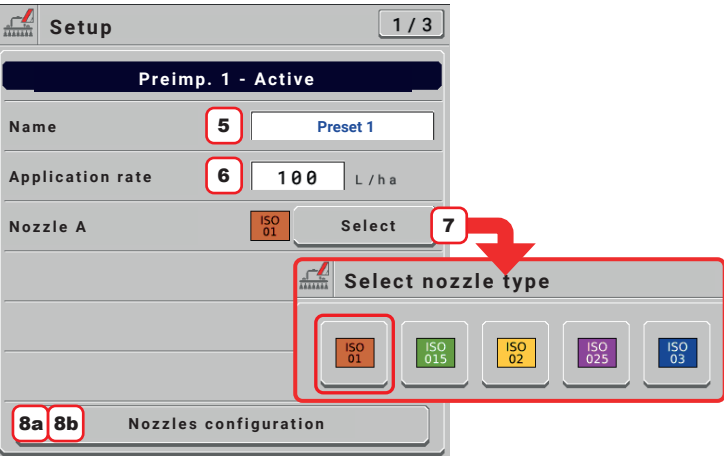


Fig. 44

- 1 Job number.
- 2 Type of nozzle.
- 3 application rate.
- Allows setting 8 different spraying configurations.
- Features to set for each **Preset**:
- 4 Select the **Preset** to be set.
- 5 Type in the name.
- 6 Enter the target rate value (L/Ha).
- 7 Select the type of nozzle among the suggested ones: 12 types of ISO nozzles and 6 customized nozzles.
- Type of nozzle:** thanks to multiple nozzle holders (dual or fourfold Seletron), it changes the number of nozzles to be programmed (2 or 4).

CONTINUES 8a 8b

Goes back to main screen

Goes back to previous menu, or scrolls the pages of a menu (previous page)

Quits without confirming the changes

Saves the changes to current page

Scrolls the pages of a menu (next page)

Saves the changes



8.1.1 Data and settings > Manage presets > Setup > Nozzles configuration

8a VALVES WITH GEARMOTOR (SINGLE BOOM) OR SINGLE SELETRON

Setup 1 / 3

Preset 1 - Active

Name **5**

Application rate **6** L / ha

Nozzle A

Nozzles configuration **8a**

Fig. 45

Nozzles configuration

Preset 1 - Active

Minimum pressure bar

Maximum pressure bar

Fig. 46

8a

- Allows setting the pressure range within which IBX100 will perform the automatic application rate control.
 - Allows setting the minimum and maximum pressure value within which IBX100 will perform the automatic regulation. Outside this range IBX100 will stop controlling the set application rate automatically. The corresponding symbols are displayed on the job page (figure a page 70):
- Minimum pressure not reached
- Maximum pressure exceeded

CONTINUES **8b**



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

>>> Data and settings > Manage presets > Setup > Nozzles configuration

8b VALVES WITH DUAL OR SINGLE BOOM GEARMOTOR WITH TWIN OR FOURFOLD SELETRON VALVES

Setup

1 / 3

Preset 1 - Active

Name

Preset 1

Application rate

100 L / h a

Nozzle A

ISO 01

Select

Nozzle B

ISO 02

Select

Nozzle C

ISO 05

Select

Nozzle D

ISO 15

Select

Nozzles configuration

✖

Fig. 47

NOZZLES CONFIGURATION NOT ENABLED

Nozzles configuration

1 / 1

Preset 1 - Active

Enable user defined nozzle shifts

9b

Minimum pressure

0.0 bar

Maximum pressure

0.0 bar

Fig. 48

9b Disabling the menu:
☐ Menu disabled for Preset 1

10b
- Allows setting the pressure range within which IBX100 will perform the automatic application rate control.
- Allows setting the minimum and maximum pressure value within which IBX100 will perform the automatic regulation.
Outside this range IBX100 will stop controlling the set application rate automatically. The corresponding symbols are displayed on the job page (figure a page 70):
Minimum pressure not reached
Maximum pressure exceeded

NOZZLES CONFIGURATION ENABLED

Nozzles configuration

1 / 1

Preimp. 1 - Active

Enable user defined nozzle shifts

9b

Number of intervals

10b 4

Nozzle shifts

✖

Select

Minimum flowrate

0.000 L / m i

Maximum flowrate

0.000 L / m i

Fig. 49

9b Make the menu active for configuration:
☒ Menu enabled for Preset 1

10b Indicate the number of customized intervals.

11b - 12b Set the minimum and maximum flowrate value within which IBX100 will perform the automatic regulation.
Outside this range IBX100 will stop controlling the set application rate automatically.

13b Select the **Nozzle shifts** menu to program nozzle combinations.
Allows customizing the flow threshold to which IBX100 will perform automatic nozzle shifts.

14b Select the nozzles to be used among the suggested ones for each range: should you disable one or more nozzles, select them using arrow keys (one at a time).

15b Set the flow threshold that will activate the nozzles configuration set in point 14b.

Nozzles configuration

1 / 1

1 0.001 15b in

ISO 01 ISO 02 ISO 15

14b

2 0.000 L / m i n

✖ ISO 01 ISO 02 ISO 15

3 0.000 L / m i n

✖ ISO 01 ISO 02 ISO 15

Nozzles configuration

1 / 1

Nozzle combination

ISO 01 ISO 02 ISO 05 ISO 15

◀ ▶

Select

Fig. 50

8.2 Home > Data and settings > Manage presets (Flowtron mode)

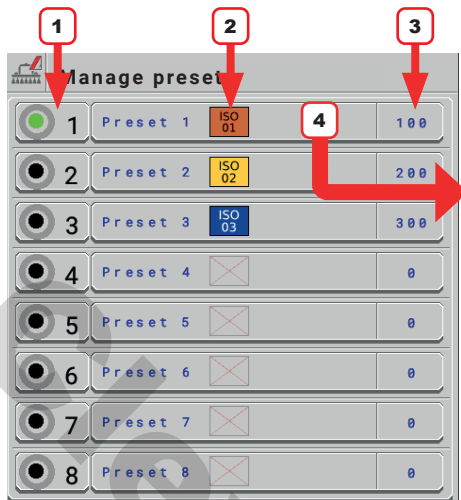


Fig. 51

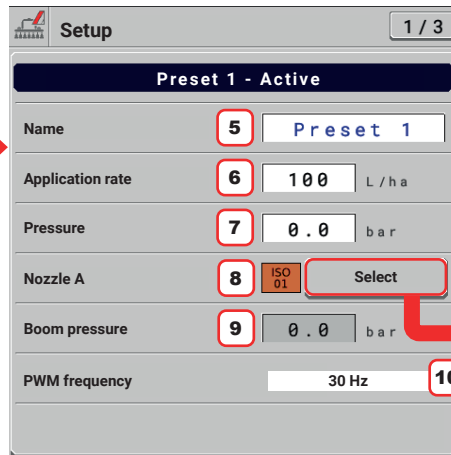
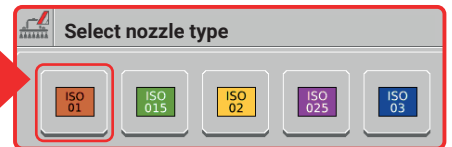


Fig. 52



1 Job number.

2 Type of nozzle.

3 Application rate.

Features to set for each **Preset**:

4 Select the **Preset** to be set.

5 Type in the name.

6 Enter target rate value of the spraying to be performed.

7 Enter target pressure value of the spraying to be performed.

8 Select the type of nozzle among the suggested ones: 12 types of ISO nozzles and 6 customized nozzles.

9 **WARNING: READ ONLY DATA.**

IBX100 automatically calculates the pressure value that the pressure transducer must return so that the pressure on the nozzle is the value set in point 7.

IBX100 calculates this value taking into account the pressure drop of Flowtron FCV valve

WARNING: pressure drop on the valve varies according to the type of nozzle used and the sprayed flowrate.

It is assumed that the pressure transducer is installed on the boom and the only pressure drop is that on the valve.

IT IS THE RESPONSIBILITY OF THE MACHINE MANUFACTURER TO MAKE SURE THAT THE PRESSURE DROP BETWEEN THE POSITION WHERE THE PRESSURE SENSOR IS INSTALLED AND THE NOZZLES IS ONLY THE Flowtron FCV VALVE.

10 Select the PWM frequency among the suggested ones:

- 30 Hz
- 20 Hz
- 10 Hz

This menu item is available only if **Home > Data and settings > System > System settings> Advanced settings > Flowtron frequency selection** option is enabled in par. 8.10.4 on page 51



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

8.3 Home > Data and settings > Manage presets: Preset activation

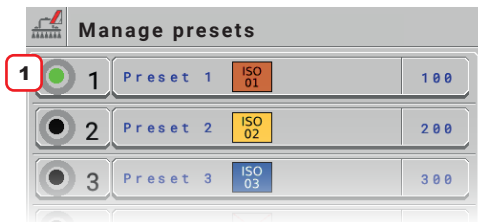


Fig. 55

1 Allows selecting the preset (job program) that you want to use for the spraying to be performed. Press the button of the Preset number you want to activate and confirm your selection to complete the procedure. The green circle indicates the active Preset.

8.4 Home > Data and settings > Manage presets: Consultation of job data of the selected Preset

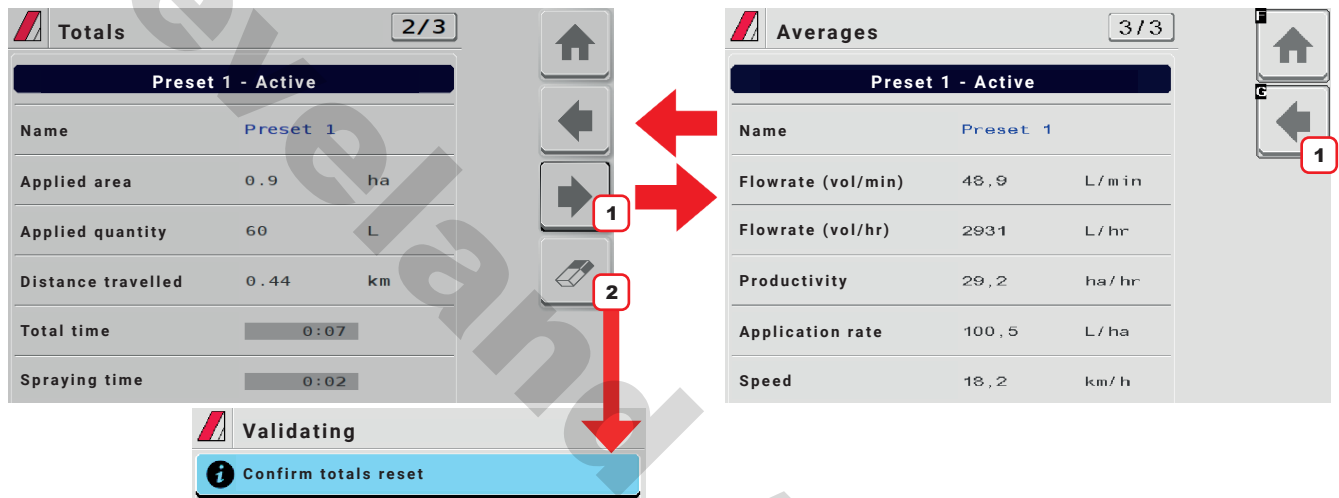


Fig. 56

- Select the **Preset**.

- Use key **1** to scroll pages and key **2** to delete the job data;

WARNING: total counters and average values are simultaneously deleted.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

8.5 Home > Data and settings > Working parameters

Working parameters 1 / 3

Speed

Minimum spraying speed ☒ 1

Minimum speed 1.0 km/h

Change target rate

Percentage change ☒ 2

Percent value 10 % 3

Pressure value 0.1 bar 4

Change target rate

Percentage change ☐ 2

Target rate value 0 L/ha 3

Fig. 57

Working parameters 2 / 3

Flowrate correction factor

Factor 5 1.00

Product density

Density 6 1.00 kg/L

Tank 2 density 7 1.00 kg/l

Flowtron compensations

Flowmeter compensation 8 ☒

Turn compensation 9 ☒

Fig. 58

Set the desired working parameters for your agricultural implement.

1 Allows setting the minimum spraying speed.

Below the set threshold, IBX100 will automatically interrupt the product output.



warning: this function is enabled in Automatic regulation mode only.

2-3 Set change target rate mode and application rate and pressure increment value.

☒ **ENABLED:** percentage increment.

☐ **DISABLED:** application rate increment in l/ha.

The target rate change is carried out with the job function described in par. 9.1.



4 Enter target pressure increment value (target pressure value is changed using the function described in par 9.1).

5 Allows setting the flowrate correction factor. It is recommended to use this parameter to correct the flowrate reading when the system features a flowmeter whose reading is affected by the different viscosity of the sprayed fluid product.

Flowmeters of the ORION series (code 462xAxxxxx) are not affected by the viscosity difference of the fluids: set the factor to 1.00.

6-7 Allows setting the fluid density value.

This parameter ONLY acts on the tank level detected by the single tank level.



8 allows activating Treatment compensation.

Treatment compensation is a functions that allows IBX100 to periodically compare the amount of fluid to be sprayed to perform the treatment set by the user with the amount actually sprayed, and to apply a regulation in case of difference. The regulation will be applied to the Duty Cycle of Flowtron FCV valves.

☐ **DISABLED** / ☒ **ENABLED:** with compensation enabled, the flowmeter is activated to support the IBX100 in case of application rate errors.

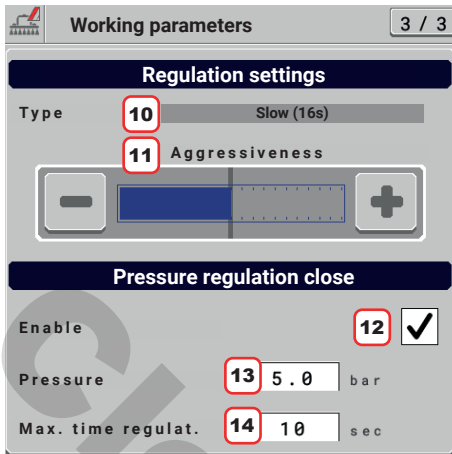
THE TREATMENT COMPENSATION FUNCTION WILL BE OPERATIONAL ONLY IF:

- it is enabled with this menu.
- with treatment ON.
- the regulation mode is set to AUTOMATIC.
- the driving speed is between the minimum and maximum speed. The graphic reference (green area) is visible in the Home screen (page 70) ref. 10.
- the measured pressure is close to the set target pressure: the maximum threshold is 5%.
- the flowrate value is between the minimum and maximum values that the flowmeter can measure.
- at least 50% of nozzles are spraying product.
- the difference between the amount of product to be sprayed and the actually sprayed one requires a duty cycle adjustment within the 20% threshold.

9 Allows activating Turn Compensation function. See paragraph "7.17 Home > Data and settings > Implement settings > Turn compensation" on page 34.

CONTINUES

> > > Home > Data and settings > Working parameters



Working parameters 3 / 3

Regulation settings

Type **10** Slow (16s)

11 Aggressiveness

Pressure regulation close

Enable **12** ☒

Pressure **13** 5.0 bar

Max. time regulat. **14** 10 sec

Fig. 59

10 Displays the type of regulating valve selected in the basic settings par. 7.1 on page 7.

11 Checks the power applied by the selected valve to regulate the system flow or pressure.
 - It reduces aggressiveness.
 + It increases aggressiveness.

The ideal calibration is achieved when the application rate remains constant even with minor variations in driving speed.

12 Function of the regulating valve during closing.

☐ **DISABLED** / ☒ **ENABLED**: The system tries to reach the set pressure acting on the regulating valve (AUTO mode enabled with main valve closed) ONLY for the time entered (**13**), after which the system does not intervene on the valve anymore.

13 Set the pressure value to be reached when the sections are closed.

14 Maximum time needed by the regulating valve to bring the boom to the set pressure.

This function can be activated only if the pressure sensor is set in the basic settings and installed on the implement.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

8.6 Home > Data and settings > Info and alarms

Alarm settings 1 / 5

Application rate

User rate modification ☒ 1

Tank

Maximum tank level ☒ 2

Minimum tank level ☒ 3

Flow per nozzle

Nozzle flowrate lower than thres. ☒ 4

Nozzle flowrate higher than thre. ☒ 5

Fig. 60

Alarm settings 2 / 5

Flowmeter

Flowmeter out of min value ☒ 6

Flowmeter out of max value ☒ 7

Nozzles

Nozzle press. lower than thres. ☒ 8

Nozzle press. higher than thres. ☒ 9

Nozzle wear check ☒ 10*

Nozzle wear limit percent. 0 11*

Fig. 61

From this menu you can enable alarm visual and acoustic notifications when the related event occurs.

☒ Alarm enabled / ☐ Alarm disabled.

For the procedure to be followed when an alarm occurs, please refer to par. 11.3 Error messages.

1 Alarm active when user changes the application rate during treatment (par. 9.1).

2-3 One of the two alarms is enabled if the (minimum or maximum) tank level exceeds the set values (par. 7.9).



SECTION VALVE **MODE** ☒ ON



MODE ☒ ON

4-5 Outside the range set in the menus **Minimum flowrate** / **Maximum flowrate** (Fig. 49 on page 38), the VT triggers an alarm.

The items are only present if the following options are active in **Basic settings**:

- **Sprayer technology** > **Seletron together with Spraying point type** > 2 / 4
- **Sprayer technology** > **Valves together with Boom settings** > **Dual** (dual boom).

6-7 Outside the range set in the **Minimum flowrate** / **Maximum flowrate** menus (par. 7.3 Home > data and settings > implement settings > Flowmeters), the VT triggers an alarm.

It is essential that in the **Implement settings** > **Basic settings** > **Flowrate reference sensor** menu, the item **Flowmeter** is selected.

8-9 Outside the range set in the **Minimum pressure** / **Maximum pressure** menus related to each **single nozzle** (par. 7.6 Home > data and settings > implement settings > Nozzle data), the VT triggers an alarm.



SECTION VALVE **MODE** ☒ ON



MODE ☒ ON

10* Enable/disable nozzle wear check and set the tolerance threshold in point **11***.

11* Set the threshold: the VT compares the effective flowrate read by the flowmeter and the one calculated by the pressure sensor. When the difference between the two flowrate values exceeds the set percentage, the alarm is triggered.



* the items are available **ONLY** if the pressure sensor is present.

CONTINUES

Alarm settings 3 / 5

Regulation

Missing flowrate	☒ 12
Stationary mach. with main ON	☒ 13
Pressure lower than threshold	☒ 14
Pressure higher than threshold	☒ 15
Speed lower than threshold	☒ 16
Target rate too low	☒ 17
Target rate too high	☒ 18

Fig. 62

Alarm settings 4 / 5

RPM

Minimum rotation speed	19
Maximum rotation speed	20

Hardware status

ECU hardware status	☒ 21
---------------------	--

Seletron

Seletron connection status	22
Seletron error status	23

Fig. 63

Alarm settings 5 / 5

Tank 2

Minimum tank level	24
--------------------	-------------------------

Fig. 64

12 Alarm is enabled with main control ON but flowrate at zero.

13 alarm is enabled with main control ON with machine stopped.

14-15 Alarms are activated if the system does not reach the set pressure limits (Fig. 46 on page 37 and Fig. 48 on page 38).

16 Alarms are enabled if the speed does not reach the set limit values (par. 8.5).



SECTION VALVE **MODE** ☒ ON

17-18 Target rate too low / Target rate too high

Alarm is activated if the output (l/ha or GPM) is different from the set application rate (par. 8.1).



MODE ☒ ON



MODE ☒ ON

17-18 Speed under minimum permitted / Speed above maximum permitted

Alarm is activated if the speed (km/h / mph) is different from the set speed (par. 8.2).

19-20 Outside the range set in **Minimum rotation speed** / **Maximum rotation speed** (par. 7.8 Home > data and settings > implement settings > Rev counter), the VT triggers an alarm

21 Enable / disable ECU hardware status alarm.



MODE ☒ ON

22-23 alarms relating to Seletron valves (Basic settings, chap. 7.1):

22 Alarm is activated when (one or more) spraying points do not respond.

23 alarm is activated when the input voltage on one or more spraying points is too low.

24 The alarm is enabled if the minimum tank 2 level exceeds the set values (par. 7.9).

CONTINUES

>>> Home > Data and settings > Info and alarms

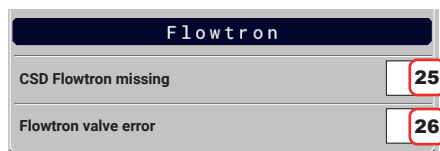


Fig. 65

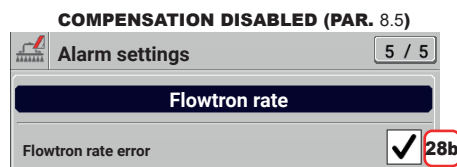
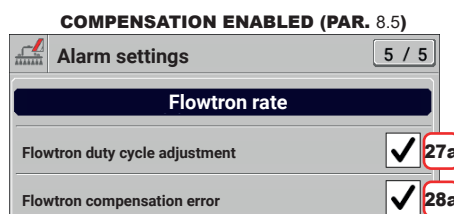


Fig. 66

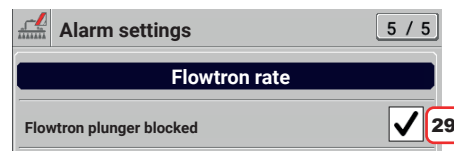


Fig. 67

Flowtron system alarms.

25 Alarm is activated when one or more Flowtron CSD nodes do not respond.

26 Alarm is activated when one or more Flowtron valves are in error status (**Flowtron status**, par. 8.11).

27a Alarm informing that the compensation value exceeds the regulation threshold (default value +/-10%). The regulation remains active even in the presence of the alarm.

COMPENSATION ENABLED (PAR. 8.5)

28a Alarm informing that the compensation value exceeds the regulation threshold by +/-20%.

COMPENSATION ENABLED (PAR. 8.5)

28b Possible application rate error causes:

- Pressure drop in the system.
- Tolerance on the nozzle in use that causes a flowrate error.
- Flowrate ratio error between valve and nozzle.

COMPENSATION DISABLED (PAR. 8.5)

28a Alarm informing that the compensation value exceeds the regulation threshold by +/-20%.

COMPENSATION ENABLED (PAR. 8.5)

29 Alarm informing that IBX100 does not detect the Flowtron valve opening.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

8.7 Home > Data and settings > Implement settings

Consult chap. 7 on page 6.

8.8 Home > Data and settings > Job data

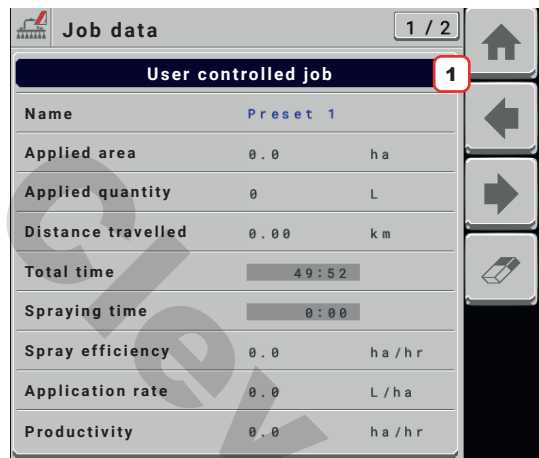


Fig. 68

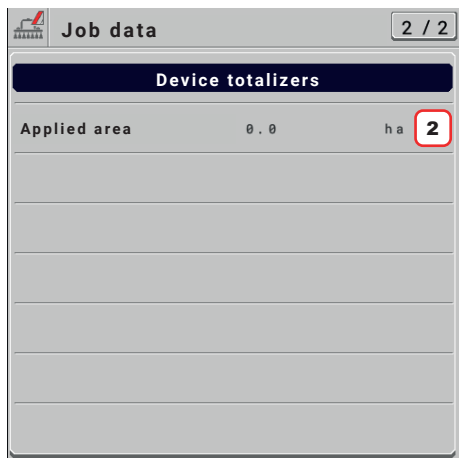


Fig. 69

Allows consulting the spraying total data relating to applied area and job time.

1 User controlled job / Task controller job

USER CONTROLLED JOB

User controlled job: It allows you to look up the total treatment data by having the task controller basic NOT working **Home > Data and settings > Implement settings > System configurations > Job totals control > NOT working** or if the VT does not have the TC basic. (TC-BAS not working = management of job data collection start controlled by IBX100 ISOBUS - use the eraser to reset the data).

Or:

TASK CONTROLLER JOB

Task controller job: It allows you to look up the total treatment data by having the task controller basic working **Home > Data and settings > Implement settings > System configurations > Job totals control > Working**. (TC-BAS working = management of job data collection start controlled by the ISOBUS Virtual Terminal).

2 total counter of hectares tilled by the machine since it started to be used.

A factory reset must be performed to reset it to zero: **Data and settings > System > System settings > Settings manager > Reset to Arag factory defaults** on page 55).

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

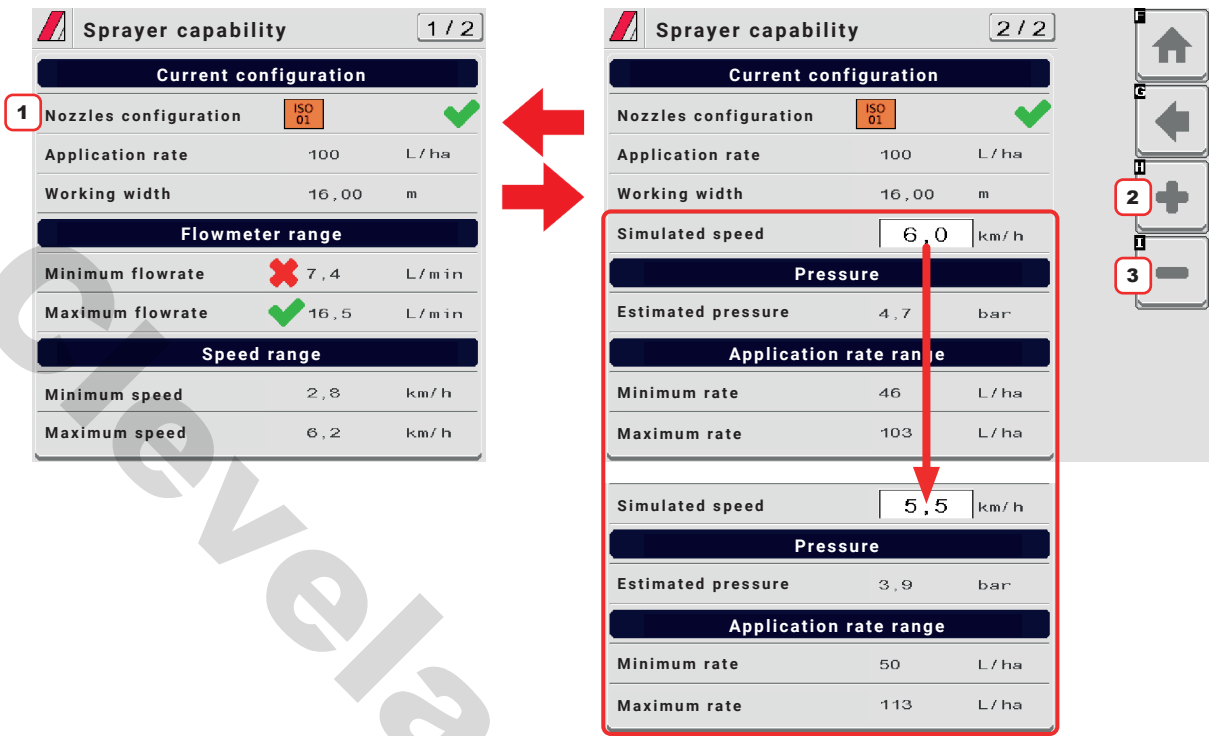


Fig. 70

- Legend:
- The datum meets the specified criteria.
 - The datum does NOT meet the specified criteria.

Allows checking treatment performance based on speed, configurations and nozzles installed on the machine.

WARNING: guidance information and all accessory functions are disabled.
Displayed items are READ-ONLY.

1 The data displayed depends on the settings previously made Fig. 11.

2 - 3 allows changing the default simulation speed 18 km/h - 11 mph.
Press 2 to increase the simulated speed by + 0.5 km/h / 0.5 mph at a time, and 3 to decrease the simulated speed by + 0.5 km/h / 0.5 mph.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

8.10 Home > Data and settings > System

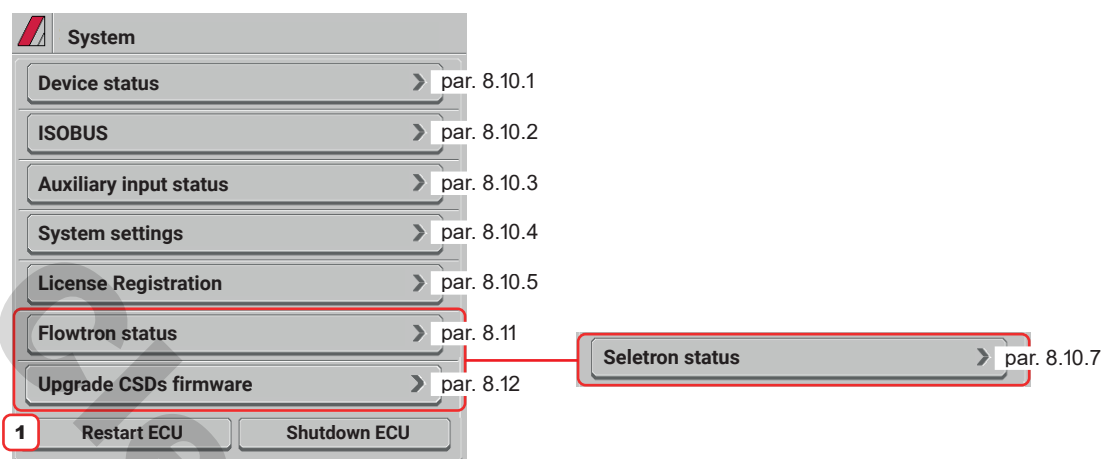


Fig. 71

Allows checking the correct operation of the system. Groups several categories.

1 Press **Restart ECU** button to restart IBX100 and confirm.



Displayed items are READ-ONLY.

8.10.1 Home > Data and settings > System > Device status

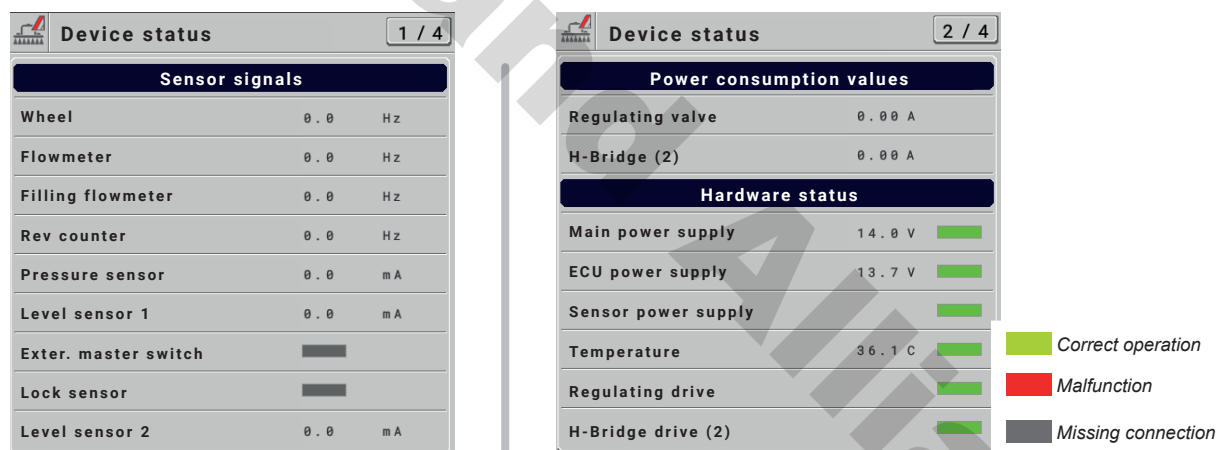


Fig. 72

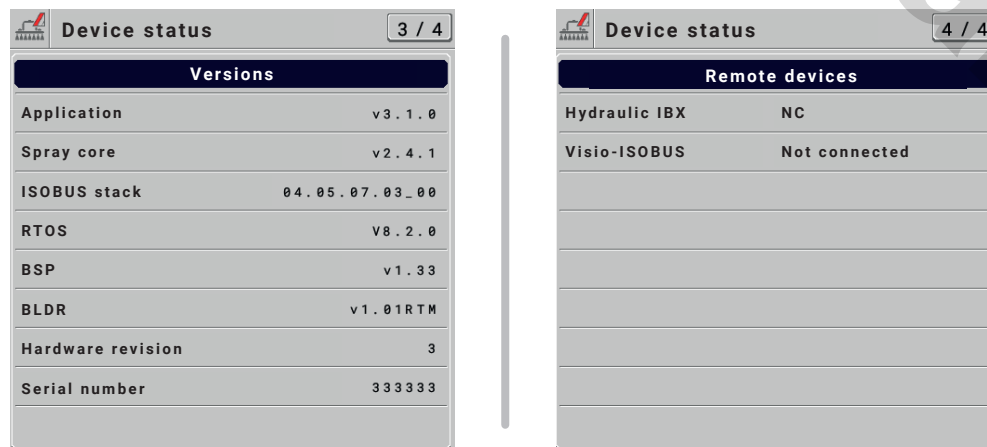


Fig. 73

Displays system information. Page 4 displays the status of connected remote devices (e.g. Syncro...).

8.10.2 Home > Data and settings > System > ISOBUS

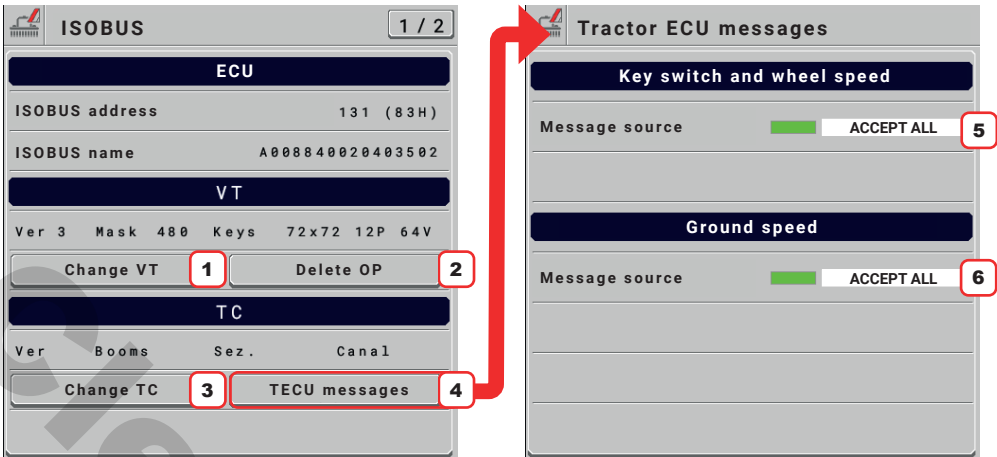


Fig. 74

Displays information on ISOBUS protocol.

- 1 Allows changing the VT on which the OP is displayed in case more terminals are connected.
- 2 Allows deleting and reloading the ECU OP.
- 3 allows changing the VT with which data can be exchanged through the TC in case more terminals are connected.
- 4 Allows accessing the menu for the selection of the source from which the data provided by the Tractor ECU present in the system will be received.
- 5 Select the source from which you wish to receive ISOBUS messages relating to system shutdown (Maintain Power) and vehicle driving speed if the latter is transmitted on the message relating to the speed of rotation of the wheel or a mechanical part of the tractor. (Home > Data and settings > Implement settings > Speed > Tractor wheel Par. 7.7).
- 6 Select the source from which you want to receive the ISOBUS message relevant to the vehicle driving speed if the latter is transmitted on the message relevant to the radar installed on the tractor (Home > Data and settings > Implement settings > Speed > Tractor radar Par. 7.7).

Available speed sources:

- **Accept all:** IBX100 will use the data contained in the relevant messages, regardless of the source they come from.
- **TECU:** IBX100 will only use the message coming from the Tractor ECU present in the system.
- **VT:** IBX100 will only use the message coming from the Virtual Terminal present in the system.

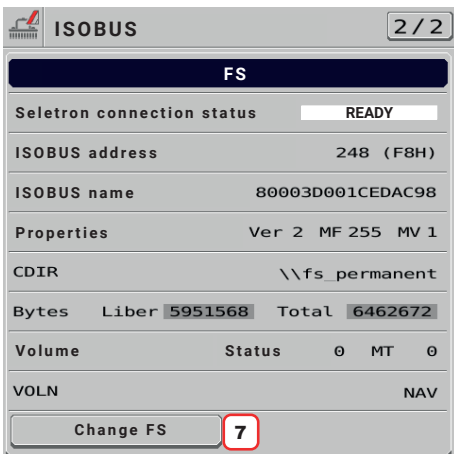


Fig. 75

It displays information about the File Server function if it is also available in the connected Virtual Terminal.

- 7 Allows changing the File Server in case more VTs are connected.

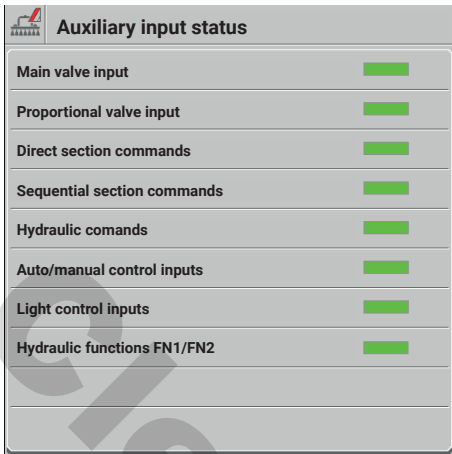


Fig. 76

Diagnostic page related to the assignment of auxiliary functions available on IBX100.

All auxiliary functions belonging to the category have been correctly assigned to the relevant inputs present in the installed ISOBUS switch box/joystick panel.

No auxiliary function belonging to the category was assigned to the inputs present in the installed ISOBUS switch box/joystick panel.

Auxiliary functions belonging to the category have been disabled and will not be made available for association with the corresponding inputs (page 28).

Some auxiliary functions belonging to the category have been correctly assigned to the related inputs present in the installed ISOBUS switch box/joystick panel, while others have not been assigned.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

8.10.4 Home > Data and settings > System > System settings

System settings

Max TC sections num. ☒

Advanced settings

Settings manager

Fig. 77

1 Sets the maximum number of sections of the IBX100 that can be automatically controlled by the TC server (VT).

2 Allows accessing the System advanced settings (see next sub-paragraph).

3 allows accessing the settings manager page (see next sub-paragraph).

Home > Data and settings > System > System settings> Advanced settings

Advanced settings

Section rate control ☐

Section delay

Advanced operator mode ☐

Flowtron frequency selection ☐

Section delay

Center section delay sec

Section delay

Section timing

Sections delay 1 / 2

Section	1	2	3	4	5	6	7	8
Section	1	2	3	4	5	6	7	8
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	sec	sec	sec	sec	sec	sec	sec	sec

Fig. 78

1 By activating this function in conjunction with TC-GEO, IBX100 will close a section upon receiving a target equal to 0l/ha for that part of the boom.

2a / 2b / 2c It allows setting a section opening and closing delay.
Select the option you want to use among the suggested ones:

• **2a Not used**

• **2b Compensation** allows an opening and closing delay to be set individually for each section.

• **2c Center delay** allows an opening and closing delay to be set only for center section.

The option can only be activated if the VT does not support the configurations with Longitudinal offset boom geometry (set option: NO, par. 7.12 at point 7).

3 By enabling this function (in **Technician** mode), the application rate and the nozzles of the presets can be changed in **Operator** mode.



4 By activating this function you can set the PWM frequency between presets (par. 8.2).

CONTINUES

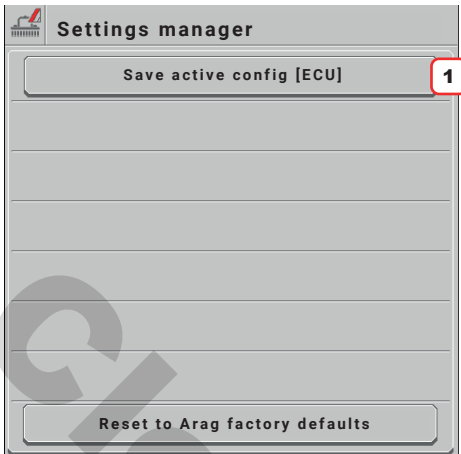


Fig. 79

1 Press **Save active config [ECU]** to create a backup file of the settings in use and save it to the internal memory of IBX100.



The internal memory of IBX100 CANNOT contain more than one backup file. Press **Save active config [ECU]** TO OVERWRITE THE PREVIOUSLY SAVED FILE WHICH WILL BE PERMANENTLY DELETED.

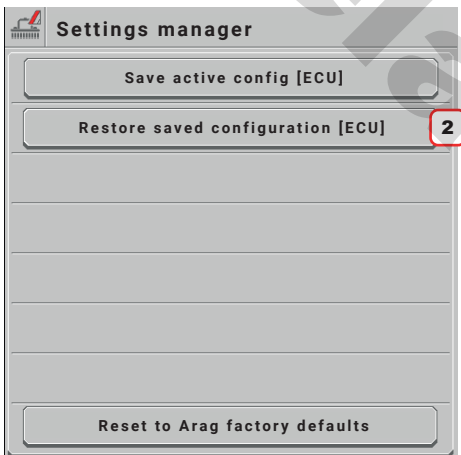


Fig. 80

Allows restoring the settings contained in the last saved backup file.

2 Press **Restore saved configuration [ECU]** to restore all settings in the previously saved backup file using the **Save active config [ECU]** button. The IBX100 will restart.



The button is only visible if a backup file was previously created and saved to the internal memory of IBX100 using the button **Save active config [ECU]**.



All settings in the application menu at the time of reset WILL BE PERMANENTLY LOST.

The backup file IS NOT DELETED after the reset.

CONTINUES



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Saves the changes to current page



Scrolls the pages of a menu (next page)



Quits without confirming the changes



Saves the changes

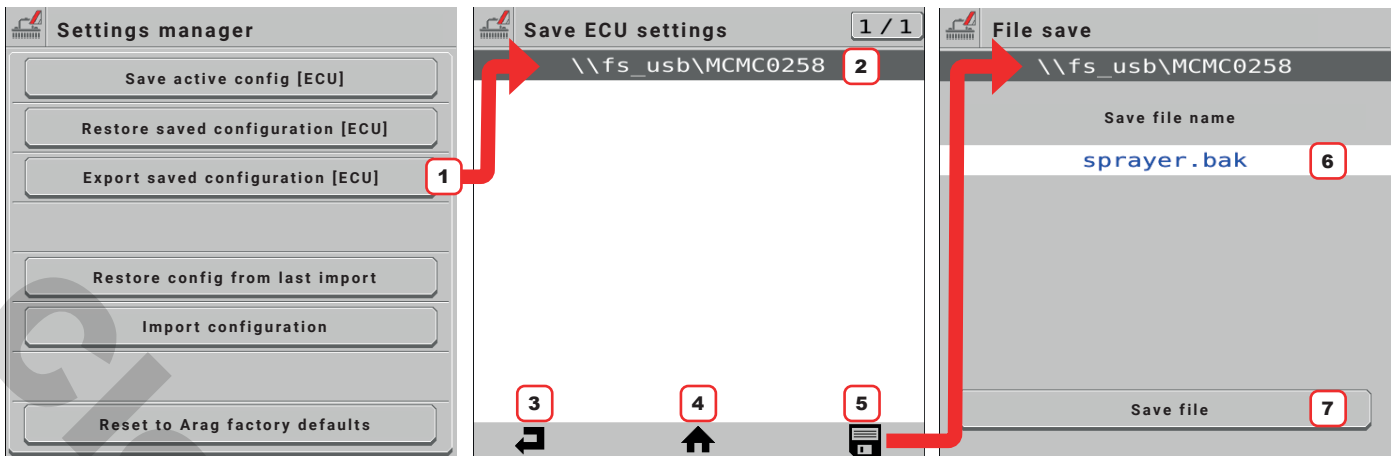


Fig. 81

1 Press **Export saved configuration [ECU]** to enter the File server management menu from which you can select the folder where to export the backup file (e.g. on a USB pendrive).



The button is visible only if the VT supports the function and if the File server license of the virtual terminal has been properly activated and registered

2 Current folder path.

MCMC0258 is the initial folder automatically created by the client file server and refers to ARAG because 0258 is the code that identifies ARAG as the ISOBUS component manufacturer.

3 BACK. Goes back to the previous folder.

4 HOME. Returns directly to the home folder (MCMC0258) - This function may not be available in all Virtual Terminals.

5 SAVE. Selects the current path and accesses the file saving page.

*An existing file can be overwritten by selecting it from those listed.
A blue rectangle will indicate the selected file.*

6 Type the name you want to assign to the backup file to save.

DO NOT CHANGE THE FILE EXTENSION. FILE EXTENSION MUST ALWAYS BE .bak

If the name assigned to the backup file to be saved is the same as that of a file already present in the selected folder, the latter will be overwritten and permanently lost.

7 Save file: Saves the file to the external memory connected to the VT.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

Home > Data and settings > System > System settings > Settings manager > Import configuration

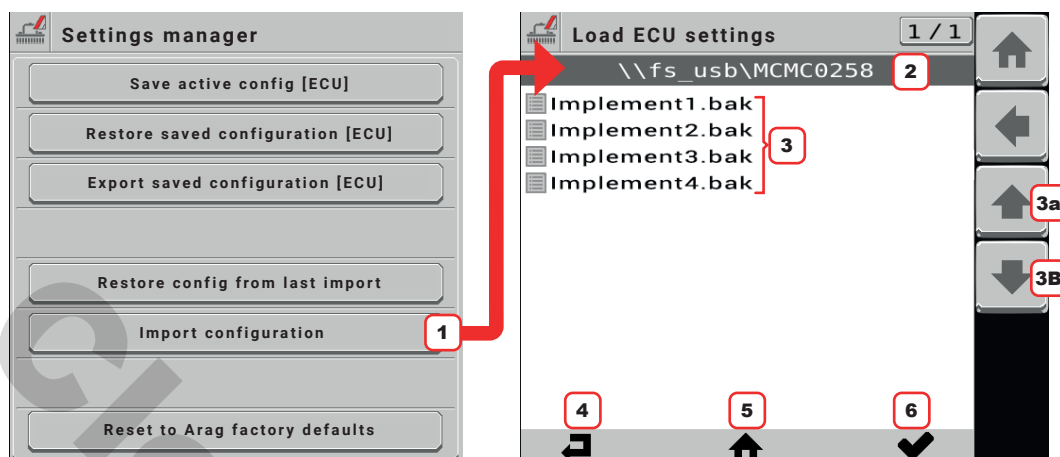


Fig. 82

Allows importing a backup file from an external memory connected to the Virtual Terminal.

1 Press **Import configuration** to enter the File server management menu from which you can select the folder from which to import the backup file.



The button is visible only if the VT supports the function and if the File server license of the virtual terminal has been properly activated and registered.

2 Current folder path.

3 List of files contained within the current folder.

In order to be loaded, the backup file must have the extension .bak and must be inside the folder MCMC0258. This folder refers to ARAG because 0258 is the code that identifies ARAG as the ISOBUS component manufacturer.

3A - 3B Buttons to select the file to load.

4 BACK. Goes back to the previous folder.

5 HOME. Returns directly to the home folder (MCMC0258) - This function may not be available in all Virtual Terminals.

6 COPY. Confirms the copy of the selected backup file to the internal memory of IBX100.

Home > Data and settings > System > System settings > Settings manager > Restore config from last import.

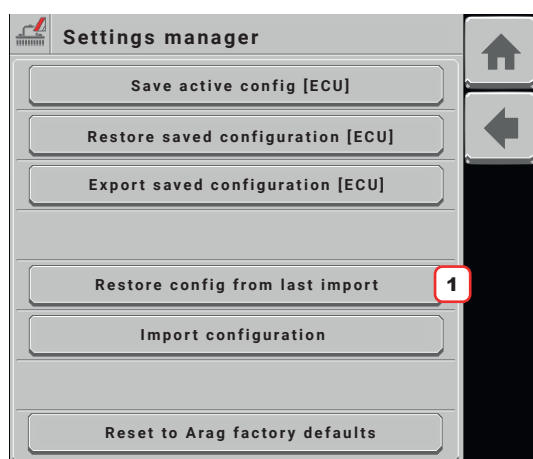


Fig. 83

Allows restoring the settings contained in the last imported backup file.

1 Press **Restore config from last import** to restore all settings in the previously imported backup file using the **Import configuration** button or through the relevant function available on VISIO ISOBUS.



All settings in the application menu at the time of reset WILL BE PERMANENTLY LOST.

The backup file IS NOT DELETED after the reset.



The button is visible only if a backup file has been previously imported via the Import configuration button (see previous paragraph) or via the appropriate function available on VISIO ISOBUS

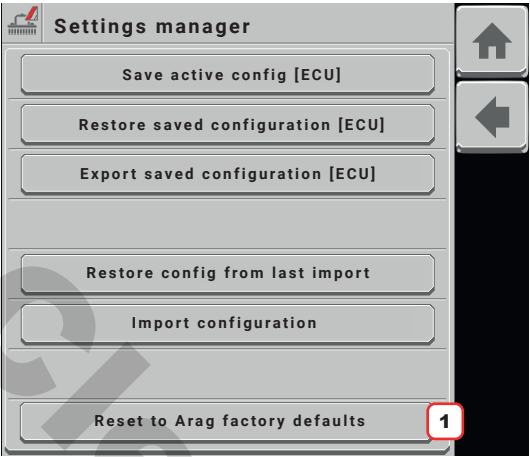


Fig. 84

1 Allows resetting the factory settings in the IBX100 menu.

Press **Reset to Arag factory defaults** to reset the IBX100 configuration to factory settings.



All settings in the application menu at the time of reset WILL BE PERMANENTLY LOST.

Any backup file previously saved via the Save active config [ECU] button or imported via the Import configuration button will not be deleted.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

8.10.5 Data and settings > System > Licenses registration

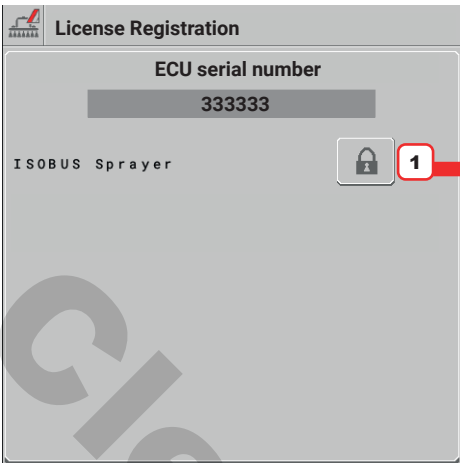


Fig. 85

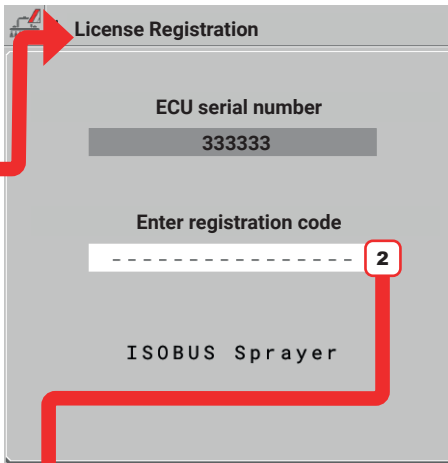


Fig. 87

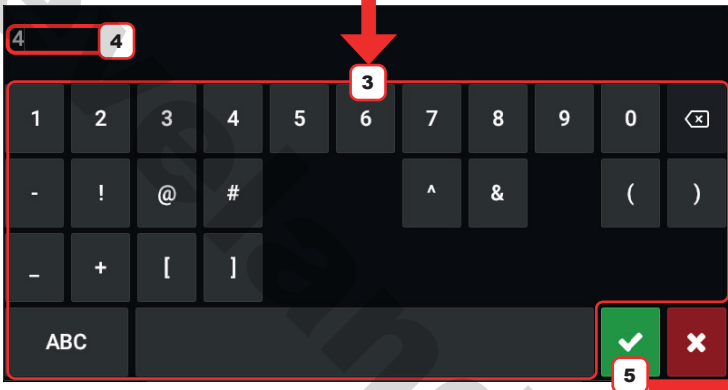


Fig. 86

Legend:



Proceed as follows to enable IBX100 Sprayer.

1 Press this button to access the code entry page.

2-3-4 Enter the registration code provided by ARAG.

5 Press this button to confirm the code entered.

At the end of the registration process, the device will display a confirmation page certifying that the operation has been completed correctly.

The symbol  will appear next to the IBX100.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

8.10.6 Data and settings > System > Licenses registration > Flowtron Sprayer

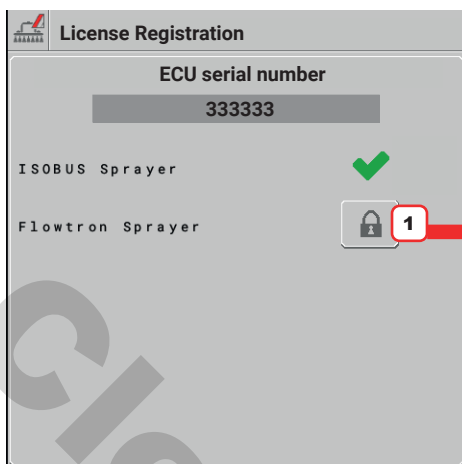


Fig. 88

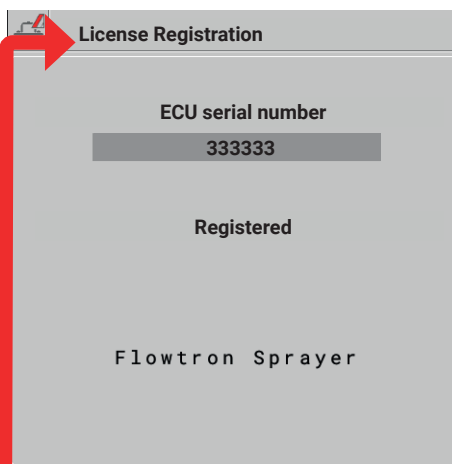
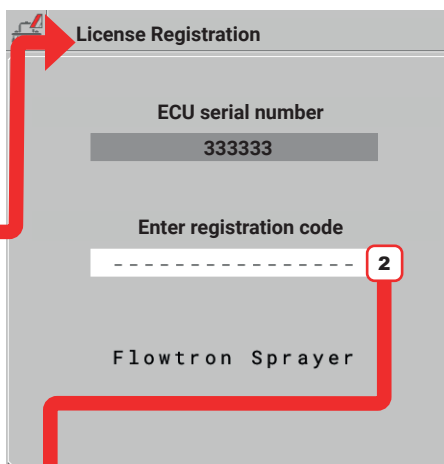


Fig. 90

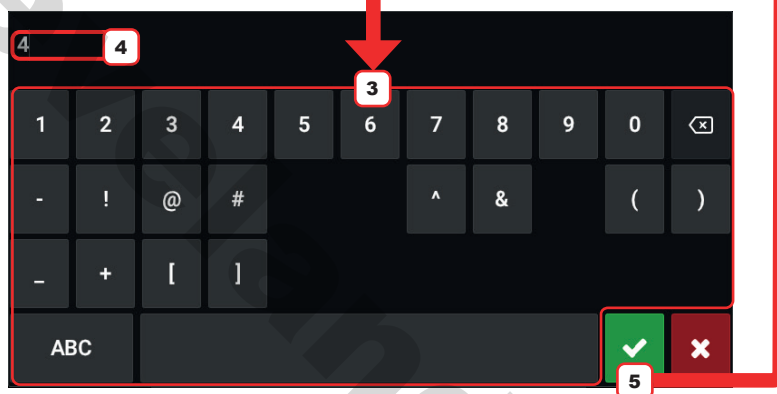


Fig. 89

Legend:



Proceed as follows to enable IBX100 Flowtron.

1 Press this button to access the code entry page.

2-3-4 Enter the registration code provided by ARAG.

5 Press this button to confirm the code entered.

At the end of the registration process, the device will display a confirmation page certifying that the operation has been completed correctly.

The symbol will appear next to the IBX100.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

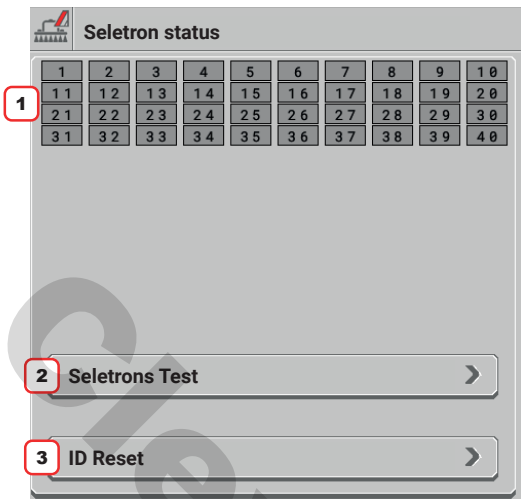


Fig. 91

This menu has two main functions:

- **INSTALLATION**
Allows displaying the progress during Seletron pairing procedure (see chapter on Seletron connection in the Installation Manual).
- **DIAGNOSTICS**
Allows to check the connection of each single Seletron.

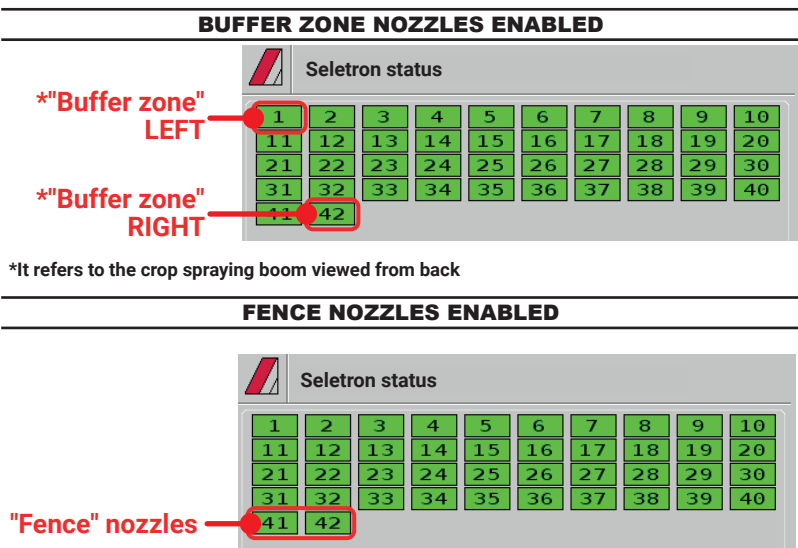


CARRY OUT BOTH PROCEDURES WITH RUNNING ENGINE.

1 The number inside each rectangle identifies the ID number of the Seletron. The background color indicates the Seletron status:

- Correct operation.
- The device is not connected or is incorrectly connected.
- The device is connected and is present on the network but there is an error.

2 - 3 Refer to the next chapters to perform Seletrons test or erase their IDs.



8.10.8 Data and settings > System > Seletron status > Seletrons Test

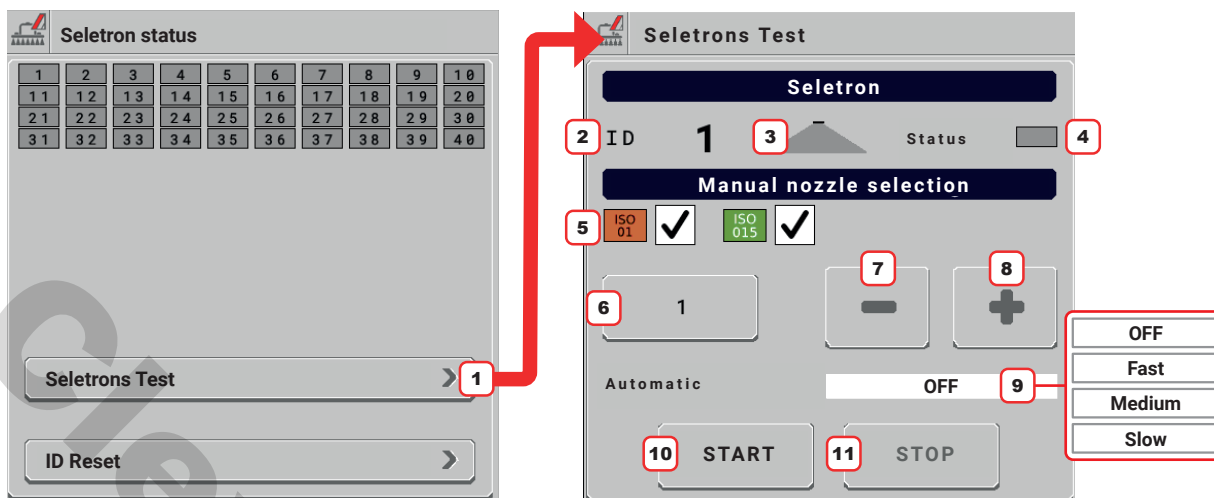


Fig. 92

Test page to check the operation of the Seletrons.



- The pump must be running to perform the test.
- The test can also be performed with Task Controller or Section Control activated.

1 Press the button to access the Seletrons Test page.

2 Displays the Seletron number being tested.

3 Displays the test status: the points are spraying (light blue) / the points are NOT spraying (gray).

4 Displays Seletron status. The background color indicates:

- Correct operation.
- The device is not connected or is incorrectly connected.
- The device is connected and is present on the network but there is an error.

5 Allows selecting the type of nozzle among those preselected in the currently working **Preset**. In case you attempt to deactivate both nozzles, the system will automatically reactivate the first nozzle on the left (in the Fig. 92 the nozzle that will be reactivated is the orange 01).

Function ONLY available if Data and settings > Implement settings > Basic settings > Spraying point type > 2 or 4.

6 It restores selection: it starts again from Seletron with ID 1.

7 - 8 Buttons only available if the selected item in point 9 is OFF:

7 Decreases the ID number of the tested Seletron (2).

8 Increases the ID number of the tested Seletron (2)

9 There are two testing modes:

- **Automatic > OFF**: by pressing **Start** the system allows the single selected Seletron spraying.
- **Automatic > Fast / Medium / Slow**: by pressing **Start** the system allows all Seletrons installed on the boom to spray, one at a time.

10 By pressing **START** the system allows the single selected Seletron spraying.

Use buttons + and - to select the Seletron to be tested
(- previous Seletron, + next Seletron).

11 Press **STOP** to stop spraying started with **START**.



For Seletron replacement, please refer to par 10.14 on page 98 .

TO PREVENT SYSTEM MALFUNCTIONS, THIS OPERATION MUST BE CARRIED OUT ONLY IF STRICTLY NECESSARY

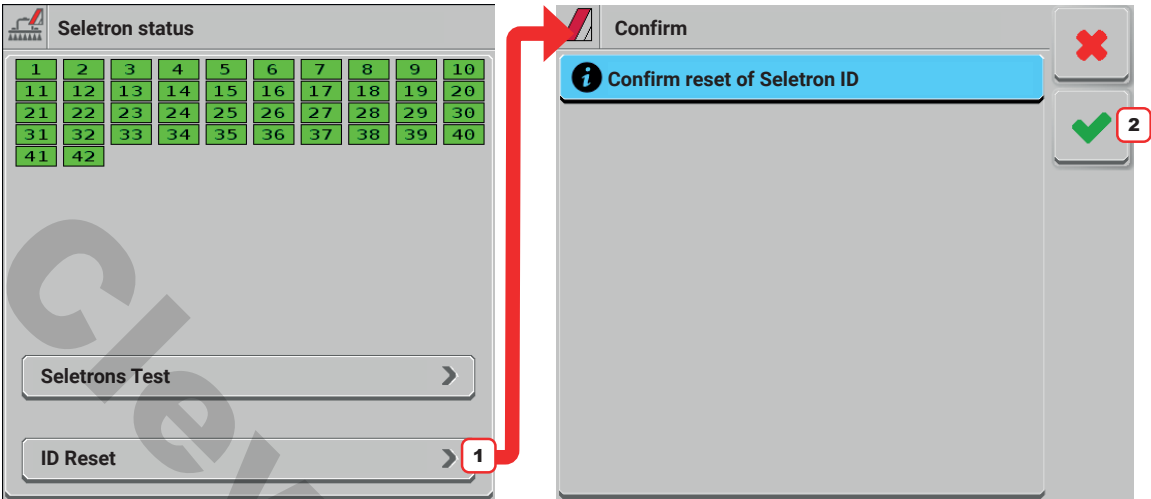


Fig. 93

Allows resetting the identification numbers of all saved Seletrons, if you wish to repeat the pairing procedure (see chapter on Seletron connection in the Installation Manual).

1 Press key 1 to delete identification numbers.

2 Press key 2 to confirm.

At the end of the reset procedure, DISCONNECT ALL SELETRONS and repeat the pairing procedure (see chapter on Seletron connection in the Installation Manual).

8.11 Data and settings > System > Flowtron status

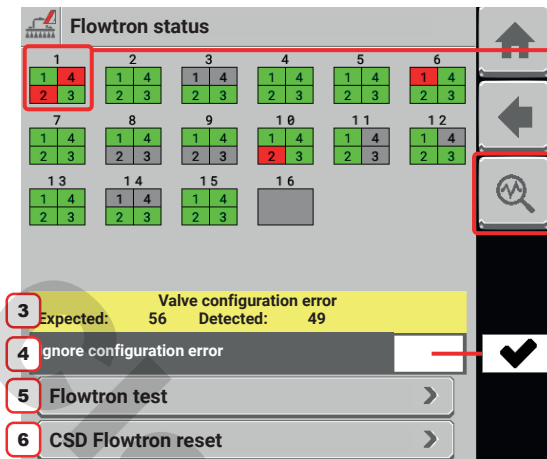


Fig. 94

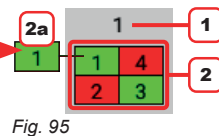


Fig. 95

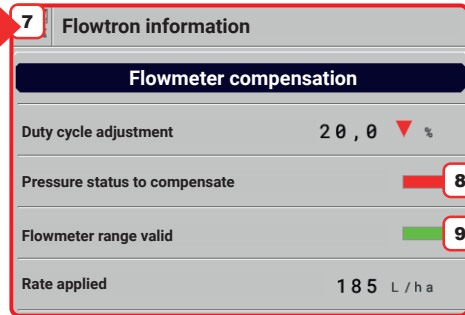


Fig. 96

This menu has two main functions:

• **INSTALLATION**

Allows displaying the progress during Flowtron pairing procedure (see chapter on Flowtron connection in the Installation Manual).

• **DIAGNOSTICS**

It checks the connection status of CSD nodes and Flowtron valves connected to each of them.



CARRY OUT BOTH PROCEDURES WITH RUNNING ENGINE.

1 CSD module number.

2 Displays the status of each CSD module.

The background color indicates the CSD status:

■ CSD module not detected (CSD module number 16 of Fig. 94).

■ CSD module configuration error (firmware update required).

Press on the square of module ref. 2 (Fig. 95) to display its information (Fig. 100 - Fig. 102 - Fig. 105 - Fig. 106).

2a Displays the number and status of Flowtron valves connected to each CSD module.

The number inside each rectangle identifies the correspondence of valves for each CSD module.

The background color indicates the Flowtron valve status:

■ Flowtron valve correctly associated with the relevant position.

■ Flowtron valve not associated or not correctly connected.

■ Flowtron associated but in error status (CSD module diagnostics: ref. to the corresponding manual).

3 Consistency check after mapping.

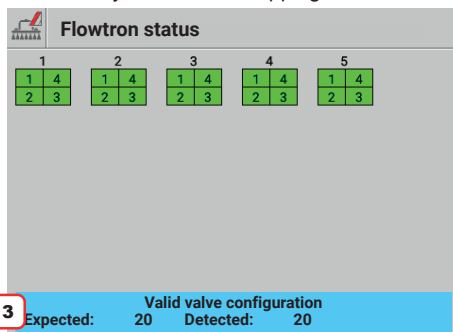


Fig. 97

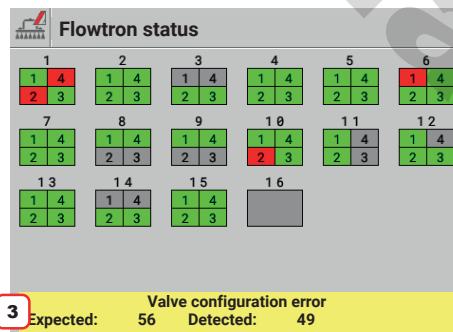


Fig. 98

The figure on the left shows the correct Flowtron mapping.

If the system detects errors, they will be displayed as shown in the figure on the right.

4 Enables / disables the possibility of ignoring Flowtron configuration errors.

It is a specific command available to the user to continue working when the detected valves do not match the expected ones: it unlocks spraying / ignores Daisy Chain when the module does not respond.

Ignore configuration error ☒: the system can work with the detected valves only, but in this case the application rate accuracy cannot be ensured. This mode must be used temporarily until the problem is solved; for this reason, the option is disabled upon each restart.

CONTINUES

5 Allows checking the correct operation of the Flowtron. Consult chapter 8.11.1 on page 65.

6 Allows deleting the identification numbers of all Flowtrons. Consult chapter 8.11.2 on page 66.

7 Allows displaying compensation information (if enabled chap. 8.5 on page 41).

8 Displays compensation enabling status according to the pressure value:

 Main valve ON, manual mode, no compensation.

 Main valve OFF, no compensation.

 Main valve ON, automatic regulation, compensation disabled due to pressure far from target.

 Main valve ON, automatic regulation, compensation enables for pressure to the target.

9 Displays compensation enabling status according to the flowmeter flowrate measurement:

 The flowmeter is performing no compensation.

 The values measured by the flowmeter are outside the defined range.

 The values measured by the flowmeter are within the provided range.

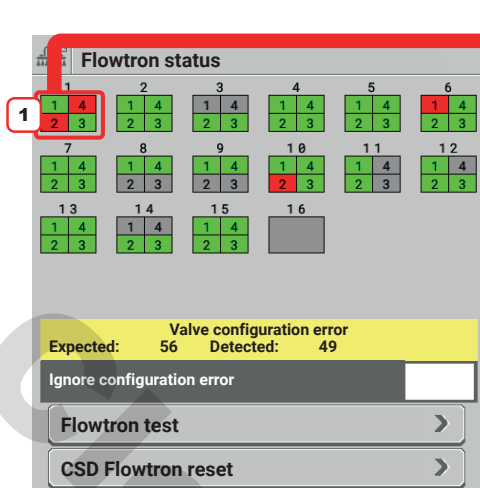


Fig. 99

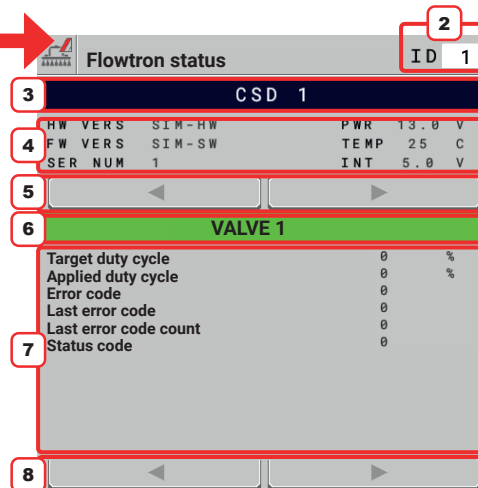


Fig. 100

- 1 Press the icon of the desired CSD module to display the details of Flowtron valves connected to it.
- 2 Unique identification number of the Flowtron valve. The number refers to the entire boom seen from the rear and indicates the positioning with respect to all Flowtron valves detected in the system.
- 3 CSD module number.
- 4 Displays information related to the selected CSD module.
- 5 Press to scroll through the CSD nodes: ◀ previous CSD module, ▶ next CSD module.
- 6 Position of the Flowtron valve detected and connected in the selected CSD module: numbers range from 1 to 4.
The background color indicates:
 - Green: Flowtron valve correctly associated with the relevant position.
 - Grey: Flowtron valve not associated or not correctly connected.
 - Red: Flowtron associated but in error status (CSD module diagnostics: ref. to the corresponding manual).
- 7 Displays information related to the selected Flowtron valve.
- 8 Press to scroll through the Flowtron valves detected and connected in the selected CSD module: ◀ previous valve, ▶ next valve.

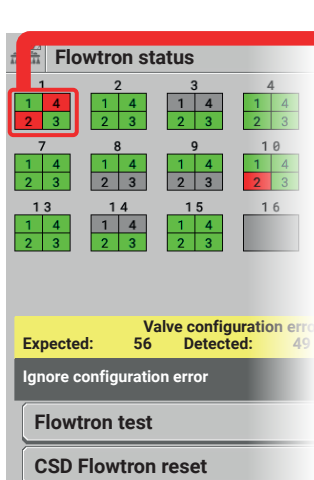


Fig. 101

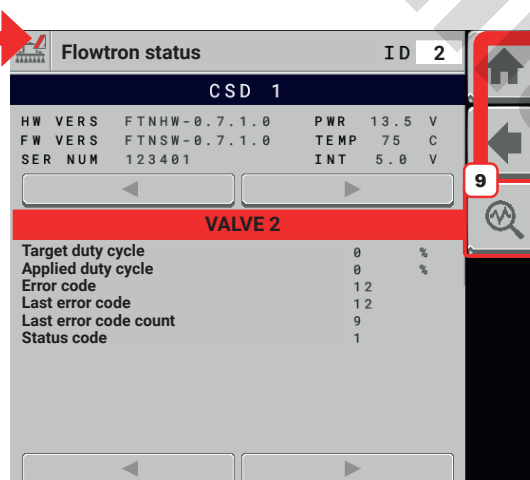


Fig. 102

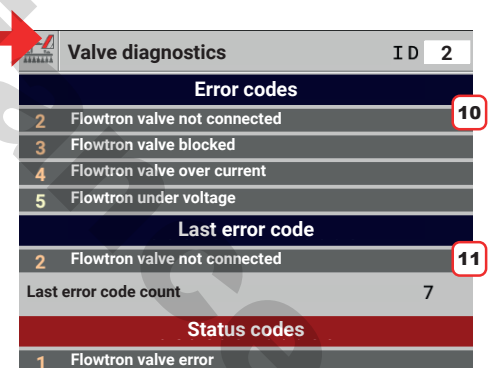


Fig. 103

- 9 Press to access the diagnostic page of the selected valve.
- 10 The system shows the error codes present and working.
- 11 THE SYSTEM SHOWS THE CODE AND DESCRIPTION OF THE LAST REGISTERED ERROR NO LONGER WORKING AND THE TOTAL NUMBER OF CONSECUTIVE ERRORS REGISTERED.

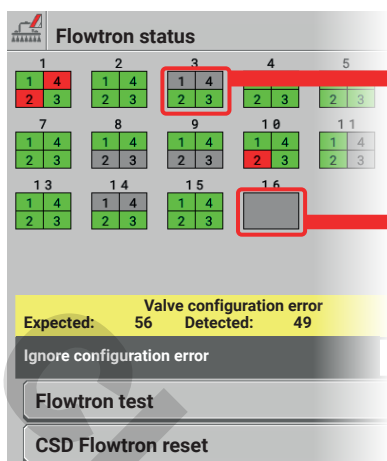


Fig. 104

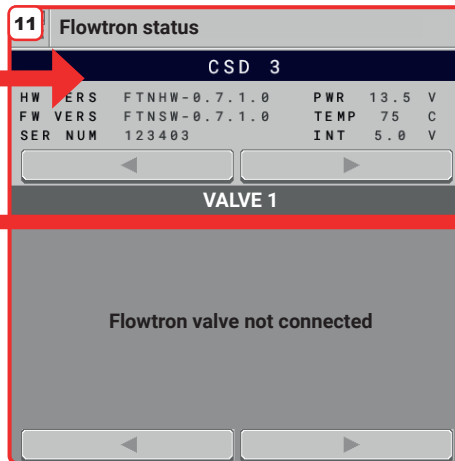


Fig. 105

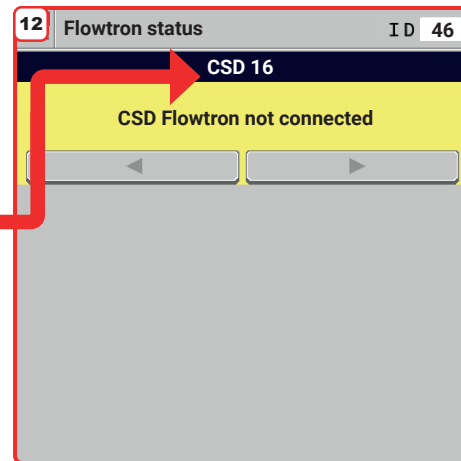


Fig. 106

11 Example of Flowtron valve not connected or not associated correctly: the unique identification number is not present.

12 Example of CSD module not associated correctly.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Saves the changes to current page



Scrolls the pages of a menu (next page)



Quits without confirming the changes



Saves the changes

8.11.1 Data and settings > System > Flowtron test

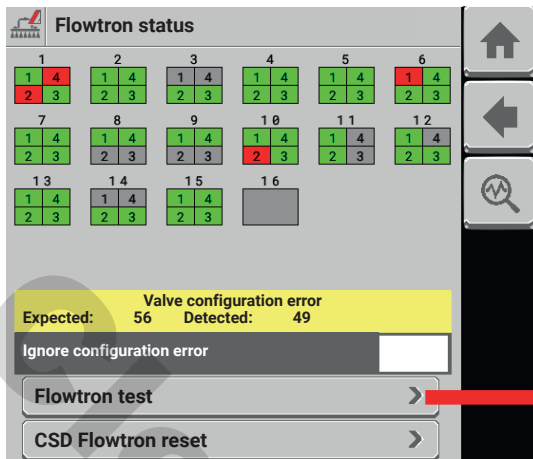


Fig. 107

Test page to check the operation of the Flowtrons.

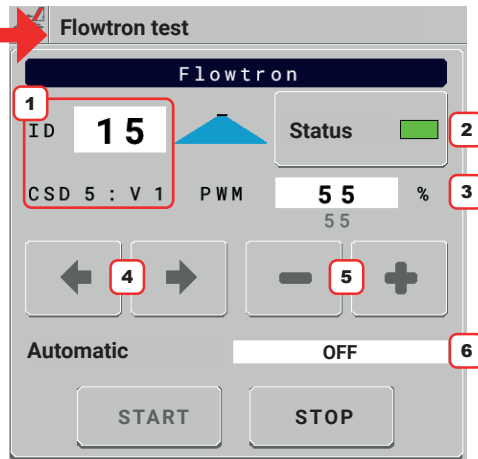


Fig. 108

1 Indicates the Flowtron valve to be tested or the one from which you want to start the test, according to the selected mode.

ID (e.g. 15): Unique identification number of the Flowtron valve. The number refers to the entire boom seen from the rear and indicates the positioning with respect to all Flowtron valves detected in the system.

CSD (e.g. 5): CSD module number.

V (e.g. 1): Position of the Flowtron valve detected and connected in the selected CSD module: numbers range from 1 to 4.

2 Status

The color displayed indicates the Flowtron valve status:

Correct operation.

Flowtron valve not associated or not correctly connected.

Flowtron in error status (CSD module diagnostics: ref. to the corresponding manual).

Press **Status** to directly access the **Flowtron status** (Fig. 100 on page 63) page, corresponding to the valve under test status.

3-5 Expected duty cycle (+ and - to edit, or press on the number to enter the value) Value below: applied duty cycle.

4 Use the arrow keys to select the Flowtron valve to be tested. (or press on the **ID** number to enter the value).

◀ Previous Flowtron valve, ▶ next Flowtron valve.

6 Allows selecting the test mode. The menu allows choosing the **Automatic** mode: **Off** / **Fast** / **Medium** / **Slow**.

There are two testing modes:

- **Automatic > OFF**: by pressing **Start** the system allows the single selected Flowtron valve to spray until **STOP** is pressed.

- **Automatic > Fast / Medium / Slow**: by pressing **Start** the system allows all Flowtron valves installed on the boom to spray, one at a time, starting from the selected one (**ID** number).

The three different switching speeds indicated can be selected.



- The pump must be running to perform the test.

- The test can also be performed with Task Controller or Section Control activated.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

TO PREVENT SYSTEM MALFUNCTIONS, THIS OPERATION MUST BE CARRIED OUT ONLY IF STRICTLY NECESSARY

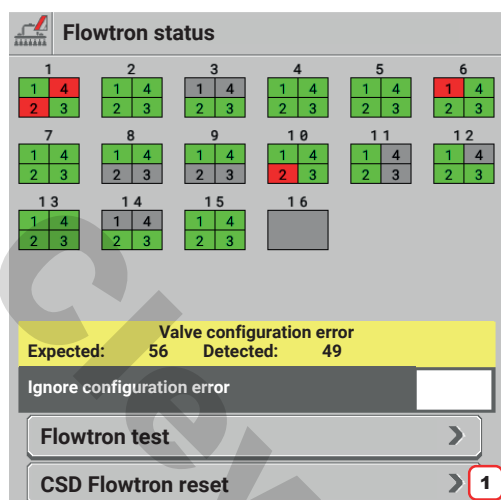


Fig. 109

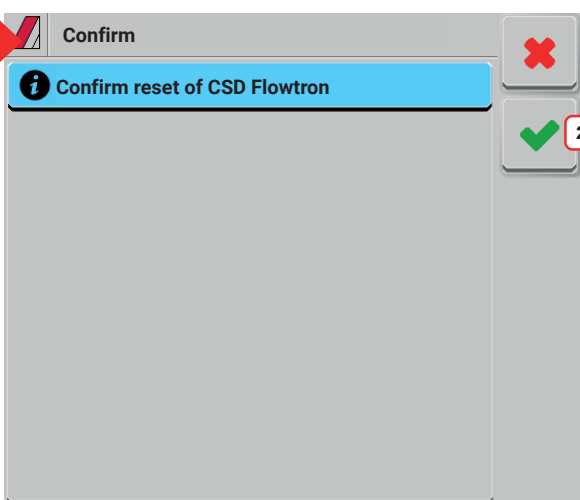


Fig. 110

Allows resetting the ID identification numbers of all saved Flowtrons, before repeating the pairing procedure (see chapter on Flowtron connection in the Installation Manual).

1 Press key **1** to delete identification numbers.

2 Press key **2** to confirm.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

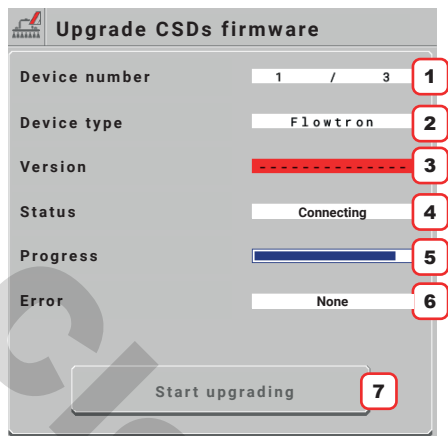


Fig. 111

This menu allows updating all Flowtron CSDs detected by IBX100.

The internal memory of IBX100 contains the validated Flowtron CSD firmware with the version in use of IBX100 ISOBUS FLOWTRON application. Access the **"Upgrade CSDs firmware"** menu: IBX100 checks the version installed in the connected Flowtron CSDs and, if it does not match the version in its internal memory, after pressing **"Start upgrading"** will upgrade all the connected CSDs.

1 Number of the device being upgraded

2 Type of device to be upgraded

3 Firmware version currently installed in the Flowtron CSD

4 Upgrade status

5 Upgrade progress status bar

6 Type of upgrade error detected

Press button 7 to start the upgrade procedure for all Flowtron CSDs.

The procedure CANNOT BE STOPPED.

The upgrade needs approx. 2-3 minutes per Flowtron CSD.

At the end, point 5 shows the message for upgrade **Completed** on green background.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

8.13 Data and settings > User preferences

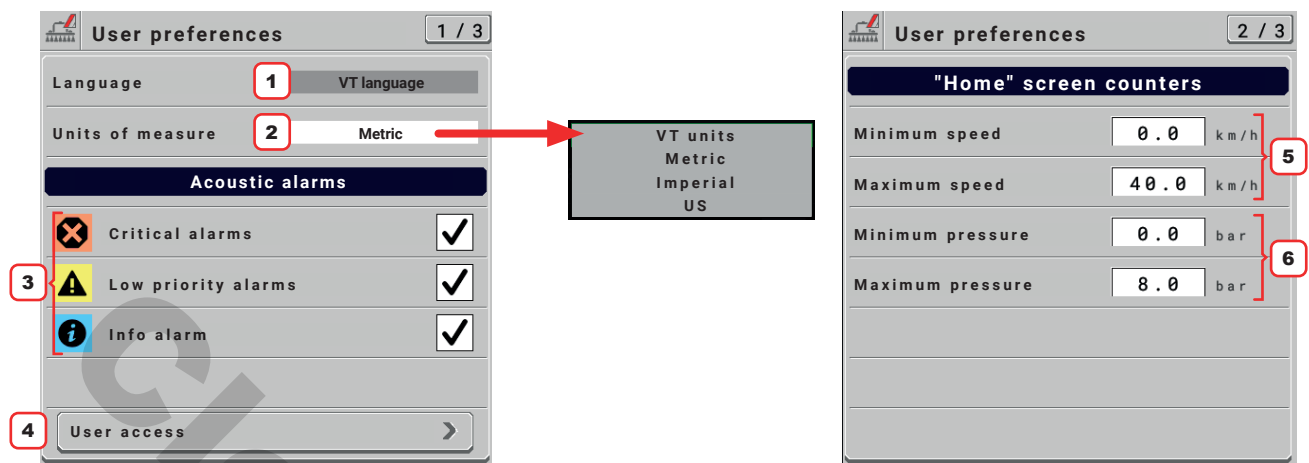


Fig. 112

1 Displays the OP use language source. To change language, edit the VT settings.

2 Set OP units of measurement.
You can select the measurement system or infer it from the VT settings.

3 The OP features an **Info and alarms** menu, which summarizes the active notifications for the operator (par. 8.6).
These notifications are rated by importance as **Critical alarms**, **Low priority alarms** and **Info**.
From this screen you can enable/disable audible alerts for each notification.

4 Set OP access level.

- **Operator**: the use at this level inhibits any kind of setting. The operator only carries out the treatment.
- **Manager**: the use at this level inhibits machine feature setting, but allows treatment configuration. You can set an access PIN code.
- **Technician**: the use at this level allows the configuration of both machine features and treatment. You can set an access PIN code.
- **Arag-Tech**: for ARAG staff, only.

5 Set speed range end-value (*"HOME" screen, par. 9.1*).

6 Set pressure range end-value (*"HOME" screen, par. 9.1*)

CONTINUES

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

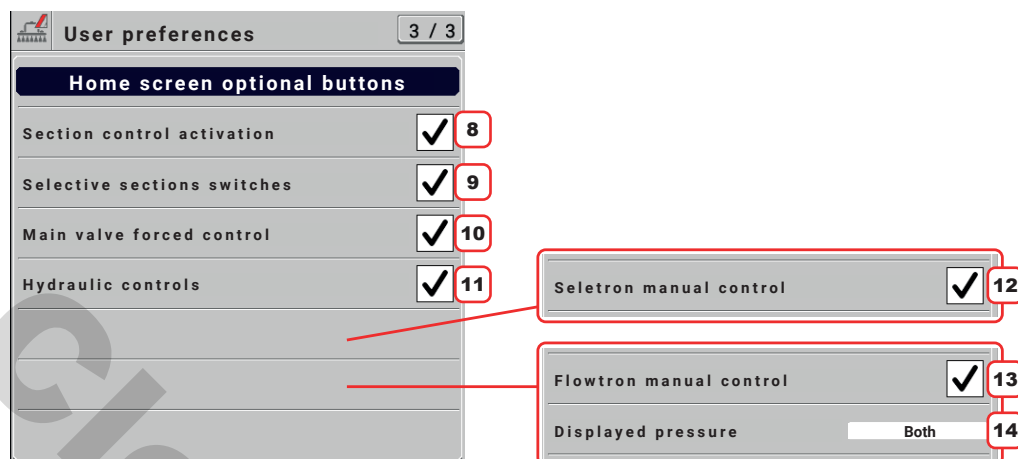


Fig. 113

8 Enables / Disables the display of a function button on the main page (10.11 Home > Section control on page 95) through which you will be able to Enable / Disable the automatic section control. This input will work only after you have configured and activated the section control correctly on the Virtual Terminal in use.

9 Item available only if **Data and settings > Implement settings > System configuration > Auxiliary inputs > Type > Sequential / ARAG Joystick 1 / ARAG Joystick 2 / Tractor joystick**. Enables / Disables the display of a button on the main page (10.7 Main control and section management on page 84) through which you will be able to act on the sections.

10 Item available only if **Data and settings > Implement settings > Valves > Valve settings > Main valve > Auto closing of main valve** is enabled and **Data and settings > Implement settings > System configuration > Automatic regulation > Disabled**.

Enables / Disables the display of a button  ("HOME" page, par. 9.1) and the arrow buttons: ▲ (increases the pressure by acting on the proportional valve) / ▼ (decreases the pressure by acting on the proportional valve).

The button  forces the Opening/Closing of the main valve when it is closed by the automatic section control. **Button display is only present in manual regulation control mode.**

WARNING: THIS FUNCTION CAN CREATE OVERPRESSURE CONDITIONS IN THE SPRAYER CIRCUIT. ONLY THE MANUFACTURER CAN ASSESS WHETHER OR NOT TO MAKE THIS INPUT AVAILABLE TO THE OPERATOR. IF SO, IT IS THE MANUFACTURER'S RESPONSIBILITY TO GIVE DIRECTIONS FOR PROPER INFORMATION/TRAINING TO THE END USER. ARAG CANNOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY THE ACTIVATION OF THIS FUNCTION SINCE ONLY THE MANUFACTURER IS AWARE OF THE CHARACTERISTICS OF THE SYSTEM DESIGNED AND ON WHICH THE IBX100 SPRAYER ISOBUS IS INSTALLED.

11 Item available if IBX100 Sprayer controls the hydraulic functions and if **Data and settings > Implement settings > System configuration > Auxiliary inputs > HYD > 7 / 9**. Enables / Disables the display of a button on the main page (10.7 Main control and section management on page 84) through which you will be able to act on hydraulic commands.



12 Item available only if **Data and settings > Implement settings > Basic settings > Seletron**. Enables / Disables the display of a button on the main page (10.9 Home > Flowtron manual control on page 94) through which it will be possible to access a page where inputs to manually Open / Close each Seletron valve individually will be displayed. Closing a Seletron in manual mode will have priority over automatic section control.



13 Item available only if **Data and settings > Implement settings > Basic settings > Flowtron**. Enables / Disables the display of a button on the main page (10.9 Home > Flowtron manual control on page 94) through which it will be possible to access a page where inputs to manually Open / Close each Flowtron valve individually will be displayed. Closing a Flowtron in manual mode will have priority over automatic section control.

14 Item available only if **Data and settings > Implement settings > Basic settings > Flowtron**.

Allows selecting the display ("HOME" screen, par. 9.1) of the detected pressure for:

- **Boom**: displays the pressure value measured on the crop spraying boom.
- **Nozzle**: displays the estimated pressure value on the nozzle.
- **Both**: displays the measured pressure value on the boom or the estimated value on the nozzle. Press on the pressure indicator in the "HOME" screen to switch the display.

9 USE

9.1 "HOME" screen > indications on display

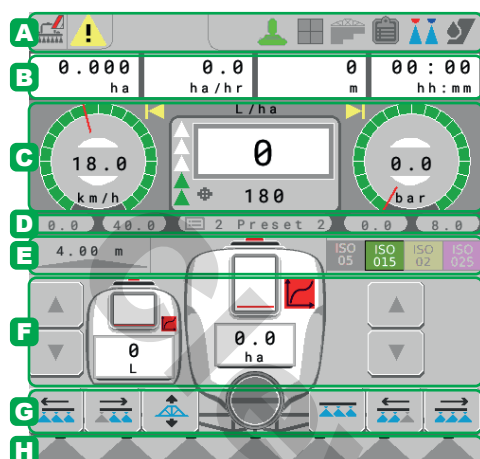


Fig. 114

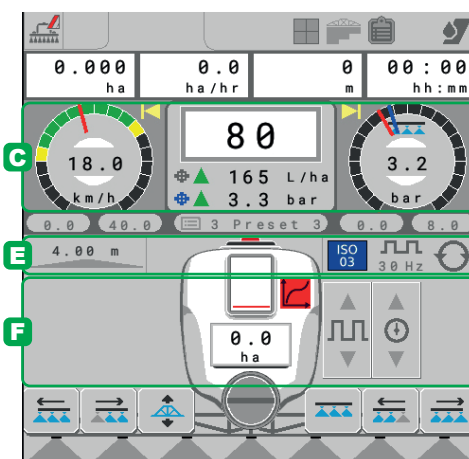


Fig. 115

1 Current application icon.

2 Alarm presence icon (par. 10.5).

3 Selective spraying status icon (par. 10.5).

4 Auxiliary input status icon (par. 7.13).

5 Variable application function status icon (par. 7.13).

6 Automatic section control function status icon (Section Control par. 7.13).

7 Check of ON / OFF job totals (par. 7.13).

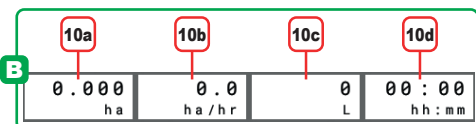
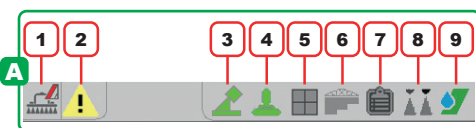
8 automatic ON/OFF nozzles selection (par. 10.5.1).

Function available only if the dual boom is selected in the basic settings: **Data and settings > Implement settings > Basic settings > Valves > Boom settings > Dual** or the automatic regulation of application rate is working and Seletron spraying points are 2 or 4: **Data and settings > Implement settings > Basic settings > Seletron > Spraying point type > 2 / 4**.

9 Automatic application rate regulation ON/OFF (par. 10.5).

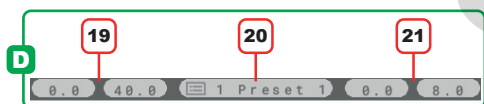
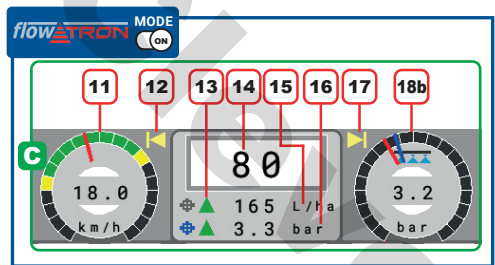
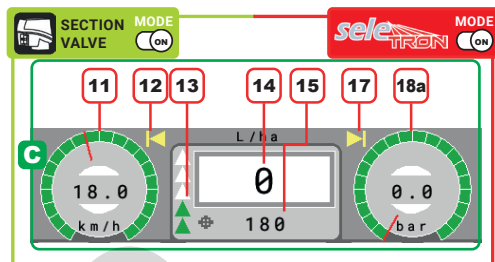
10a 10b 10c 10d Job data (can be selected by pressing the corresponding area):

Applied area 0 . 0 0 0 ha	Productivity 0 . 0 ha / hr	Distance travelled 0 m	Working time 0 0 : 0 0 hh : mm
Rev counter 0 rpm	Flowrate 0 . 0 L / min	Sprayed quantity 0 L	



10a 10b 10c 10d Job data (can be selected by pressing the corresponding area):

Flowtron compensation with respect to the target:		Min. / max duty cycle		Medium duty cycle / expected duty cycle (target) percentage	
Optimal duty cycle Limit duty cycle Duty cycle outside the limit		0 ± % 0 ∓ %		0 ▯ % 0 ∘ %	



11 Working speed: ■ optimal value, ■ limit value, ■ outside the limit.

12 Pressure lower than threshold / Nozzle flowrate lower than thres.

13 Percentage variation of output or pressure (par. 10.1).

14 Instantaneous output (par. 10.1 / 10.2).

15 Set application rate (par. 10.1 / 10.2).

16 Set nozzle pressure (par. 8.2): ■ the measured value matches the expected value.

17 Pressure higher than threshold / Nozzle flowrate higher than thre.

18a Detected pressure



18b Press on the icon to change from boom detected pressure display ■ to nozzle estimated pressure display ■ (par. 8.13). The red needle indicates ■ the measured / estimated pressure value and the blue needle ■ the expected value.

19 Speed range end-value (par. 8.13).

20 Job preset (par. 8.2).

21 Pressure range end-value (par. 8.13).

22 Boom width (par. 7.2).

23 Nozzle being used (par. 8.2).



24 Selected PWM frequency (par. 8.2).

25 Turn compensation.

- Turn compensation not working.
- Curvature signal not available.
- Turn compensation enabled.

26 Simulated speed: ▲ Increases simulated speed / ▼ Decreases simulated speed. The icons are visible only after simulated speed activation.

27 BLC and TTC functions in automatic mode active.

27a BLC function in manual mode active.

27b BLC function in automatic mode active.

27c BLC function in manual mode active but shows an error.

27d BLC function in semi-automatic mode active or low speed.

27e TTC function in manual mode active.

27f TTC function in automatic mode active.

27g TTC function in manual mode active but shows an error.

27h BLC function in manual mode active with lock.

27i BLC and/or TTC functions active but connection with hydraulic control unit lost.

28 - 29 Tank 2 level text and graphics / Tank level text and graphics (can be selected by pressing the corresponding area):

Applied area	Sprayed quantity
0.0 ha	0 L

Missing tank profile.

flowTRON MODE ON

30 Manual Flowtron duty cycle regulation. The icon is visible only after disabling the automatic regulation of application rate.

31a Manual pressure regulation. The icons are visible only after disabling the automatic regulation of application rate.

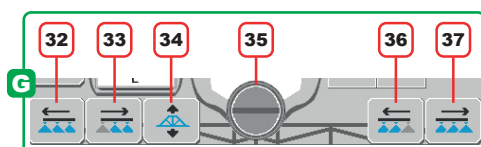
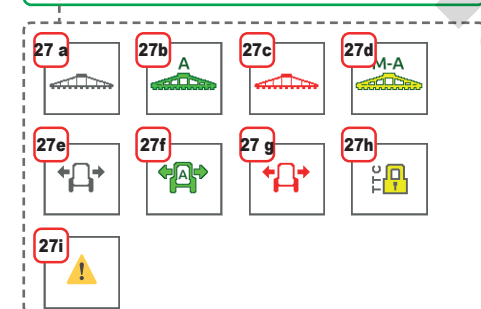
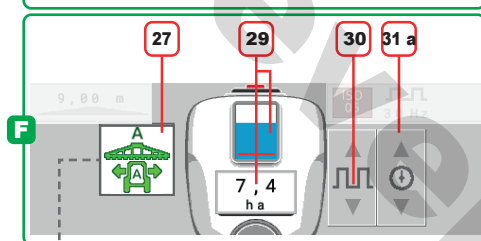
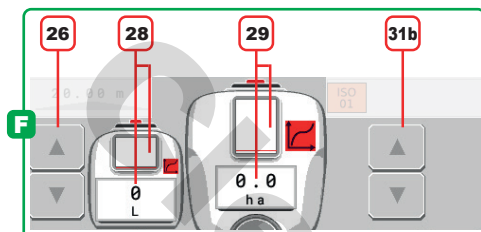
31b Manual application rate regulation. The icons are visible only after disabling the automatic regulation of application rate.

32 33 36 37 Section switches (par. 10.7.2).

34 Hydraulic function switches (par. 10.7.2).

35 Main valve input status:

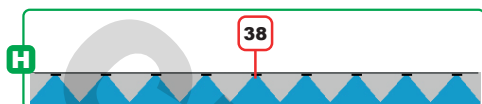
-  main ON.
-  main OFF.
-  main OFF: Disabled treatment sharing required by an auxiliary function (Virtual terminal or minimum speed set).
-  main valve forced control working (function on page 69).



38 Spraying boom (par. 10.7).

Section status:

-  Sections OFF - Main control OFF.
-  Sections ON - Main control OFF.
-  Sections ON - Main control ON.
-  Section closed by ISOBUS Virtual Terminal by automatic section control.



-  Green sections when some Seletrons of the same section are open and some are closed.



-  Symbol visible on section status:
-  All Flowtron valves are closed, one or more Flowtron valves in error status.
-  Some Flowtron valves are open, one or more Flowtron valves in error status.

10 JOB FUNCTIONS

10.1 Application rate temporary increase and decrease - Home page > Change target rate

Indicators visible in the Home screen:

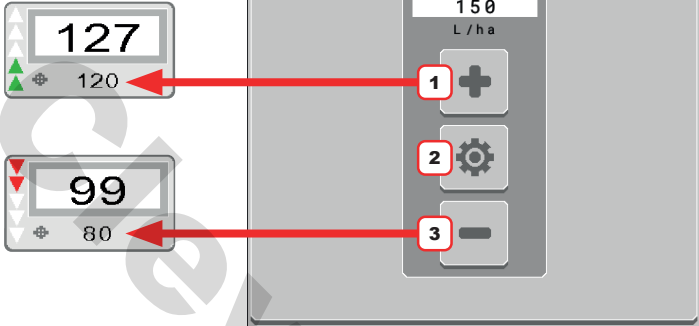


Fig. 116

Changes the target rate value for the treatment.

- 1 Temporarily increases the ▲ **Application rate** for the treatment, increasing by multiples of 10%, up to a maximum of +50%.
- 2 Goes back to the initial setup (see active preset, par. 8.1).
- 3 Temporarily decreases the ▼ **Application rate** for the treatment, increasing by multiples of 10%, up to a maximum of -50%.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

10.2 Temporary increase and decrease of pressure / application rate - Home > Change target rate

Changes the target rate value / duty cycle and the pressure for the treatment.

In auto rate mode the screen that allows regulating **Pressure** and **Application rate** is displayed (par. 10.5 Home > Automatic functions).

In manual application rate mode the screen that allows regulating **Pressure** and **Duty cycle** is displayed (par. 10.5 Home > Automatic functions).

10.2.1 Application rate: item enabled with automatic regulation ON

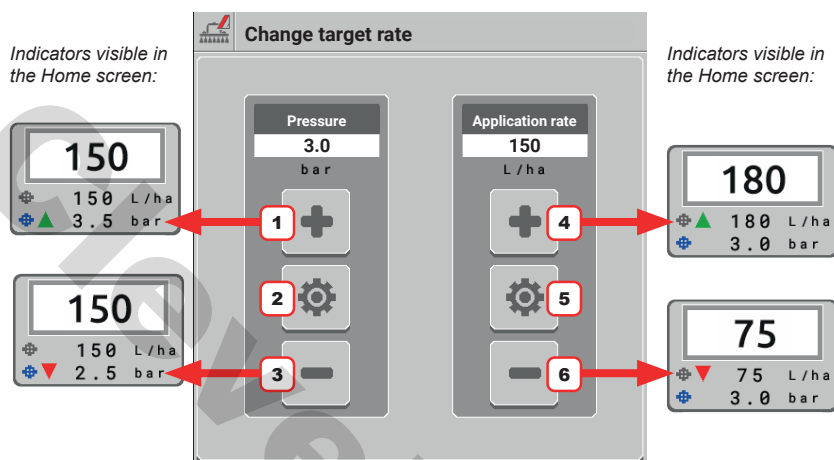


Fig. 117

- 1 Temporarily increases ▲ **Pressure** for the treatment.
- 2 Goes back to the initial setup (see active preset, par. 8.2).
- 3 Temporarily decreases ▼ **Pressure** for the treatment.
- 4 Temporarily increases ▲ **Application rate** for the treatment.
- 5 Goes back to the initial setup (see active preset, par. 8.2).
- 6 Temporarily decreases ▼ **Application rate** for the treatment.

10.2.2 Duty cycle: item enabled with automatic regulation OFF

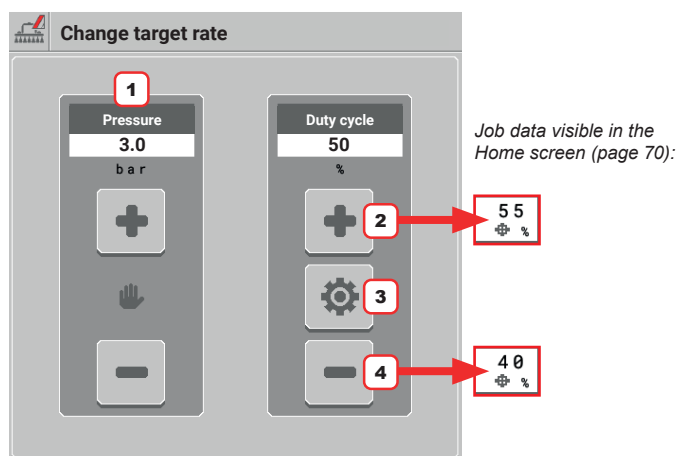


Fig. 118

- 1 In this mode it is possible to manually change the pressure in the hydraulic circuit by directly using the regulating valve.
+ : Increases **Pressure** value
- : Decreases **Pressure** value.

- 2 Temporarily increases the **Duty cycle** for the treatment.
- 3 Goes back to the initial setup 50%.
- 4 Temporarily decreases the **Duty cycle** for the treatment.

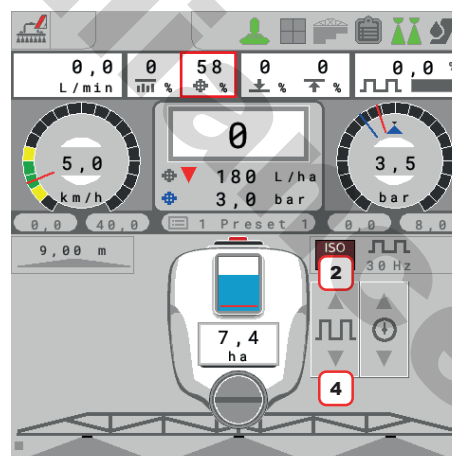


Fig. 119

10.3 "HOME" screen > menu selection buttons

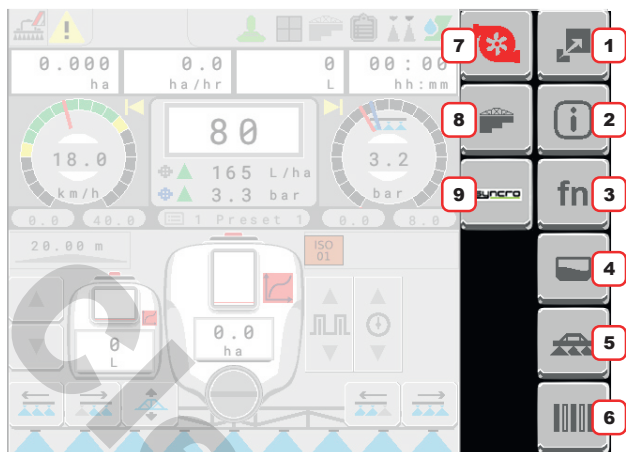


Fig. 120

1 Data and settings (chap. 8)

2 Displays job information / Alarms (par. 10.4)

3 automatic functions (par. 10.5)

4 Tank filling management (par. 10.6)

5 Main control ON / OFF (par. 10.7) Control conditions



6 Seletron manual control (page 94)



6 Flowtron manual control (par. 10.9)

7 Pump rate control type:

- Pump off
- Pump on with treatment OFF
- Pump on with treatment ON

8 Section control (button visible only if enabled in par. 8.13)

9 Management of Syncro ISOBUS functions (par. 10.12)



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

10.4 Home > Alarms

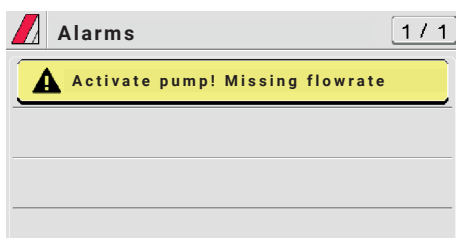


Fig. 121

From "Home" screen, press



This screen summarizes the alarm notifications active for the operators or the just-solved alarms.



For the procedure to be followed when an alarm occurs, please refer to par. 11.3.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

10.5 Home > Automatic functions

Indicators visible in the Home screen:

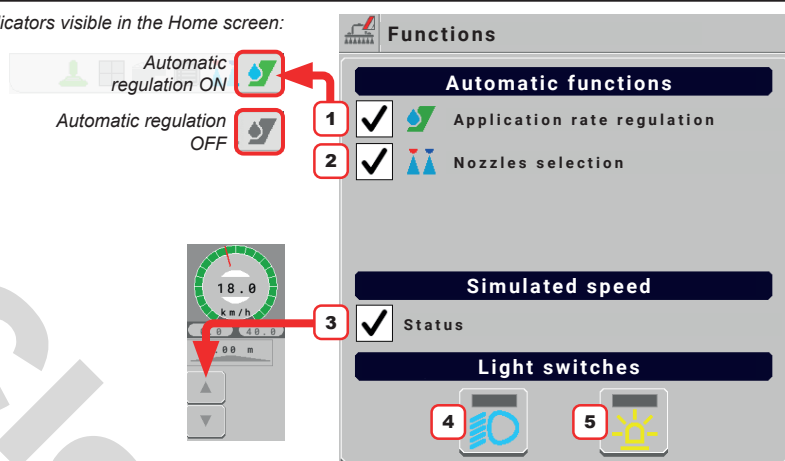


Fig. 122

From "Home" screen, press **fn**.

This screen allows enabling or disabling automatic functions, automatic nozzles selection, simulated speed and switching the crop spraying boom or flasher on or off.

SECTION
VALVEMODE
ONsele
TRONMODE
ON

1 Enables / disables automatic output regulation (DEFAULT: ON):

AUTOMATIC REGULATION ON

IBX100 keeps the set application rate constant regardless of the changes in speed and boom section status.

In this case the application rate can be set with the proper functions **Manage presets** (par. 8.2) - **Change target rate** (par. 10.1), or by loading a prescription map from the TC.

If necessary, during spraying, it is possible to intervene on output control (Auxiliary Input) to adjust output to crop conditions, increasing or decreasing momentarily the application rate up to $\pm 50\%$.

AUTOMATIC REGULATION OFF (MANUAL)

Rate manual regulation shall be carried out with the suitable command (Auxiliary Input).

flow
TRONMODE
ON

1 Enables / disables automatic output regulation (DEFAULT: ON):

AUTOMATIC REGULATION ON

IBX100 keeps the set application rate and pressure constant, regardless of boom section status, by changing the duty cycle (and thus the flowrate) on each Flowtron valve when the speed changes.

In this case the application rate and pressure can be set with the proper functions **Manage presets** (par. 8.2) - **Change target rate** (par. 10.1), or by loading a prescription map from the TC (application rate only).

If necessary, during spraying, it is possible to act on output controls (Auxiliary Input) to adjust output to crop conditions, increasing or decreasing momentarily the application rate and pressure up to $\pm 50\%$.

AUTOMATIC REGULATION OFF (MANUAL)

Regulations of application rate (duty cycle) and pressure must be performed manually with:

- Auxiliary Input, using the proper control available.
- Keys to change pressure and application rate (par. 10.2.1).
- Keys available in the HOME page (par. 9.1).

2 Enables / disables automatic nozzle selection on all spraying points (par. 10.5.1).

3 allows enabling / disabling speed simulation (DEFAULT: OFF).

The simulation allows carrying out regulation tests with stopped machine (default preset at 18 km/h - 11 mph) (par. 8.9).

4 - 5 Allows turning on/off the installed light switches (DEFAULT: OFF). Press button 4 to turn on/off the crop spraying boom and button 5 for the flasher.

Lighting OFF.

Lighting ON.

Refer to the installation diagram for correct use of the wiring pins marked as **LIGHT**: pin 1 for the flasher and pin 2 for the boom light.

10.5.1 Home > Automatic functions > Nozzles selection

Enables / disables automatic nozzle selection on all spraying points (DEFAULT: ON).

AUTOMATIC NOZZLE SELECTION

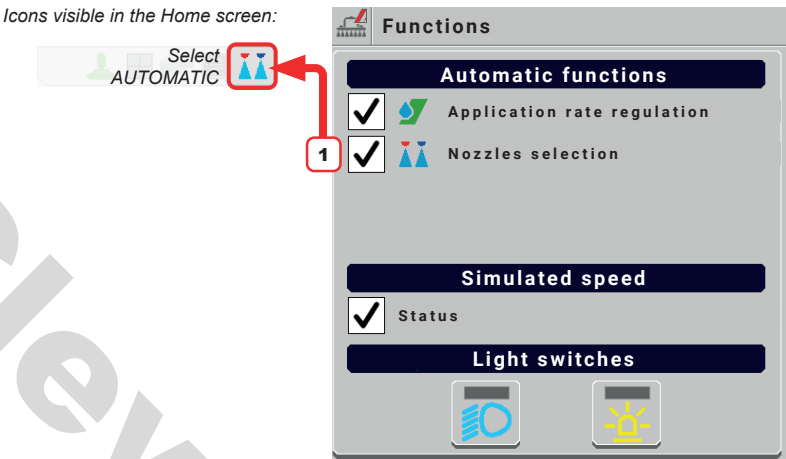


Fig. 123

1 When spraying starts (general command ON), VT automatically checks the flowrates: if the necessary conditions are not met, VT signals this with the screen of Fig. 125.

MANUAL NOZZLE SELECTION

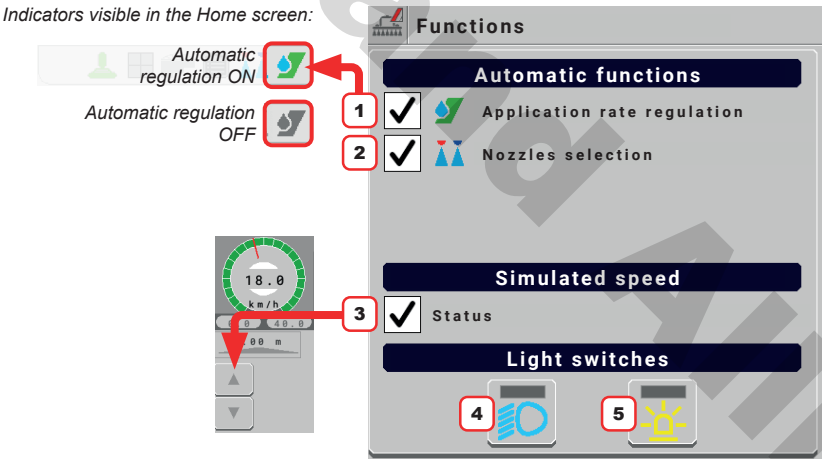


Fig. 124

2 - 3 allows to select manually nozzles in use on the spraying points. The number of nozzles displayed will vary according to the spraying point setting (par. 7.1). Press the button next to the nozzle to enable or disable the corresponding nozzle.

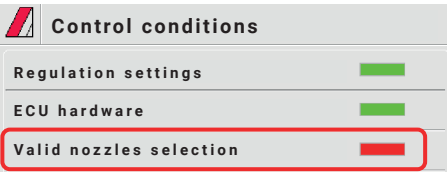


Fig. 125

Correct setup

Wrong setup

This screen is displayed only in case of blocking error during the treatment, in this case in the presence of a wrong nozzles selection.

CONTINUES

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

OPERATION OF AUTOMATIC NOZZLES SELECTION

(SELETRON MODE AND SECTION VALVES WITH DUAL BOOM MODE)

In a traditional system, the farming machine speed limits depend on the minimum and maximum pressure of the nozzle in use and on the desired spray rate. For instance, if we were spraying 100 l/ha - 10.5 gpa with a violet evenfan nozzle ISO110025, the minimum operating speed shall be 6.9 km/h - 4.3 mph (corresponding to a pressure of 1 bar- 15 psi) while maximum speed shall be 13.9 km/h 8.6 mph (corresponding to a pressure of 4 bars- 60 psi). This operation field can be restrictive for the features of both crop to be treated and machine.

Operation field of possible combinations of ISO11002 and ISO110025 nozzles
 When automatic nozzles selection mode is enabled, the VT (using Seletron devices) will enable the nozzle, or combination of nozzles, according to the set driving speed and application rate.
 This system allows to widen the machine operating range, i.e. in the above instance, using ISO11002 (**A** - yellow) and ISO110025 (**B** - violet) nozzles, that work correctly at a speed from 5.5 km/h - 3.4 mph to 24.9 km/h - 15.5 mph.

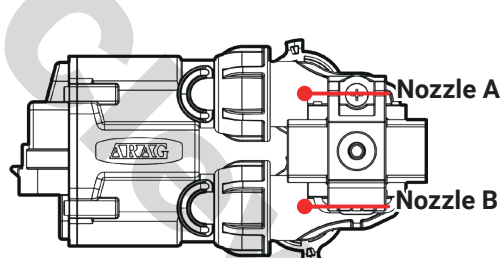


Fig. 126

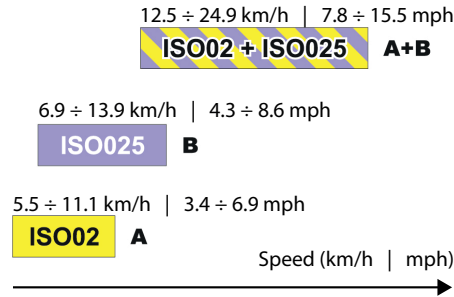


Fig. 127

According to the set data and those detected by the sensors, the monitor selects the suitable nozzle configuration constantly checking that:

- spraying pressure remains within the range selected for each single nozzle at all times.
- if more than one nozzles configuration is possible, the configuration where working pressure is as close as possible to the working range of the nozzle is selected.
- required number of nozzle changes is as low as possible.

When setting a treatment, make sure to couple compatible nozzles.

For example:

- **Compatible nozzles:** the flowrate at 1 bar - 14 psi of the ISO025 nozzle is LOWER than the flowrate at 5 bar - 73 psi of the ISO02 nozzle (Fig. 128).
- **NON-compatible nozzles:** the flowrate at 1 bar - 14 psi of the ISO05 nozzle is HIGHER than the flowrate at 5 bar - 73 psi of the ISO02 nozzle (Fig. 129).

In the same way, the overall flowrate of both nozzles at MINIMUM pressure shall be LOWER than the flowrate of the high flowrate nozzle at MAXIMUM pressure.

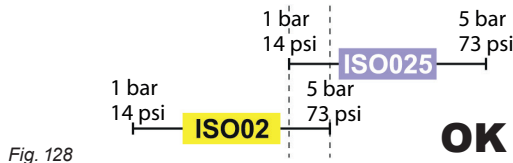


Fig. 128

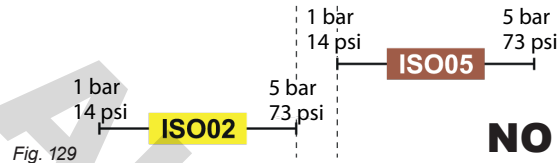


Fig. 129

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

10.6 Home > Tank

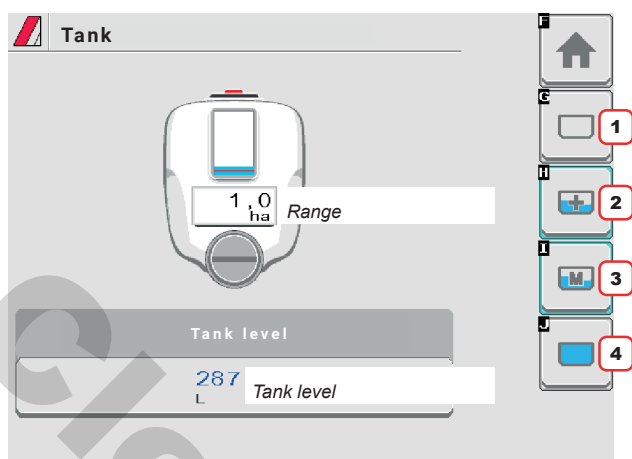


Fig. 130

From "Home" screen, press .

Manages tank filling. The management mode will change according to the device set for the tank level reading (chap. 7.1).

1 Press to set tank level to empty.

2 Press to set the quantity of liquid filled in the **tank**.

3 Press to set the quantity of liquid **present** in the tank.

4 Press to set tank level to the maximum level.

• **Tank level source: Single tank level**

The computer displays the real quantity of fluid inside the tank, detected by the level sensor.

• **Tank level source: Manual / Filling flowmeter**

The computer calculates the quantity of fluid inside the tank (by processing the job data), and allows to enable several manual procedures:

- Level reset.
- Filled quantity manual setup.
- Tank level manual setting.
- Complete filling, according to the tank capacity.

LEVEL RESET

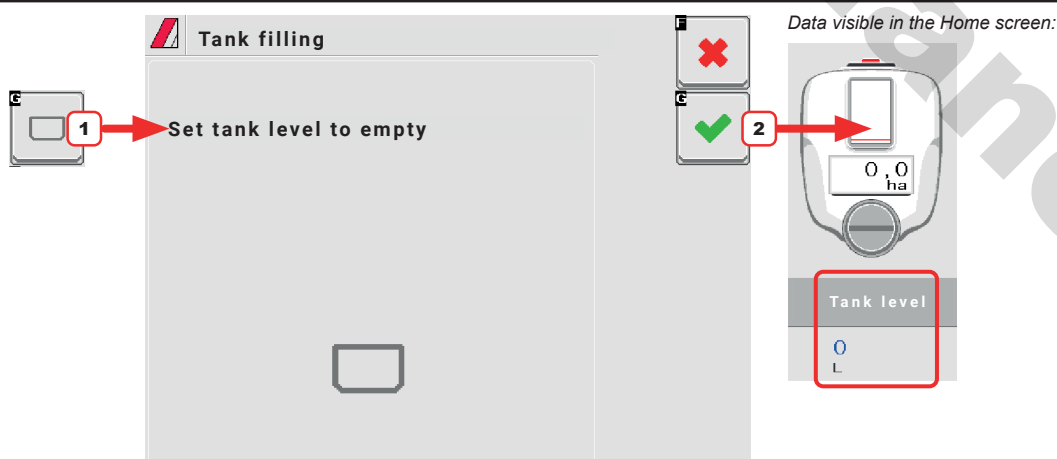


Fig. 131

1 Press to access the tank level reset page.

2 Press to set the quantity of liquid filled in the **tank**.

FILLED QUANTITY MANUAL SETUP

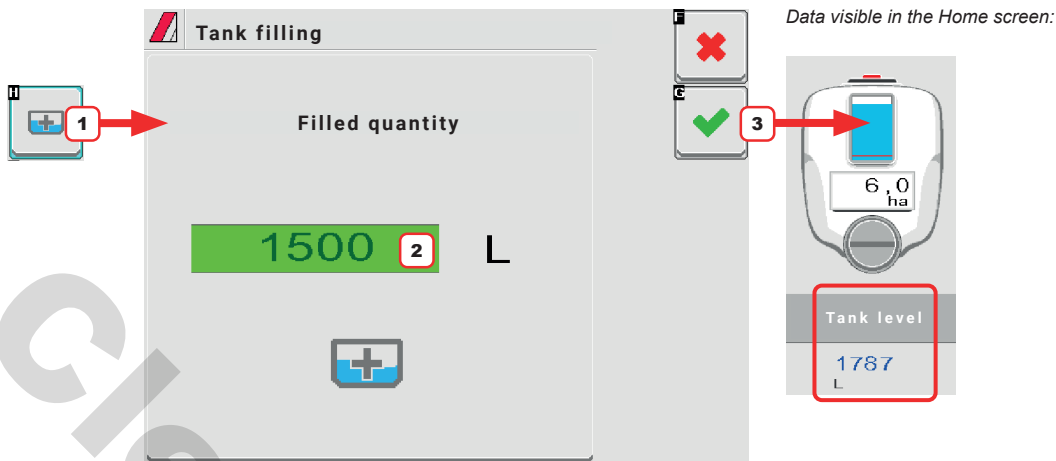


Fig. 132

1 Press to set the quantity of liquid in the tank.

2 - 3 Set the value and confirm.
The display will show the tank level.



It is not possible to set values higher than tank total capacity.

TANK LEVEL MANUAL SETTING

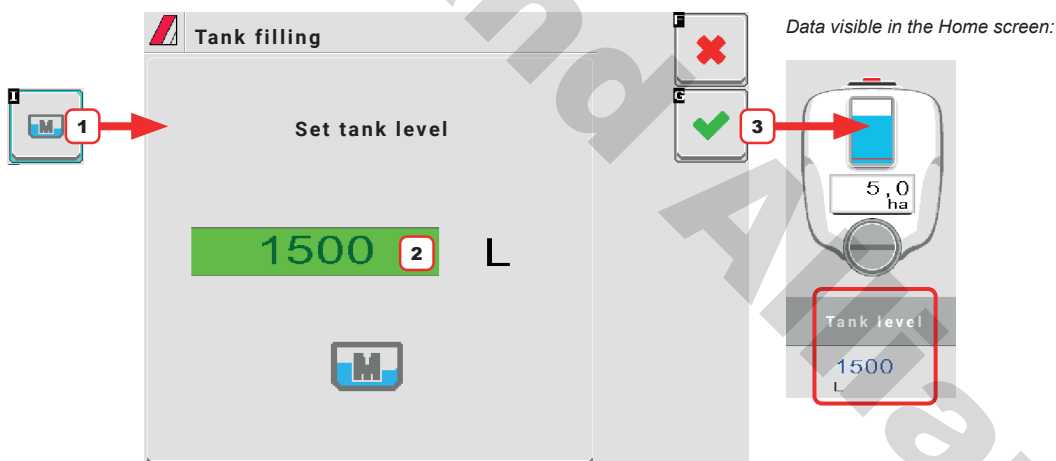


Fig. 133

1 Press to set the quantity of liquid in the tank.

2 - 3 Set the value and confirm.
The display will show the tank level.



It is not possible to set values higher than tank total capacity.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

TANK FILLING

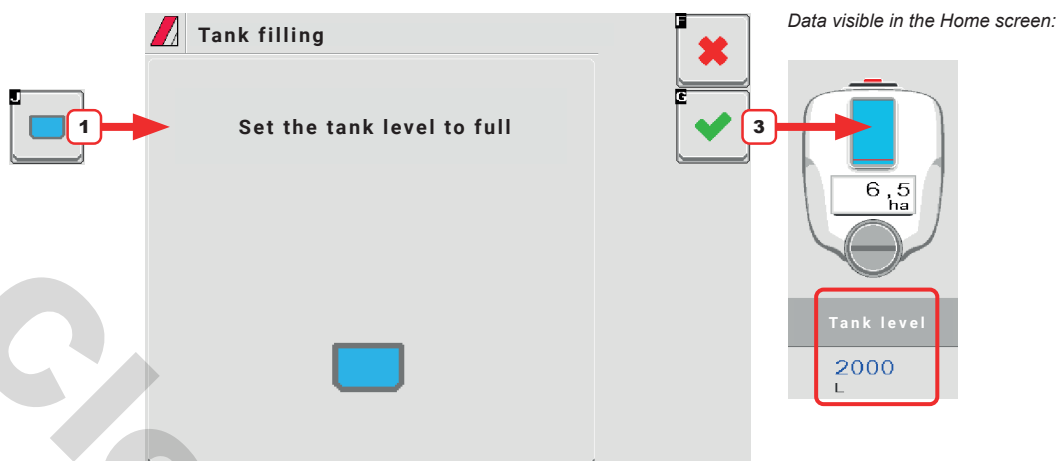


Fig. 134

1 - 2 Press to set tank level to the maximum level.

The display will show the tank as full: its total capacity has been set during advanced setup (par. 7.9).

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

10.7 Main control and section management

10.7.1 Control settings WITH Auxiliary Input

Refer to the user's manual supplied with the device.

Auxiliary Input ON →

Fig. 135

Fig. 136

ARAG Auxiliary Input control system is not compulsory on all systems, and must thus be ordered separately. Some VTs allow controlling section valves directly from monitor touch-screen panel.

To display the necessary controls on the touch-screen panel, your auxiliary input must nevertheless be set (par. 7.13.1).



If the hydraulic valve management is handled by IBX100 ISOBUS HYDRAULIC, select zero as HYD value.

10.7.2 Control settings WITHOUT Auxiliary Input

Auxiliary Input OFF →

Fig. 137

Fig. 138

If no Auxiliary Input is present, the valves are controlled (control unit and/or hydraulic valves) directly through the monitor touch-screen panel (keys in the bottom part of the HOME page).

To display the necessary controls on the touch-screen panel, your auxiliary input must nevertheless be set (par. 7.13.1).



If the hydraulic valve management is handled by IBX100 ISOBUS HYDRAULIC, select zero as HYD value.

CONTINUES



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

MAIN CONTROL FROM TOUCH-SCREEN PANEL

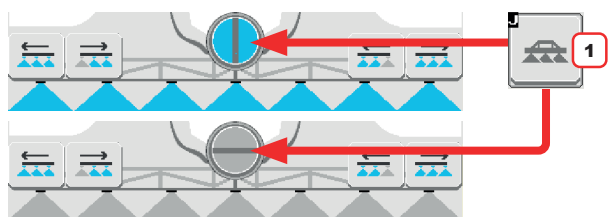
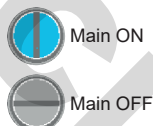
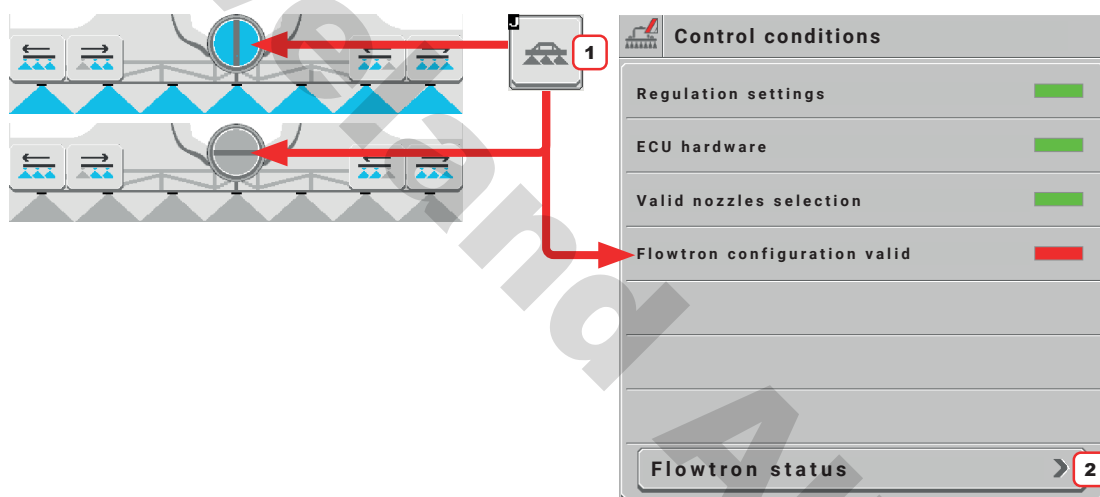


Fig. 139

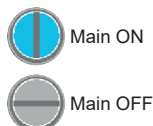
1 Press the button to enable or disable the main control.



flowTRON MODE
ON



1 Press the button to enable or disable the main control.



This screen is displayed only in case of blocking error during the treatment, in this case in the presence of a wrong Flowtron configuration.

2 Press **Flowtron status** to access the Flowtron diagnostics page (par. 8.11)

CONTINUES



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

SECTION DIRECT CONTROL FROM TOUCH-SCREEN PANEL

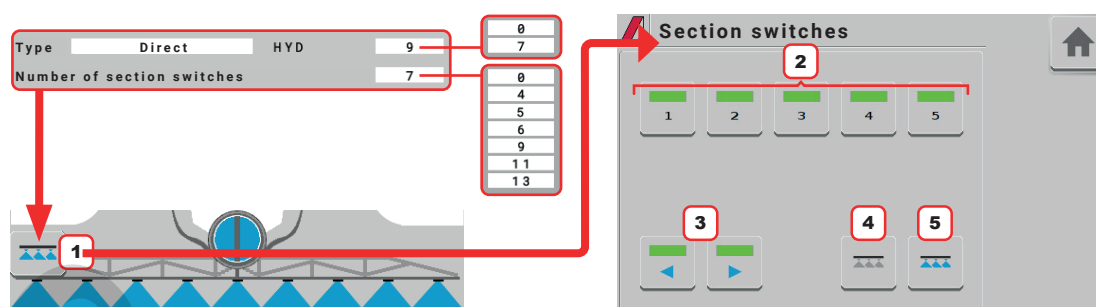


Fig. 140

1 Press button to display the **Section switches** page.

2 Press to open/close the relevant section:

 Section ON + Main control ON (symbols displayed in the Home screen ).

 Section ON + Main control OFF (symbols displayed in the Home screen ).

 Section OFF (symbols displayed in the Home screen ).

3 Press to open/close the relevant end nozzle:

 End nozzle ON + Main control ON (symbols displayed in the Home screen ).

 End nozzle ON + Main control OFF (symbols displayed in the Home screen ).

 End nozzle OFF (symbols displayed in the Home screen ).

4 Press to close all boom sections: symbols displayed in the Home screen .

5 Press to open all boom sections:

Section ON + Main control ON (symbols displayed in the Home screen .

Section ON + Main control OFF (symbols displayed in the Home screen .

CONTINUES



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

SECTION SEQUENTIAL CONTROL FROM TOUCH-SCREEN PANEL

Type	Sequenziali	HYD	9	0
Using center section switch	YES			NO

Type	ARAG Joystick 1	HYD	9	0
				7

Type	ARAG Joystick 2	HYD	9	0
Number of pages	2			1



Fig. 141

Open section

Closed section

Below are some examples of button use.



Fig. 142

6a With sections closed and main valve open, press button to open sections to the left, starting from the first available on the right. Each press of the key corresponds to the opening of a section.

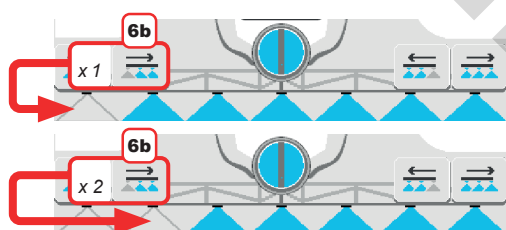


Fig. 143

6b With sections open and main valve open, press button to close sections to the right, starting from the first available on the left. Each press of the key corresponds to the closing of a section.

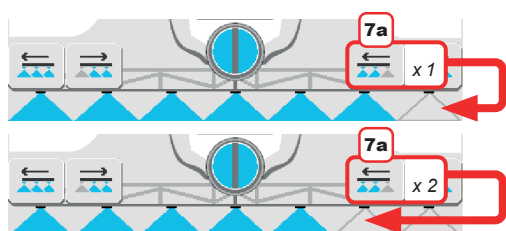


Fig. 144

7a With sections open and main valve open, press button to close sections to the left, starting from the first available on the right. Each press of the key corresponds to the closing of a section.

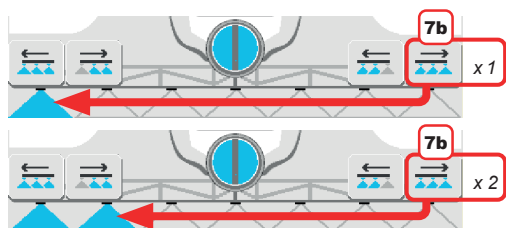


Fig. 145

7b With sections closed and main valve open, press button to open sections to the right, starting from the first available on the left. Each press of the key corresponds to the opening of a section.

CONTINUES

HYDRAULIC COMANDS FROM TOUCH-SCREEN PANEL

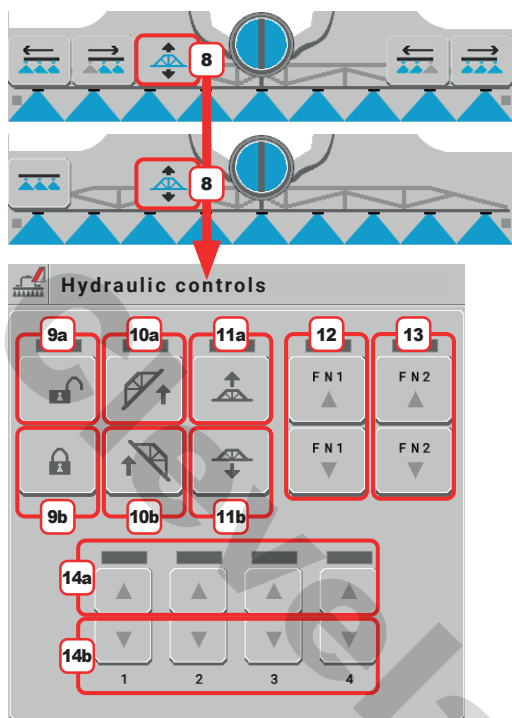


Fig. 146

8 Press button to display the **Hydraulic controls** page.

9a Boom release.

9b Boom lock.

10a Boom counter-clockwise leveling.

10b Boom clockwise leveling.

11a Boom height increase.

11b Boom height decrease.

12 FN1 functions grouping controls (par. 7.10).

13 FN2 functions grouping controls (par. 7.10).

14a Boom section movement: opening.

14b Boom section movement: closing.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

10.7.3 ARAG Joystick1: ARAG default functions

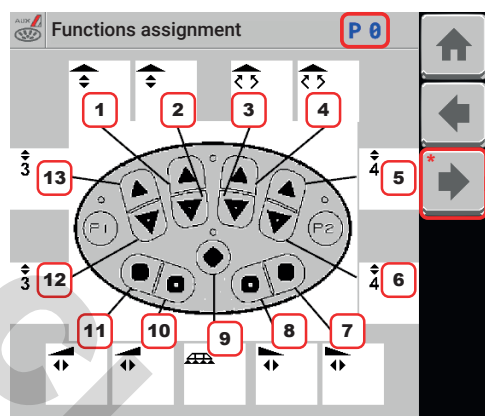


Fig. 147

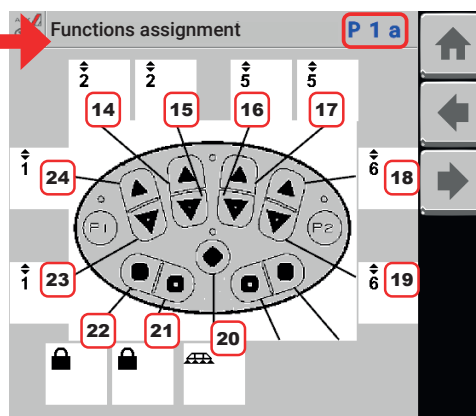


Fig. 148

*Press keys to scroll pages.



The functions described below are illustrative.

The following contents may NOT be updated and may differ from the product in your possession.

1 Boom lifting.

2 Boom lowering.

3 Boom clockwise leveling.

4 Boom counter-clockwise leveling.

5 Boom section number 4 lifting.

6 Boom section number 4 lowering.

7 Right sequential 2.

8 Left sequential 2.

9 Main valve switch.

10 Right sequential 1.

11 Left sequential 1.

12 Boom section number 3 lowering.

13 Boom section number 3 lifting.

14 Boom section number 2 lifting.

15 Boom section number 2 lowering.

16 Boom section number 5 lowering.

17 Boom section number 5 lifting.

18 Boom section number 6 lifting.

19 Boom section number 6 lowering.

20 Main valve switch.

21 Boom lock.

22 Boom release.

23 Boom section number 1 lowering.

24 Boom section number 1 lifting.

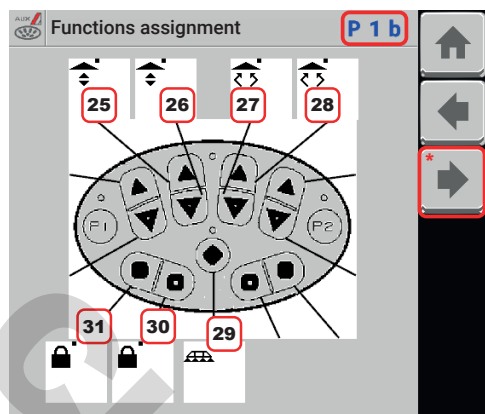


Fig. 149

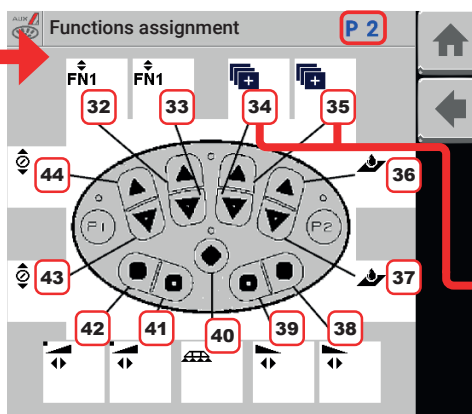
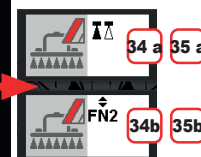


Fig. 150

*Press   keys to scroll pages.



25 Boom lifting.

26 Boom lowering.

27 Boom clockwise leveling.

28 Boom counter-clockwise leveling.

29 Main valve switch.

30 Boom lock.

31 Boom release.

32 FN1 functions ON.

33 FN1 functions OFF.

34 - 35 Press to select the function you want to use:

34a - 35a Nozzle selection AUTO/MAN switch.

34b - 35b FN2 functions ON/OFF

36 AUTO switch.

37 MAN Application rate regulation.

38 Right sequential 2.

39 Left sequential 2.

40 Main valve switch.

41 Right sequential 1.

42 Left sequential 1.

43 Decrease of pressure / Duty cycle (Flowtron mode).

44 Increase of pressure / Duty cycle (Flowtron mode).

10.7.4 ARAG Joystick2: ARAG default functions



The functions described below are illustrative.

The following contents may NOT be updated and may differ from the product in your possession.

ARAG JOYSTICK2: SINGLE PAGE

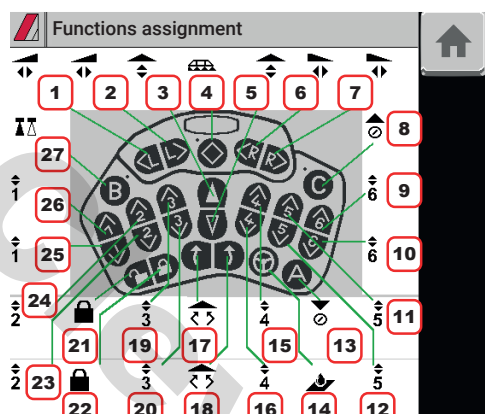


Fig. 151

- 1 Left sequential 1.
- 2 Right sequential 1.
- 3 Boom lifting.
- 4 Main valve switch.
- 5 Boom lowering.
- 6 Left sequential 2.
- 7 Right sequential 2.
- 8 Increase of pressure / Duty cycle (Flowtron mode).
- 9 Boom section number 6 lifting.
- 10 Boom section number 6 lowering.
- 11 Boom section number 5 lifting.
- 12 Boom section number 5 lowering.
- 13 Decrease of pressure / Duty cycle (Flowtron mode).
- 14 Application rate regulation AUTO/MAN switch.
- 15 Boom section number 4 lifting.
- 16 Boom section number 4 lowering.
- 17 Boom clockwise leveling.
- 18 Boom counter-clockwise leveling.
- 19 Boom section number 3 lifting.
- 20 Boom section number 3 lowering.
- 21 Boom release.
- 22 Boom lock.
- 23 Boom section number 2 lowering.
- 24 Boom section number 2 lifting.
- 25 Boom section number 1 lowering.
- 26 Boom section number 1 lifting.
- 27 Nozzle selection AUTO/MAN switch.

ARAG JOYSTICK2: MULTIPLE PAGES

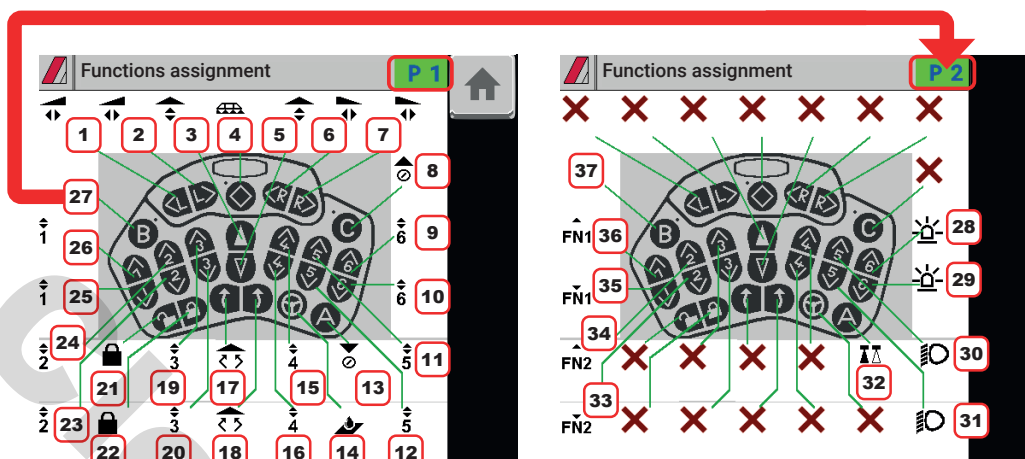


Fig. 152

Fig. 153

Multiple pages are working only if in menu Home > Data and settings > Implement settings > System configurations > Auxiliary inputs (par. 7.13.1 on page 28) and in the OP setup of Joystick2 (refer to the relevant manual), value 2 is set to item Number of pages.

1 Left sequential 1.

2 Right sequential 1.

3 Boom lifting.

4 Main valve switch.

5 Boom lowering.

6 Left sequential 2.

7 Right sequential 2.

8 Increase of pressure / Duty cycle (Flowtron mode).

9 Boom section number 6 lifting.

10 Boom section number 6 lowering.

11 Boom section number 5 lifting.

12 Boom section number 5 lowering.

13 Decrease of pressure / Duty cycle (Flowtron mode).

14 Application rate regulation AUTO/MAN switch.

15 Boom section number 4 lifting.

16 Boom section number 4 lowering.

17 Boom clockwise leveling.

18 Boom counter-clockwise leveling.

19 Boom section number 3 lifting.

20 Boom section number 3 lowering.

21 Boom release.

22 Boom lock.

23 Boom section number 2 lowering.

24 Boom section number 2 lifting.

25 Boom section number 1 lowering.

26 Boom section number 1 lifting.

27 The page changes every time it is pressed.

CONTINUES

28 Flasher ON.

29 Flasher OFF.

30 Boom lighting ON.

31 Boom lighting OFF.

32 Nozzle selection AUTO/MAN switch.

33 FN2 functions OFF.

34 FN2 functions ON.

35 FN1 functions OFF.

36 FN1 functions ON.

37 The page changes every time it is pressed.



10.8 Home > Seletron manual control



Fig. 154

It allows you to manage each individual Seletron by turning it off or on manually.

From "Home" screen, press



Press on the square related to the Seletron you wish to activate/deactivate:
Blue square = Seletron working
Yellow square = Seletron NOT working

Each press of the square changes the Seletron status

Function available only if the menu:
Data and settings > User preferences > Home screen optional buttons > Section control activation is active.



10.9 Home > Flowtron manual control

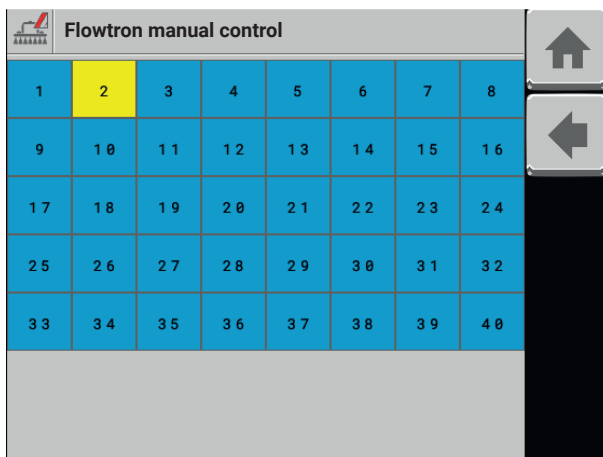


Fig. 155

It allows you to manage each individual Flowtron by turning it off or on manually.

From "Home" screen, press



Press on the square related to the Flowtron you wish to activate or deactivate:

Blue square = Flowtron working
Yellow square = Flowtron NOT working

Each press of the square changes the Flowtron status

Function available only if the menu:
Data and settings > User preferences > Home page buttons > Section control activation / Flowtron manual control is active.



Goes back to main screen



Saves the changes to current page



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Scrolls the pages of a menu (next page)



Quits without confirming the changes



Saves the changes

10.10 Home > Pump rate control type

Allows rate control to be managed through the pump.



From "Home" screen, press

- Pump off
- Pump on with treatment OFF
- Pump on with treatment ON

Function available only if the menu:

Data and settings > Implement settings > Basic settings > Rate control type > Pump control.

10.11 Home > Section control

Enables / Disables automatic section control.



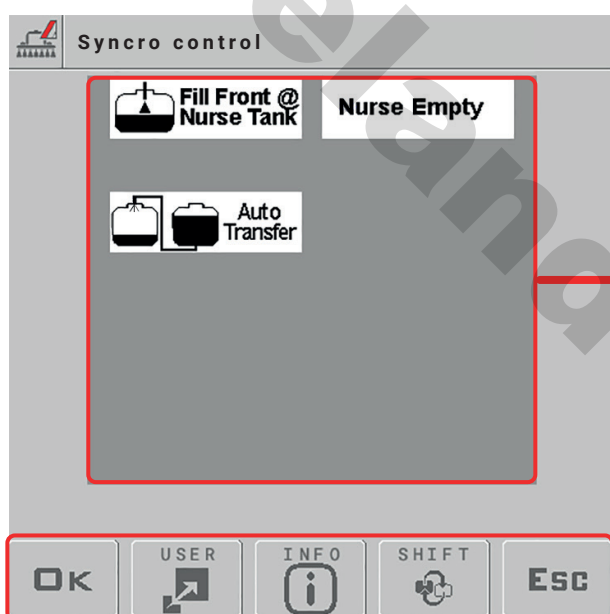
From "Home" screen, press

Each time the button is pressed, the function is activated or deactivated.

Function available only if the menus are set:

Data and settings > Implement settings > System configurations > Task controller > Section control activated.

Data and settings > User preferences > Home screen optional buttons > Section control activation activated.

10.12 Home > Syncro control

Please, refer to the relevant instruction manual (download area of the site "www.aragnet.com").

Fig. 156

The user can access the functions of the connected Syncro ISOBUS: execute available commands, view info and alarms.

The user CANNOT program the Syncro.



From "Home" screen, press



This page is not available to the remote connection.

ALARM DISPLAYED WHEN A COMMAND IS NOT ACCESSIBLE FROM VT: USE ISOBUS SYNCRO.

To make the regulation press this area



in the Home page and follow the instructions in par. 9.1.



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Quits without confirming the changes



Saves the changes to current page



Scrolls the pages of a menu (next page)



Saves the changes

10.13 End nozzles

"BUFFER ZONE" FUNCTION ENABLED - ONLY FOR SELETRON SYSTEM

Some spraying modes entail special areas called "Buffer zones", where spraying must be reduced or absent. Besides the normally used nozzles, special nozzles must be installed (e.g.: ASJ AOC), which reduce the jet or the drift effect at boom end sides. To connect the "Buffer" nozzles, proceed as follows:
LH "Buffer" nozzle (boom view from back), 1st boom nozzle, 2nd boom nozzle,----> No. of boom nozzle, RH "Buffer" nozzle (boom view from back).

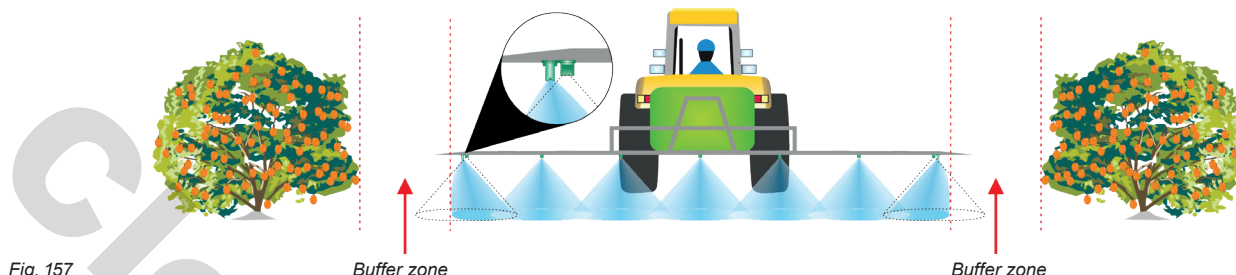


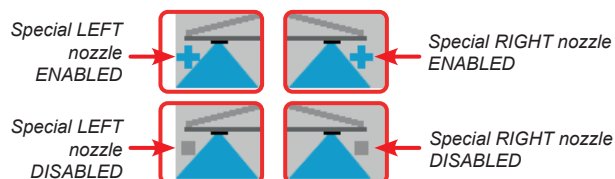
Fig. 157

Buffer zone

Buffer zone

By enabling the function in implement basic settings (chap. 7) standard nozzles or special nozzles can be alternately selected. Nozzle selection modes are variable (they vary based on the Auxiliary Input connected to the VT). Following are some examples.

**END NOZZLES:
CORRESPONDING ICON ON "HOME" SCREEN**



EXAMPLE OF NOZZLE SELECTION THROUGH THE SWITCH BOX

• LH special nozzle enabling (Boom view from back)



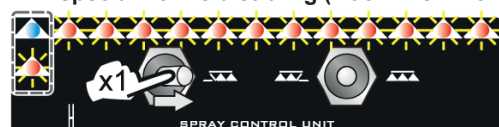
Press switch to the left once to enable the LH "Buffer zone" nozzle and to close the standard one. The LED on the left flashes alternately.

• RH special nozzle enabling (Boom view from back)



Press switch to the right once to enable the RH "Buffer zone" nozzle and to close the standard one. The LED on the right flashes alternately.

• LH special nozzle disabling (Boom view from back)



Press switch to the right once to disable the LH "Buffer zone" nozzle and to enable the standard one. The LED on the left no longer flashes and is steady.

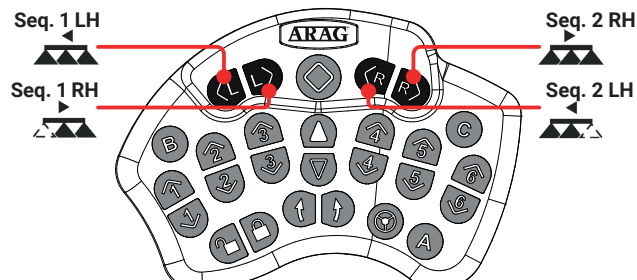
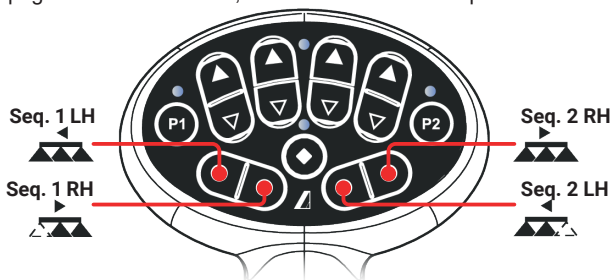
• RH special nozzle disabling (Boom view from back)



Press switch to the left once to disable the RH "Buffer zone" nozzle and to enable the standard one. The LED on the right no longer flashes and is steady.

EXAMPLE OF NOZZLE SELECTION THROUGH THE JOYSTICK

The operation is similar to the one just described for the sequential switch box. The functions associated to nozzle enabling are included in the "Main" page. For further details, refer to the instructions provided with the joystick.



"FENCE NOZZLE" function enabled

This function entails the assembly of specific nozzles at boom end; these nozzles allow spraying areas that cannot be reached by the traditional nozzles due to the boom size (i.e. fences). The enabling of such nozzles does not stop the output from the other boom nozzles.

The connection and pairing procedure of seletron devices and "Fence" nozzles is the following: at first connect all boom nozzles, then the left "Fence" nozzle and the right "Fence" nozzle.

By setting the reference flowrate and pressure for the "Fence" nozzle, it is possible to control the output of all nozzles based on the set spray rate. The width covered by the fence nozzle is not included in the calculation of the applied area.

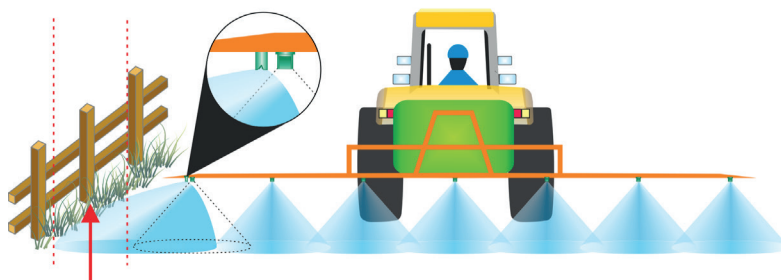
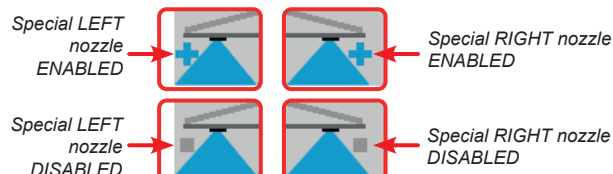


Fig. 158

Fence zone

By activating the function in the basic settings of the implement (chap. 7) it is possible to select normal or special nozzles: the activation of the "Fence" nozzles does not interrupt the delivery of the other boom nozzles. Nozzle selection modes are variable (they vary based on the Auxiliary Input connected to the VT). Following are some examples.

END NOZZLES: CORRESPONDING ICON ON "HOME" SCREEN



EXAMPLE OF NOZZLE SELECTION THROUGH THE SWITCH BOX

• LH special nozzle enabling (Boom view from back)



Press switch to the left once to enable the LH "Fence" nozzle. The LED on the left flashes alternately.

• RH special nozzle enabling (Boom view from back)



Press switch to the right once to enable the RH "Fence" nozzle. The LED on the right flashes alternately.

• LH special nozzle disabling (Boom view from back)



Press switch to the right once to disable the LH "Fence" nozzle. The LED on the left no longer flashes and is steady.

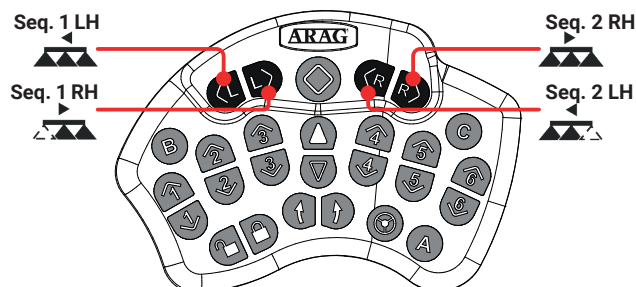
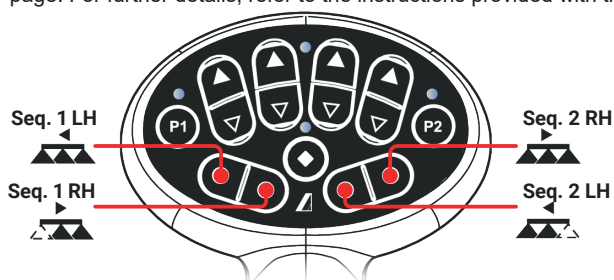
• RH special nozzle disabling (Boom view from back)



Press switch to the left once to disable the RH "Fence" nozzle. The LED on the right no longer flashes and is steady.

EXAMPLE OF NOZZLE SELECTION THROUGH THE JOYSTICK

The operation is similar to the one just described for the sequential switch box. The functions associated to nozzle enabling are included in the "Main" page. For further details, refer to the instructions provided with the joystick.



10.14 SELETRON REPLACEMENT

10.14.1 Preliminary Operations



TO AVOID ACCIDENTS, EMPTY THE TANK AND MAKE SURE THAT THE ENTIRE SYSTEM IS COMPLETELY FREE FROM CHEMICALS.

IMPORTANT

Operate main valve and section controls (ON position) and carry out the indicated settings:

General control ON + Open sections + Active nozzles + **MANUAL** nozzle selection + **MANUAL** section management

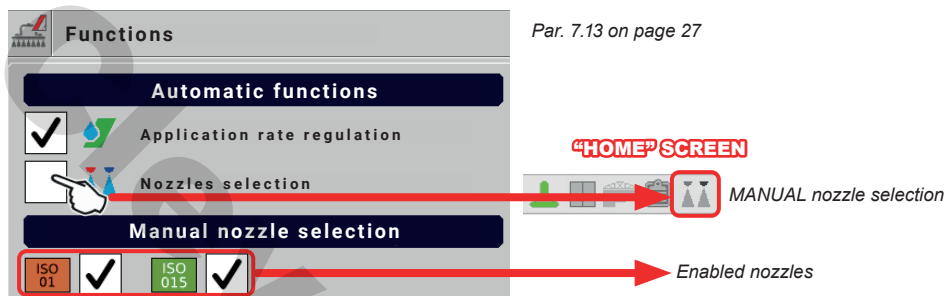


Fig. 159

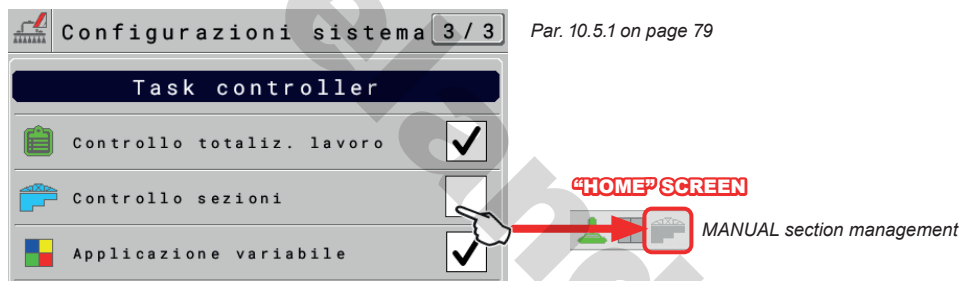


Fig. 160

10.14.2 Replacement procedure

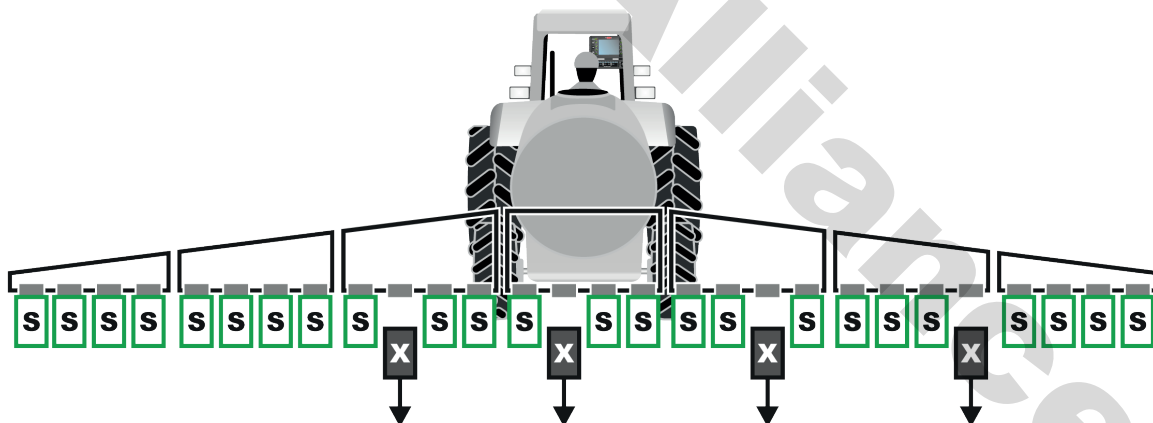
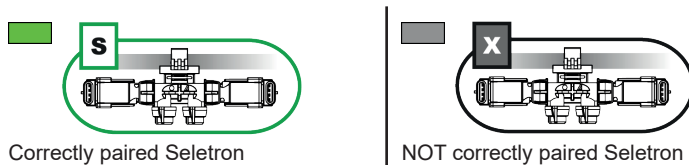


Fig. 161



- ONLY DISCONNECT THE SELETRON DEVICES THAT WERE NOT CORRECTLY PAIRED (X Fig. 161).

CONTINUES >>>

Connect the new Seletron devices:  , IN A SEQUENCE FROM LEFT TO RIGHT (when looking at the boom from behind).



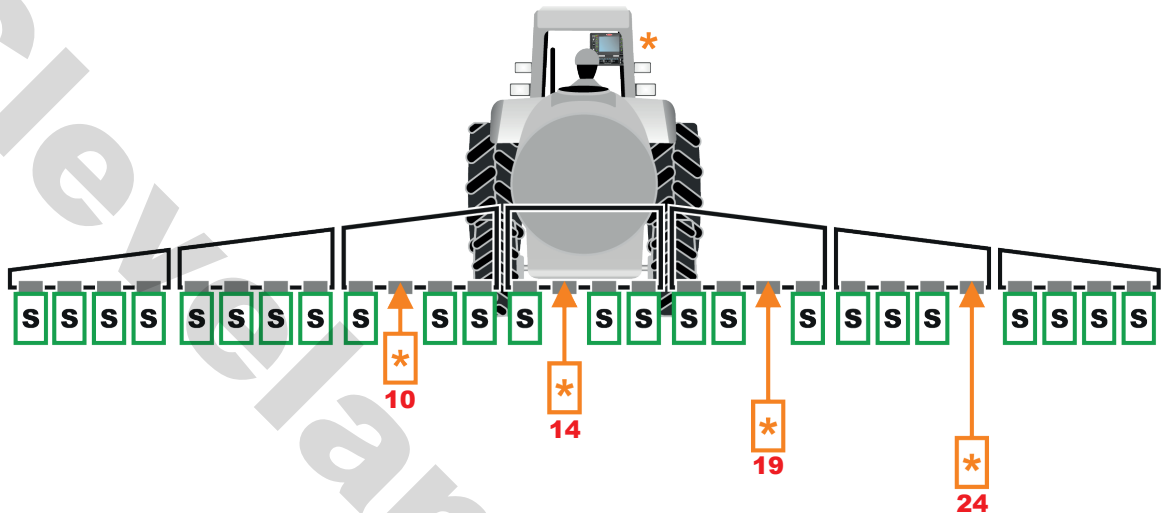
AFTER CONNECTING THE SELETRON, WAIT FOR APPROX. 4 SECONDS, THE MONITOR MAKES AN ACOUSTIC SIGNAL AND DISPLAYS THE GREEN SYMBOL OF THE CONNECTED SELETRON.
ONLY NOW IS IT POSSIBLE TO PROCEED WITH THE INSTALLATION OF THE FOLLOWING SELETRON.

Tighten each Seletron onto the relevant nozzle holder, using a torque wrench and a tightening torque of 4.5 Nm / 40 Inch/lbs. Alternatively, if you do not have a torque wrench, tighten the Seletron devices by hand and make sure there are no leaks.

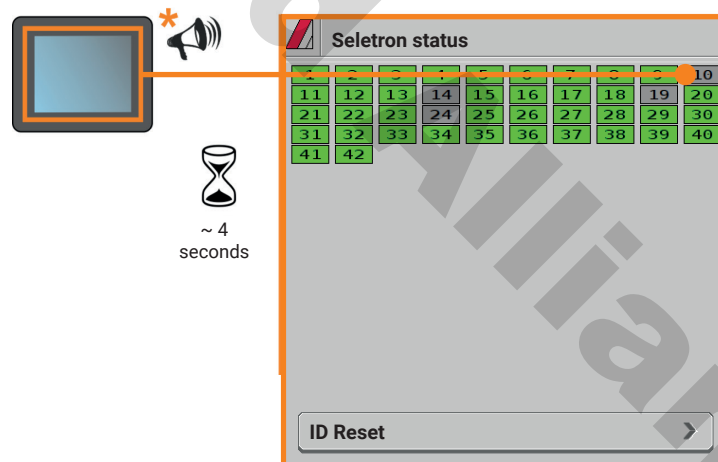


ARAG IS NOT LIABLE FOR ANY DAMAGE OR MALFUNCTION CAUSED BY THE USE OF TOOLS DIFFERENT FROM THE ONES INDICATED ABOVE.

Fig. 162



SELETRON CONNECTION SEQUENCE: 10, 14, 19 AND 24



Goes back to main screen



Goes back to previous menu, or scrolls the pages of a menu (previous page)



Saves the changes to current page



Scrolls the pages of a menu (next page)



Quits without confirming the changes



Saves the changes

10.15 Replacing a CSD module or FLOWTRON valve

Should it become necessary to replace one or more FLOWTRON elements, proceed as follows:

- 1 Disconnect the main power supply to the system.
- 2 Remove the element to be replaced (CSD module or Flowtron valve).
- 3 Install the new element (CSD module or Flowtron valve) observing all precautions described in the corresponding manual.
- 4 Switch on the system and enter the diagnostics page **Data and settings > System > Flowtron status** (par. 8.11 on page 61).
- 5 Select menu **CSD Flowtron reset** and start the procedure (par. 8.11.2 on page 66): when the new device acquires its own address the diagnostics page displays the status change.
- 6 Wait until initialization is complete on the whole network.

	Goes back to main screen		Goes back to previous menu, or scrolls the pages of a menu (previous page)		Quits without confirming the changes
	Saves the changes to current page		Scrolls the pages of a menu (next page)		Saves the changes

11 MAINTENANCE / DIAGNOSTICS / REPAIRS

11.1 Cleaning rules

- Clean only with a soft wet cloth.
- DO NOT use aggressive detergents or products.
- DO NOT aim water jets directly at control unit.

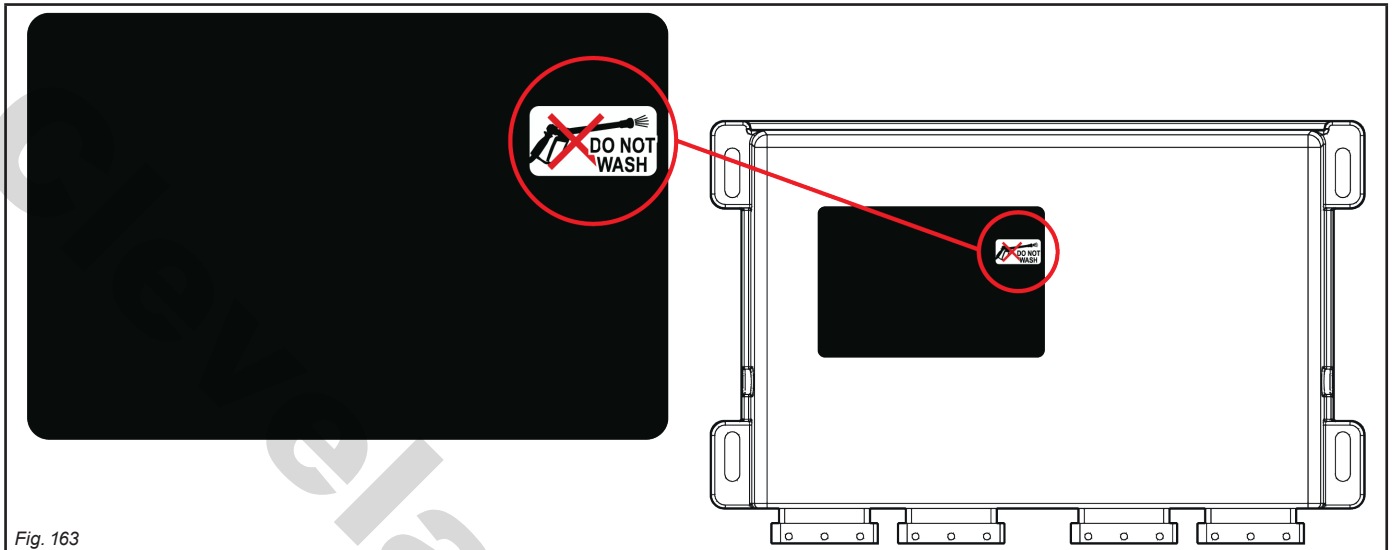
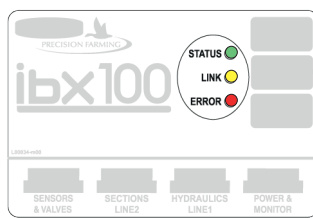


Fig. 163

11.2 LED status key



COLOR	
STATUS	green
LINK	yellow
ERROR	red

- **regular blinking** = constant blinking
- **periodical blinking** = series of blinks interrupted by a pause

Switching on Upon start-up, the control unit carries out the **LED switching on in a sequence**, as follows:
1 green LED - 2 yellow LED - 3 red LED
 Whole sequence duration: 2 seconds

- STATUS** ●
- **off**: control unit not powered
 - **steady on**: control unit operational
 - **1 periodic blink**: control unit initialization
 - **2 periodical blinks**: the control unit has been correctly initialized and is waiting for connection with Virtual Terminal
 - **3 periodical blinks**: OP loading
 - **4 periodical blinks**: ERROR - OP loading on Virtual Terminal failed
 - **5 periodical blinks**: SEVERE ERROR - internal flash drive formatting in progress

- LINK** ●
- **steady ON**: CAN-Bus communication lines operate regularly
 - **1 periodical blink**: error on CAN ISOBUS line
 - **2 periodical blinks**: error on CAN LINE 1 (Seletron / FLOWTRON)
 - **3 periodical blinks**: error on CAN LINE 2 (Seletron / FLOWTRON)

- ERROR** ●
- **OFF**: no error
 - **1 periodical blink**: temperature too high
 - **2 periodical blinks**: supply voltage out of range
 - **3 periodical blinks**: BUS 1 (LINE 1) short circuit or absorption too high
 - **4 periodical blinks**: BUS 2 (LINE 2) short circuit or absorption too high
 - **5 periodical blinks**: hydraulic circuit short circuit or absorption too high
 - **6 periodical blinks**: regulating valve short circuit or absorption too high
 - **7 periodical blinks**: section valve short circuit or absorption too high
 - **8 periodical blinks**: analog sensor connection problem

11.3 Error messages

MESSAGE ON DISPLAY	CAUSE	SOLUTION	WORKING MODE
Disable main valve switch	Main switch ON upon switching on	• Disable main control (OFF)	--
Move forward! The machine is stopped	Main control ON with machine stopped	• Start the machine • Disable main control (OFF)	Master ON + Regulation AUTO ON 
Hyd-ECU not detected!	Communication problems between VT hydraulic control unit (Hyd-ECU)	• Check condition of connection cables (and connectors)	--
	The cables are damaged	• Replace the cable	--
	Wrong configuration	• If a hydraulic IBX100 is present, the auxiliary inputs must be set to 0 in IBX100 Sprayer	--
Enable pump! No flowrate	Main control ON but flowrate at zero	• Start the pump and move the machine	Master ON + Regulation AUTO ON 
Minimum tank level reached!	Tank level is lower than the set reserve value	• Fill the tank	Master ON
	Minimum value was not set correctly	• Check set reserve value	
Maximum tank level reached!	Tank level has reached the maximum set value	• Stop tank filling phase	--
Low pressure! Regulation locked.	Pressure does not reach set value	• Increase driving speed	Master ON + Regulation AUTO ON 
	Limit was not set correctly	• Check set limit	
Slow down! High pressure	The pressure exceeds the maximum level allowed for the nozzle being used	• Decrease driving speed • Regulate the operating pressure so as to respect the previously set limits for nozzles in use • Check maximum pressure setting for nozzles in use	Master ON
Accelerate! Low pressure	The pressure does not reach the minimum value for the nozzle in use	• Increase driving speed • Regulate the operating pressure so as to respect the previously set limits for nozzles in use • Check minimum pressure setting for nozzle in use	Master ON
Flowmeter out of max value Flowmeter out of min value Flowrate out of range (Max) Flowrate out of range (Min)	Flowrate out of the limits allowed by flowmeter	• Modify working conditions to suit flowmeter limits (speed, pressure, etc.) • Make sure that flowmeter parameters are set correctly	Master ON
Slow down! Too low flow rate!	Flowrate does not reach the value requested for output	• Decrease driving speed • Make sure that flowmeter parameters are set correctly	Master ON + Regulation AUTO ON 
Accelerate! Too high flowrate!	The flowrate exceeds the value required for output	• Increase driving speed • Check that the setup of the menu Implement settings (boom width, flowmeter, etc.) has been set correctly	Master ON + Regulation AUTO ON 
Reduce rotation speed!	RPM exceeds the maximum set value	• Decrease the rotation speed of the moving part • Check the constant set for the rev counter	--
Increase rotation speed!	RPM does not reach the minimum value	• Increase the rotation speed of the moving part • Check the constant set for the rev counter	Master ON
Nozzles wear check	Difference between measured and calculated flowrate (according to selected nozzle data) higher than set value	• Check that the set nozzle coincides with the one installed on the boom • Replace nozzles	Master ON + Regulation AUTO ON 

CONTINUES >>>

MESSAGE ON DISPLAY	CAUSE	SOLUTION	WORKING MODE
Seletron system failure!	One or more spraying points do not respond	- Identify the unrecognized spraying point - Check that the corresponding spraying point is connected correctly - Check condition of harness on the corresponding spraying point	--
Seletron system error!	Low supply voltage on one or more spraying points	Check battery voltage level - Identify the unrecognized spraying point - Check condition of harness on the corresponding spraying point	--
CSD Flowtron missing	The CSD smart cable is not detected	Check the status of LEDs on the CSD cable. To identify the type of error, refer to the CSD manual. If LEDs are off, check that the wiring is connected or undamaged.	--
Flowtron valve error	One or more valves are in error status	- Check the error from menu Valve diagnostics. Possible errors: - No communication with IBX100; - Flowtron not connected; - Excessive current; - Too High/Too Low Voltage; - Excessive temperature; - Reverse position; - Hardware error.	--
Flowtron duty cycle adjustment	Minimum compensation thresholds exceeded	Alarm informing that the compensation value exceeds the regulation threshold (default value +/-10%).	--
Flowtron compensation error	Maximum compensation threshold exceeded	Alarm informing that the compensation value exceeds the regulation threshold by +/-20%.	--
Flowtron plunger blocked	IBX100 does not detect the opening of Flowtron valve.	Check Flowtron status, clean/replace if necessary.	--

11.4 Troubleshooting

PROBLEM	CAUSE	SOLUTION
Section valve controls take no effect	Valves not connected	• Connect the IN-CAB cable and the connection cable to the valves.
One valve does not open	No power supply to valve	• Check valve electric connection and operation.
The display no longer shows the speed	Wrong setup	• Check the setup of the wheel constant.
	No signal coming from the speed sensor	• Check connections to speed sensor.
The displayed speed is not precise	Wrong setup	• Check the setup of the wheel constant.
Output volume readout inaccurate	Wrong setup	• Check the setup of the boom width. • Check the setup of the flowmeter constant. • Check the setup of the wheel constant. • Check the setup of the section valve type. • Check connections to speed sensor.
Covered area count displayed does not match actual area covered	Wrong setup	• Check the setup of the boom width. • Check the setup of the wheel constant. • Check connections to speed sensor.
	Counter not reset	• Reset the counter.
Distance traveled count displayed does not match actual distance covered	Wrong setup	• Check the setup of the wheel constant. • Check connections to speed sensor.
	Counter not reset	• Reset the counter.
Sprayed fluid count displayed does not match liters/gpm actually sprayed	Wrong setup	• Check the setup of the flowmeter constant. • Check the setup of the section valve type.
	Counter not reset	• Reset the counter.
	Use of three-way section valves without setting metered by-passes	• Perform setting.
Time count displayed does not match actual work time	Counter not reset	• Reset the counter.
Unable to reach output volume value set for the automatic operation	Wrong setup	• Check spray application rate setup. • Check the setup of the boom width.
	System not adequately sized to provide required flowrate	• Check maximum pressure valve regulation. • Make sure regulating valve is adequate for specific system.
	Regulating valve malfunction	• Check valve operation.
Instantaneous pressure readout inaccurate	Wrong setup	• Check full scale setup for pressure sensor.
	Pressure sensor not calibrated	• Perform setting.
	Pressure sensor wrong installation	• Check connections to pressure sensor.
Instantaneous pressure is not displayed	Wrong setup	• Check pressure sensor setting.
	IBX100 does not receive signals from pressure sensor	• Check connections to pressure sensor.
	Pressure sensor wrong installation	• Check connections to pressure sensor.
Rpm readout inaccurate	Wrong setup	• Check rpm sensor constant setting.
Rpm value not displayed	IBX100 does not receive signals from RPM sensor	• Check connections to RPM sensor.
	Rpm sensor wrong installation	• Check connections to RPM sensor.

12 TECHNICAL DATA

12.1 Electrical features

Rated supply voltage 9 to 16 Vdc
 Protection against polarity inversion Yes
 Protection against short-circuit Yes
 Digital inputs For Open collector sensors: max. frequency 2000 Hz
 Analog inputs 4-20 mA
 Digital outputs (valves) Active high (max 200 mA)
 Hydraulic valves power outputs Active high (max 2.5 A)
Seletron and Flowtron lines power outputs Active high (max 15 A per line)

12.2 Environmental features

Operating temperature -40 °C to +60 °C / -40 °F to +140 °F
 Storage temperature -40 °C ÷ +85 °C / -40 °F ÷ +185 °F

12.3 Physical features

Weight (without harness) 1213 g / 42.8 oz

12.4 FLOWTRON system performance

Maximum number of spray points on the boom: no. 224
 Maximum number of Flowtron CSD modules to be connected: no. 56

13 END-OF-LIFE DISPOSAL

Dispose of the system in compliance with the established legislation in the country of use.

14 GUARANTEE TERMS

Warranty conditions are available at www.aragnet.com, in the relevant TERMS AND CONDITIONS section.

15 EU DECLARATION OF CONFORMITY

The declaration of conformity is available at the website www.aragnet.com, in the relevant section.

Only use genuine ARAG accessories or spare parts to make sure manufacturer guaranteed safety conditions are maintained in time. Always refer to the Internet address www.aragnet.com

D20354_GB-m07 03/2026



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