02

BRAVO 300S SERIES COMPUTERS

46730401
46730501
46730701

CE

Software rel. 1.0x

INSTALLATION, USE AND MAINTENANCE

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01361883418

• LEGEND SYMBOLS

	= **Generic danger**
	= **Warning**

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This manual is an integral part of the equipment to which it refers and must accompany the equipment in case of sale or change of ownership. Keep it for future reference; ARAG reserves the right to modify the specifications and instructions regarding the product at any time and without prior notice.

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• FOREWORD AND GUIDE TO THE MANUAL

This guide includes all instructions for correct assembly, connection and set up of BRAVO 300S computers.
Additional information specific to the different computer models is available on the data sheets for each models intended for use by installers only.

• USING THE MANUAL

This manual contains information reserved for the installation technician, and hence makes use of technical terminology without the explanations which would otherwise be required by the end user.
THIS MANUAL IS FOR USE EXCLUSIVELY BY AUTHORIZED INSTALLATION TECHNICIANS.
THE MANUFACTURER IS NOT LIABLE FOR USE OF THIS MANUAL BY UNAUTHORIZED AND UNQUALIFIED PERSONS.

• CONVENTIONS

The installation procedures described in this manual apply to all computer models, except where noted.
Model designations are mentioned where appropriate to identify special instructions for specific models.

• LIABILITY

The installation technician is responsible for implementing the installation procedure in a professional manner so as to guarantee perfect functionality of the computer, whether supplied solely with ARAG components or with components from other manufacturers.

ARAG recommends using its own components for the installation of the control systems.
If the installation technician should decide to use components provided by other manufacturers, even if this should not require the modification of the cabling or other systems, he does so at his own exclusive risk and liability.
The installation technician is responsible for compatibility with components and accessories provided by other manufacturers.
If, as a consequence of the above recommendations, the computer or other ARAG components installed in combination with components provided by other manufacturers should suffer damage of any kind, no form of liability, whether direct or indirect, will be recognized by ARAG.

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1 RISKS AND PRECAUTIONS BEFORE ASSEMBLY

All installation work must be done with the battery disconnected, using suitable tools and any individual protection equipment deemed necessary.

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

2 BRAVO DSB

ARAG has designed and manufactured a diagnostics system for Bravo series computers and the systems to which they may be connected.
BRAVO DSB (**art. code 467003**) provides reliable computer diagnostics (not of the control unit to which it is connected) so as to enable the resolution of any potential problems experienced with the system.

3 INTENDED USE

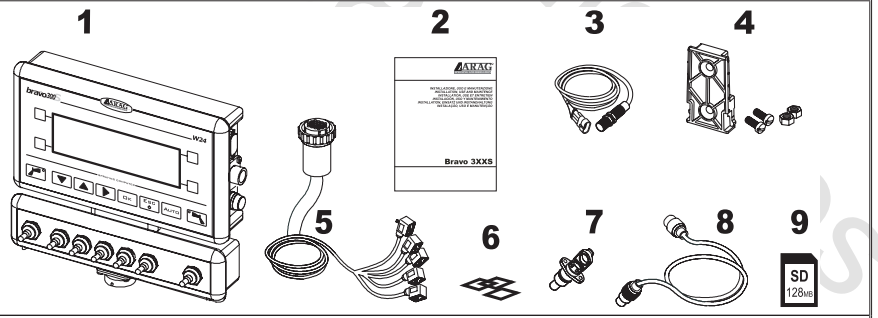
The device you have purchased is a computer which, when connected to a valve or suitable control unit, makes it possible to control all phases of treatment in agricultural applications directly from the cab of the agricultural machine in which it is installed.

CE **This device is designed to work on agricultural machinery for crop spraying applications.**
The machine is designed and built in compliance with EN ISO 14982 standard (Electromagnetic compatibility - Forestry and farming machines), harmonized with 2004/108/EC Directive.

4 CONTENTS OF THE PACKAGE

The following table lists the components contained in the BRAVO computers package:

BRAVO SERIE 30xS



Legend:

1 Computer
2 Instruction booklet
3 Inductive speed sensor
4 Mounting kit
5 Complete cabling for connection to the valves and sensors
6 Gaskets for section valve connectors
7 Power connector
8 Power cable
9 SD memory card

Tab. 1

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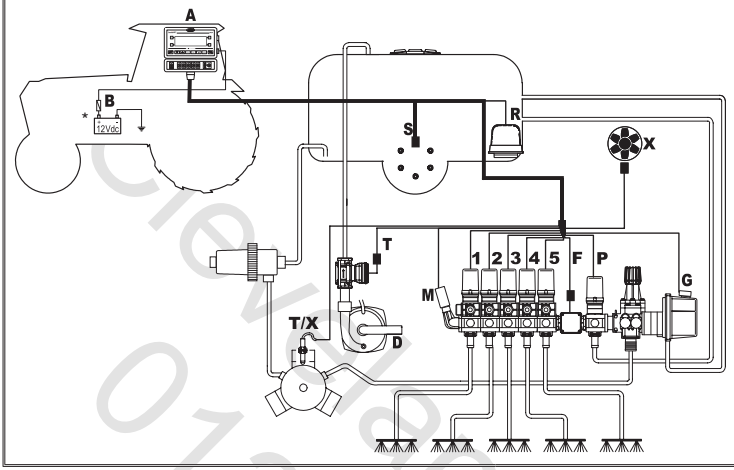
5 LOCATION ON THE MACHINE

5.1 Recommended system configuration

Assembly diagram for crop sprayers with membrane pump - BRAVO 30xS

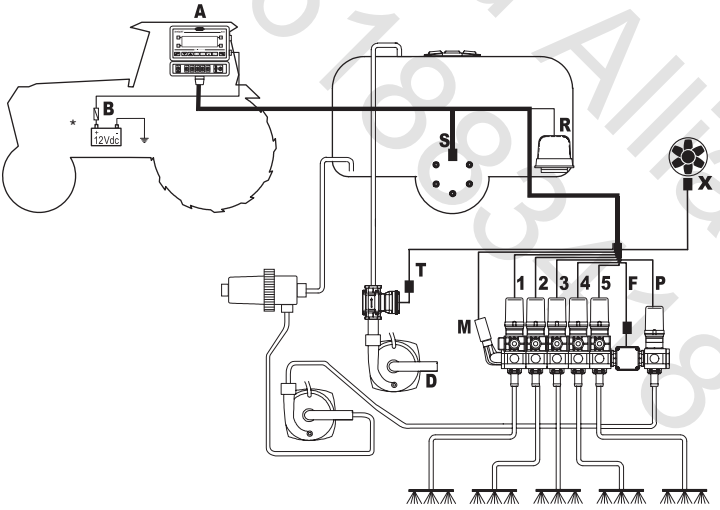


Legend:

- **A** Control panel
- **B** Battery
- **S** Speed sensor
- **D** Filler pump
- **M** Pressure sensor
- **F** Flowmeter
- **T** Filling flowmeter or Pump Protector
- **R** Foam marker
- **X** RPM sensor or Pump Protector
- **P** Control valve
- **G** Main valve
- **1-5** Section valves

Tab. 2

Assembly diagram for crop sprayers with centrifugal pump - BRAVO 30xS



Legend:

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- **T** Filling flowmeter or Pump Protector
- **R** Foam marker
- **X** RPM sensor or Pump Protector
- **P** Control valve
- **1-5** Section valves

Tab. 3

The computer should be directly connected to the farm machine battery.
*** Do not connect the computer to a KEY ON power source (15/54).**

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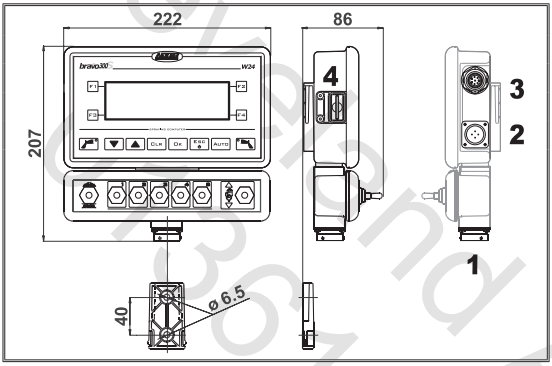
5.2 Locating the computer

• BRAVO 30xS series computers must be installed in the cab of the tractor, in observance of the following precautions:

- DO NOT install the computer in an area subject to excessive vibration or collisions as this may damage it or lead to its controls being accidentally actuated;
- install the unit is a visible position within easy reach by hand: bear in mind that the computer should not obstruct the operator's freedom of movement or block his view.

Note the connections required for the computer to operate (table 4 and 5), the required length of the cables, and provide adequate space for the connectors and cable runs. An identification symbol is located next to each connector to indicate its function; for the configuration of the systems, refer to par. 5.1 - Recommended system configuration.



Tab. 4

ITEM	CONNECTION POINTS
1	Control unit and Sensors
2	Power
3	Auxiliary connections
4	SD memory card

Tab. 5

5.3 Mounting the bracket

The computer and control unit must be mounted on a bracket installed at the desired location (the previous paragraph shows the bracket drilling template).
The bracket must be extracted from its seat on the computer (**A**, Fig. 1) and installed using the provided bolts (**B**).
Make sure the bracket is securely mounted, fit the computer or control unit to it, and push it in until it locks in place (**C**).

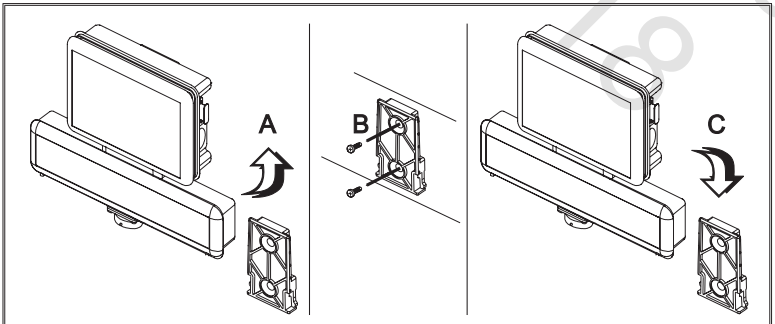


Fig. 1

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5.4 Location of the control unit

The control unit must be installed with the special brackets supplied and mounted to the unit, positioning it as shown in the manual provided with it.

⚠ **MAKE SURE TO FOLLOW ALL THE SAFETY INSTRUCTIONS GIVEN IN THE CONTROL UNIT'S MANUAL.**

6 CONNECTING THE COMPUTER TO THE MACHINE

6.1 General precautions for cable runs

• Securing the cables:
- secure the cables so that they do not interfere with moving parts;
- route the cables in such a way that twisting and tractor movements cannot damage or break them.

• Routing the cables to protect against water infiltrations:
- branches in the cable runs must ALWAYS be oriented downwards (Fig. 2).

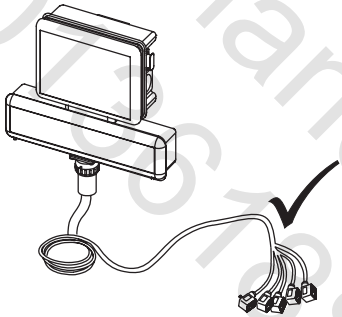

Fig. 2

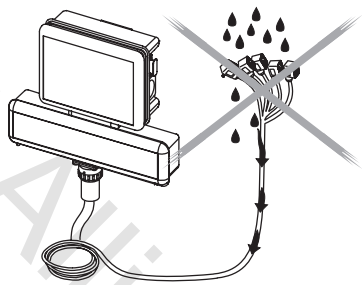

Fig. 3

• Fitting the cables to the connection points.
- Do not force the connectors by pushing too hard or bending them: the contacts can be damaged and computer operation compromised.

• Use ONLY the cables and accessories listed in the catalogue; these have the correct specifications for their intended application.

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6.2 Power connection

Inside the package (component 6 - Tab. 1) you will find the power connector required for the connection to the machine's battery; Fig. 6 shows the drilling template for installing the power connector.
Connect the power connector to the battery poles using two 6 mm faston connectors, as shown in Figs. 4 and 5.
Use the cable provided in the package (component 7 – Tab. 1) to connect the computer to its power supply.

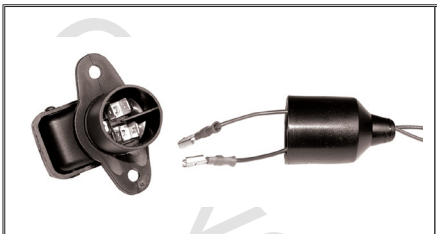

Fig. 4

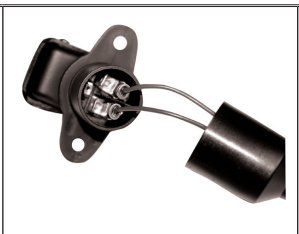

Fig. 5

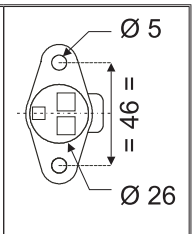

Fig. 6

CAUTION!
Do not connect the power supply cables to the battery until you have completed the installation procedure; this will avoid possible short circuits.
Before powering up the computer and control unit, make sure the battery voltage is as specified (12 Vdc).

BRAVO 300S is powered directly from the battery (12 Vdc) of the agricultural machine it is installed on and must ALWAYS be switched on from the computer; when finished, switch the computer off manually using the suitable key on the control panel.

Keeping BRAVO 300S on for long periods of time when the machine is off may run down the tractor battery; be sure to switch off the computer if the machine is to be left unused with the engine off for some time.

Connect the power source as shown in Fig. 7.

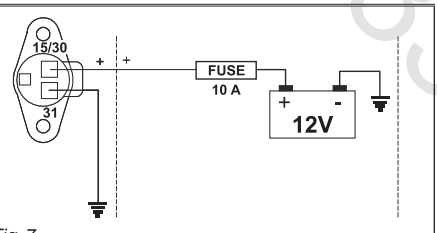

Fig. 7

CAUTION!
• The power circuit must ALWAYS be fitted with a 10 Amp automotive fuse.
• All battery connections must be made with cables with a minimum cross section of 2.5 mm².
To avoid short circuits, do not connect the power cable connector before the installation is completed.
• Use cables with suitable terminals to ensure correct connection of each individual wire.

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7 CONNECTING THE CABLE TO THE CONTROL UNIT AND SERVICES

• Use only the cables provided with the ARAG computers.
• Take care not to break, pull, tear or cut the cables.
• Use of unsuitable cables or cables not provided by ARAG automatically voids the warranty.
• ARAG is not liable for damage to the equipment, persons or animals caused by failure to observe the above instructions.

7.1 Connecting the multi-pin connector

Connect the multi-pin connector to the panel and connect the other end of its cable to the control unit.

Make sure that it is correctly fitted and turn the collar clockwise until it locks in place.

7.2 Connecting the valves

• Use ARAG valves: in case of damages caused by the use of incorrect or non-Arag valves, warranty will be null and void.
• All valve connectors must be equipped with gaskets before installation (Fig. 8).
• Make sure the gaskets are correctly fitted to avoid infiltration of water when operating the control unit.

Fit the connectors to the valves following the markings given in the general system installation diagram in your possession (par. 5.1 - System recommended configuration).

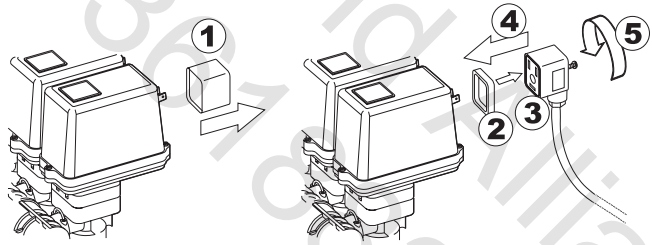

Fig. 8

• Remove the protector cap (**1**, Fig. 8) from the electrical valve.
• Fit the gasket (**2**) onto the connector (**3**) and push the connector fully on (**4**): **take care not to bend the valve's electrical contacts.**
• Tighten screw (**5**) fully down.

If there are more control panel switches than section valves, connect the wires as shown in Tab. 6.

NO. OF SECTION VALVES	SWITCHES TO BE USED	CABLES TO BE CONNECTED TO SECTION VALVES
2	2 - 4	2 - 4
3	2 - 3 - 4	2 - 3 - 4
4	1 - 2 - 4 - 5	1 - 2 - 4 - 5
6	1 - 2 - 3 - 4 - 5 - 6	1 - 2 - 3 - 4 - 5 - 6

Tab. 6

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7.3 Connecting the sensors and other services

Fit the connectors to the services following the markings given in the general system installation diagram in your possession (par. 5.1 - System recommended configuration).

Wiring cables are marked with symbols denoting their functions: please see Tab. 7 for correct wiring instructions.

ITEM	MAIN CONNECTION	ALTERNATIVE CONNECTION
S	Speed sensor	
M	Pressure sensor	
F	Flow meter	
T	Filler flow meter	Pump Protector
R	Foam marker	
X	RPM sensor	Pump Protector
P	Control valve	
G	Main valve	
1 ÷ 5	Section valves	

Tab. 7

Use ARAG sensors: use of unsuitable sensors or sensors not provided by ARAG automatically voids the warranty.
ARAG is not liable for damage to the equipment, persons or animals caused by failure to observe the above instructions.

- Instructions for sensor installation are supplied with the products.
The speed sensors listed below can also be used as RPM sensors:
• inductive speed sensor (**code 467100.086**).
• magnetic speed sensor (**code 467100.100**).

- Connection of:
• flowmeter
• pressure sensor
• Pump Protector
• filling flow-meter
• RPM sensor
• foam marker

All ARAG sensors use the same type of connector: plug the sensor connector into the matching wiring connector; make sure it is seated correctly and push until it locks into place.

Fig. 9

Fig. 10

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8 ACCESSORY CONNECTIONS

8.1 Pump Protector

Optional sensor (**code 4664000.100**) is a device which, when connected to the computer, detects and signals breakage of the pump membrane or indicates when the oil level drops below its operational minimum level.

The preferred sensor input is always marked with an "X" on the cabling; if this input is not available, use the secondary input marked "T".

CAUTION:
only use the secondary input "T" if the input marked "X" is occupied by another sensor.
Do not use the secondary input "T" if no sensor is connected to the "X" input, as the computer will not detect the Pump Protector in this configuration.

8.2 SD memory card

The SD memory card is used to exchange data with the BRAVO 300S computer.

Ensure the card is not protected before starting to use it (Fig. 11).

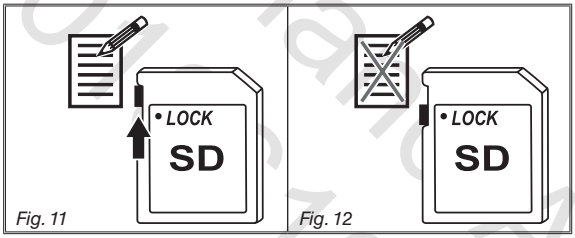

Fig. 11 *Fig. 12*

ALWAYS power off the computer before inserting or removing the SD memory card.

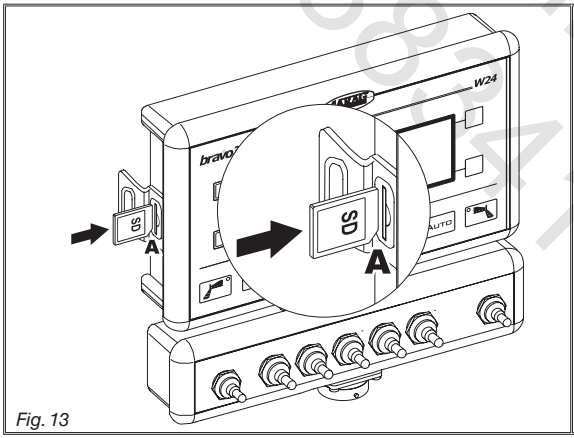

Fig. 13

• Inserting the memory card
Insert the memory card making sure to orient it correctly: the diagonal corner **A** must be pointing downward; push the card until it locks into place and close the slot with the cover.

• Removal
Push the card into the slot and release immediately: now you can remove the card.

Failure to insert the SD memory card in the computer will cause an error (par. 15.1).
Store the SD memory card into the suitable case (supplied) when not in use.

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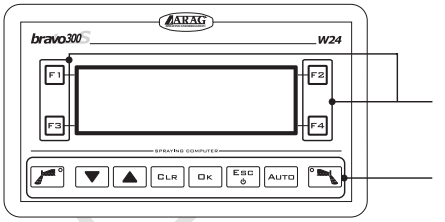
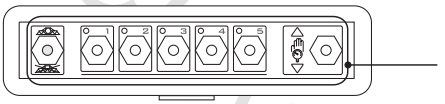
9 CONTROLS AND DISPLAY

9.1 Control panel

	Function key for displaying and setting treatment parameters Parameter selection/modification keys Foam marker control keys
	Control unit valve switches

Tab. 8

9.2 Function keys

F1 Job selection	Job's data Logger ON? F2
F3 Zero transducer setup	Tank User setting F4

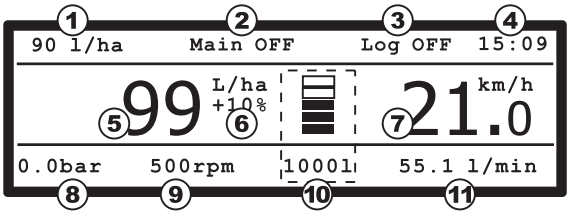
9.3 Control, selection and modification keys

Control, selection and modification keys							
			CLR	OK	ESC	AUTO	
LEFT foam marker	Decrease / scroll data	Increase / scroll data	Reset data	Confirm data	ON/OFF Cancel changes to data	Manual / Automatic application	RIGHT foam marker

9.4 Control unit valve switches

Main control ON	Main control OFF	Section open	Section closed	Increase output	Decrease output

9.5 Display



1 Set application rate (Automatic Operation) / Manual Operation
2 Spraying status
3 Data recorder status
4 Clock
5 Measured output
6 Output variation rate
7 Speed
8 Pressure
9 RPM / Area covered (only where RPM sensor not fitted)
10 Fluid in tank (text and graphic)
11 Rate

Tab. 9

Vervielfältigungen Original 1834 18

10 MENU STRUCTURE

HOW TO USE THE FUNCTION KEYS

*The functions held in page **1** may be accessed in three ways: use the arrow keys and press the appropriate function key, press the appropriate function key twice, or hold it down for 3 s.*

▼ ▲ + F

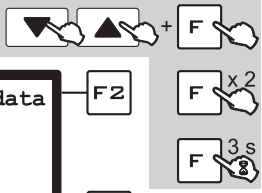
F x 2

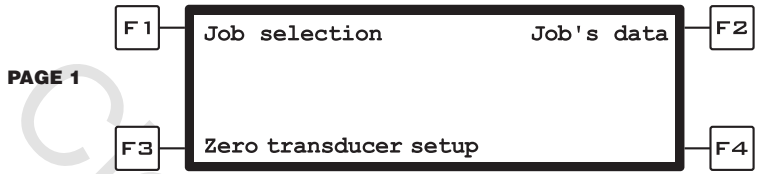
F 3 s

PAGE 1

F1 — Job selection — Job's data — F2

F3 — Zero transducer setup — F4





*To access the functions held in page **2**, use the arrow keys (to toggle between pages **1** and **2**) and then press the appropriate function key*

▼ ▲ + F

PAGE 2

F1 — Logger ON? — F2

F3 — User setting — F4

OK 1 s.

User setting

- Speed
- Jobs setup
- Nozzles setup
- Working limits
- Flowrate correct. factor
- User preferences
- Date & Time
- Data logger
- Test
- Load/save setup

Esc + ▼ ▲

Advanced Setup

- Language
- Unit of measurement
- Section valves number
- Boom setup
- Valves
- Flowmeter
- Pressure sensor
- Delivery cal. sensor
- Tank
- Filling flowmeter
- Rev counter
- Foam Marker
- Pump Protector

Fig. 14

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11 ADVANCED SETUP

The computer can be programmed with the parameters required to ensure correct distribution of the treatment product.
This must be done once only, **when installing the computer**.

11.1 Pre-programming tests and checks

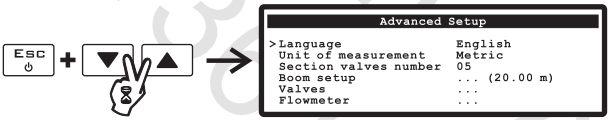
Before programming the computer check that:
- **all components are correctly installed (control unit and sensors);**
- **the equipment is connected to its power sources;**
- **all components are correctly connected (control unit and sensors).**

Incorrect connections of the components and the use of other components from those specified can damage the system or components themselves.

11.2 Computer power-up / shutdown

- **Normal power-up**

- **Power-up for advanced setup**



- **Shutdown**

WARNING: ALWAYS power off the computer from the appropriate key, otherwise ALL treatment data will be LOST.

11.3 How to view the menus

When using BRAVO 300S, use the cursor **>** to select the appropriate menu: use the “arrow” keys (chap. 9 - Controls and display) to move the cursor to the desired option (Fig. 15).
Now you may confirm your selection.

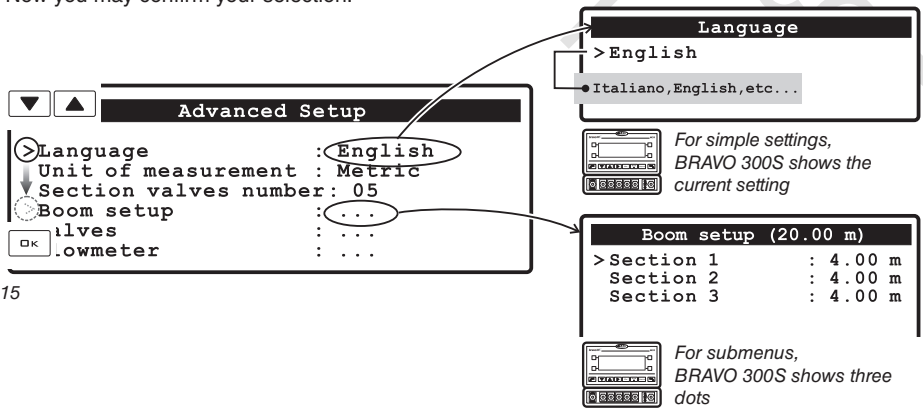


Fig. 15

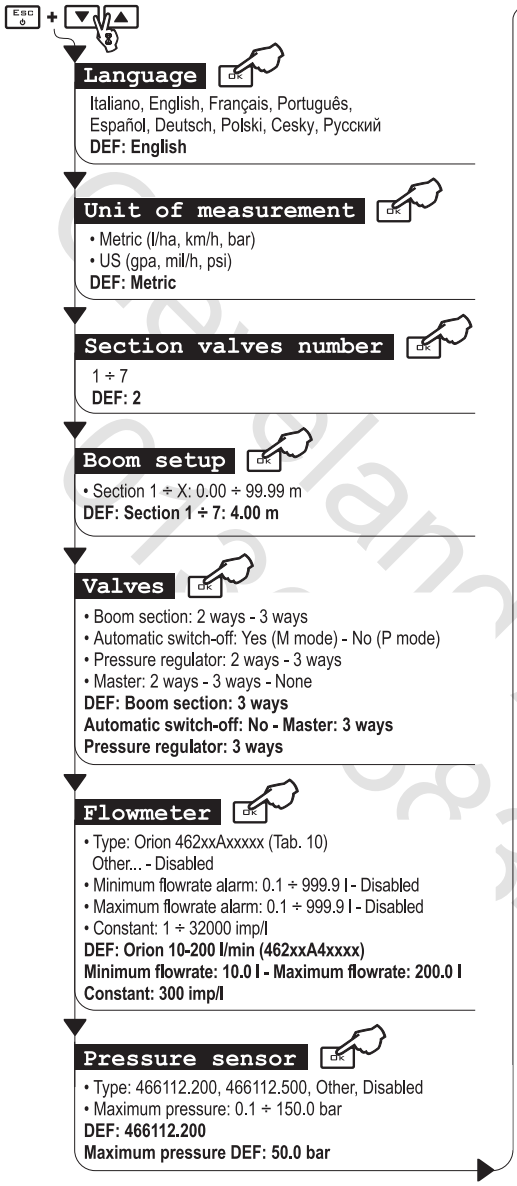


Fig. 16

The minimum and maximum settable values for the parameters are given in paragraph 16.1 - Units of measurement.

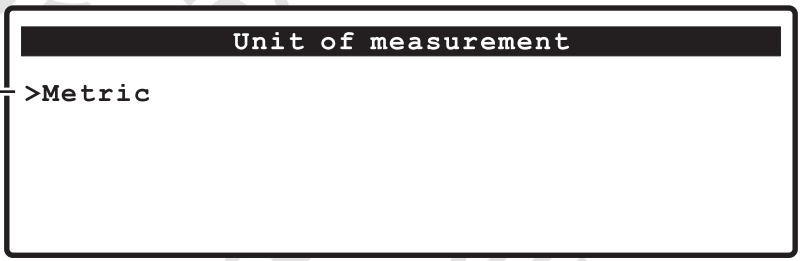
11.5 Language

- Setting user's language

Italiano, English, Français, Português, Español, Deutsch, Polski, Cesky, Русский

11.6 Unit of measurement

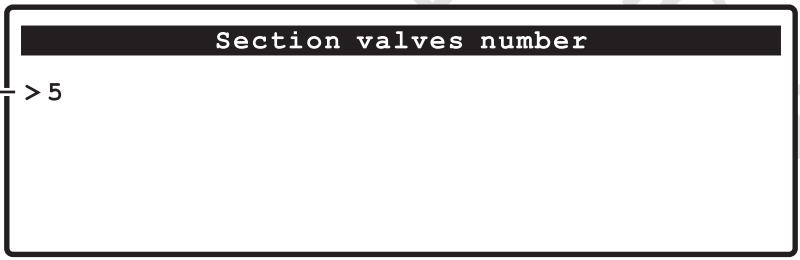
- Setting measurement units



- **Metric** (l/h, km/h, bar)
- **US** (gpa, mil/h, psi)

11.7 Section valves number

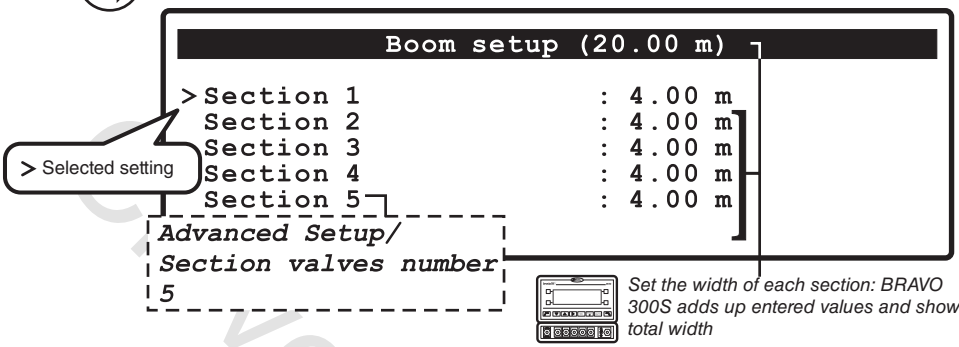
- Setting the number of valves installed in the system



1 ----> 7 valves

▲ ▼ Used to scroll data or edit values	OK Confirms access or change to data
CLR Sets data to zero	ESC ⏻ Quits function or changes to data

- Setting the width of individual boom sections and total number of nozzles



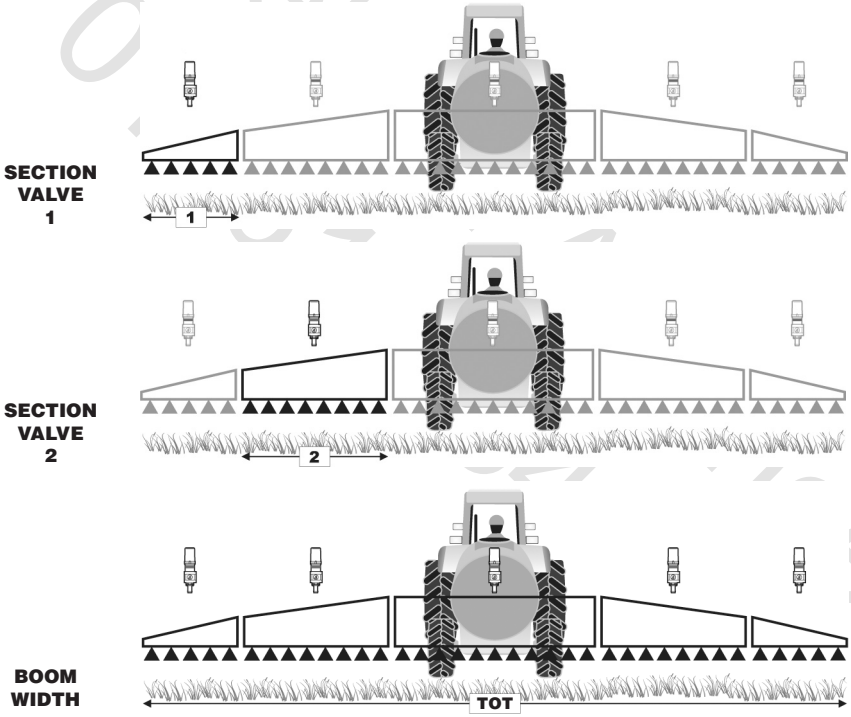


Fig. 17

▲ ▼ Used to scroll data or edit values	OK Confirms access or change to data
CLR Sets data to zero	ESC Quits function or changes to data

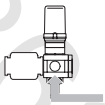
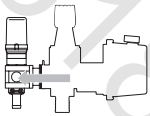
11.9 Valves

- Setting the type of valves installed in the system

Valves

```
>Boom section              : 3 ways
 Automatic switch-off      : No (P mode)
 Pressure regulator        : 3 ways
 Master                    : 3 ways
```

> Selected setting

- **Boom section**
  - **2 ways** plain valves
  - **3 ways** calibrated backflow valves
- **Automatic switch-off**
  - **No (P mode)**
  - **Yes (M mode)**
- **Pressure regulator**
  - **2 ways** 
  - **3 ways** 
- **Master**
  - **2 ways** discharge valve
  - **3 ways** main valve
  - **None** **automatic shutoff must be set (M mode)**

! **Enable automatic switch-off** — **Configuration check, no main valve set: activate M mode of operation**

- **"P" mode of operation:**
section valves are operated independently.
Main switch control functions do not affect section valve opening or closing.
- **"M" mode of operation:**
section valve are closed or opened from the main switch provided that section valve switches are set in the appropriate position; in other words, if section switches are set to OFF (lever down), operating the main switch does not affect the sections. If one or more section valve switches are set to ON (lever up), opening or closing the main switch opens or closes the section valves as well.

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

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11.10 Flowmeter

- Setting the flow-meter and its parameters

```
Flowmeter
>Type                    : Orion 4621XA0XXXX
 Min. flowrate alarm.    : 0.5 l/min
 Max. flowrate alarm     : 10.0 l/min
 Constant                : 6000 imp/l
```

> Selected setting

- Disabled
- Orion 462.....
- Other...

Flowmeter out of range

During application: rate outside set limits

Default limits may be modified

TYPE	MEASUREMENT UNITS METRIC			MEASUREMENT UNITS US		
	Constant (pls/l)	Min flowrate (l/min)	Max flowrate (l/min)	Constant (pls/l)	Min flowrate (l/min)	Max flowrate (l/min)
4621xA0xxxx	6000	0,5	10,0	22710	0,13	2,60
4621xA1xxxx	3000	1,0	20,0	11355	0,30	5,00
4621xA2xxxx	2000	2,5	50,0	4542	0,60	13,00
4621xA3xxxx	600	5,0	100,0	2271	1,35	26,00
462xxA4xxxx	300	10,0	200,0	1135	2,60	53,00
4622xA5xxxx	150	20,0	400,0	568	5,00	106,00
4622xA6xxxx	100	30,0	600,0	378	8,00	158,00
Other...	625	10,0	200,0	156	2,60	53,00

Tab. 10

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

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11.11 Pressure sensor

- Setting the type of pressure sensor and its full scale value

```
Pressure sensor
>Type                    : Arag 466112.500
 Maximum pressure        : 20.0 bar
```

> Selected setting

- Arag 466112.200 ---> 50.0 bar
- Arag 466112.500 --> 100.0 bar
- Other --------> 20.0 bar
- Disabled

Default full scale values can be modified

11.12 Delivery cal. sensor

- Setting the pressure sensor and its full scale value

```
Delivery cal. sensor
>Flowmeter
```

- Flowmeter
- Pressure
- Either — **when working within the operating limits, the computer uses the flowmeter; outside these limits, it will use the pressure sensor, PROVIDED THAT it has been appropriately set up**

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

11.13 Tank

- Setting tank and reserve value

```
Tank

>Capacity                    :  2000 l
 Minimum level alarm         :   150 l
```

> Selected setting

11.14 Filling flowmeter

- Setting the type of filling flow-meter and its parameters

```
Filling flowmeter

>Type                        : Orion 462XXA4XXXX
 Minimum flowrate            : 10.0 l/min
 Maximum flowrate            : 200.0 l/min
 Constant                    : 300 imp/l
```

> Selected setting

- Disabled
- Orion 462.....
- Other...

The default constant may be modified

TYPE	MEASUREMENT UNITS METRIC			MEASUREMENT UNITS US		
	Constant (pls/l)	Min flowrate (l/min)	Max flowrate (l/min)	Constant (pls/l)	Min flowrate (l/min)	Max flowrate (l/min)
462xxA4xxxx	300	10,0	200,0	1135	2,60	53,00
4622xA5xxxx	150	20,0	400,0	568	5,00	106,00
4622xA6xxxx	100	30,0	600,0	378	8,00	158,00
Other...	625	10,0	200,0	156	2,60	53,00

Tab. 11

▲ ▼	Used to scroll data or edit values
OK	Confirms access or change to data
CLR	Sets data to zero
ESC ⏻	Quits function or changes to data

11.15 Rev. counter

- RPM sensor setup

Rev counter

```
>Constant                    : 2 pls/turn
 Minimum speed alarm         : 100 rpm
 Maximum speed alarm         : 500 rpm
```

> Selected setting

1 ÷ 999 pls/turn
When measured RPM's are outside the set limits, BRAVO 300S will display the alarm messages listed at the side

Increase rotation speed!

Reduce rotation speed!

Disabled Sensor not present

11.16 Foam Marker

- Settings for foam marker operation

Foam Marker

>Manual

Chap. 9
Controls and display

Manual Foam marker is operated from the dedicated keys

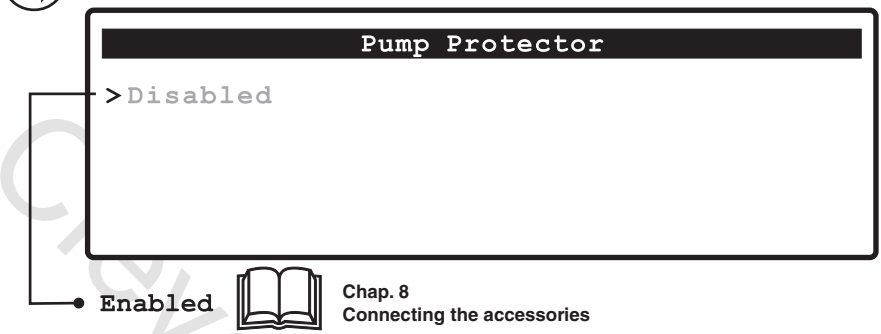
Semi-autom. Main switch ON --> foam marker ON
Main switch OFF --> foam marker OFF
The desired side is operated from the dedicated keys

Automatic Main switch ON --> foam marker ON
Main switch OFF --> foam marker OFF
Whenever the foam marker is ON, the active side changes automatically

▲ ▼ Used to scroll data or edit values	OK Confirms access or change to data
CLR Sets data to zero	ESC ⏻ Quits function or changes to data

11.17 Pump Protector

- Setting the Pump Protector sensor ON / OFF



Chap. 8
Connecting the accessories

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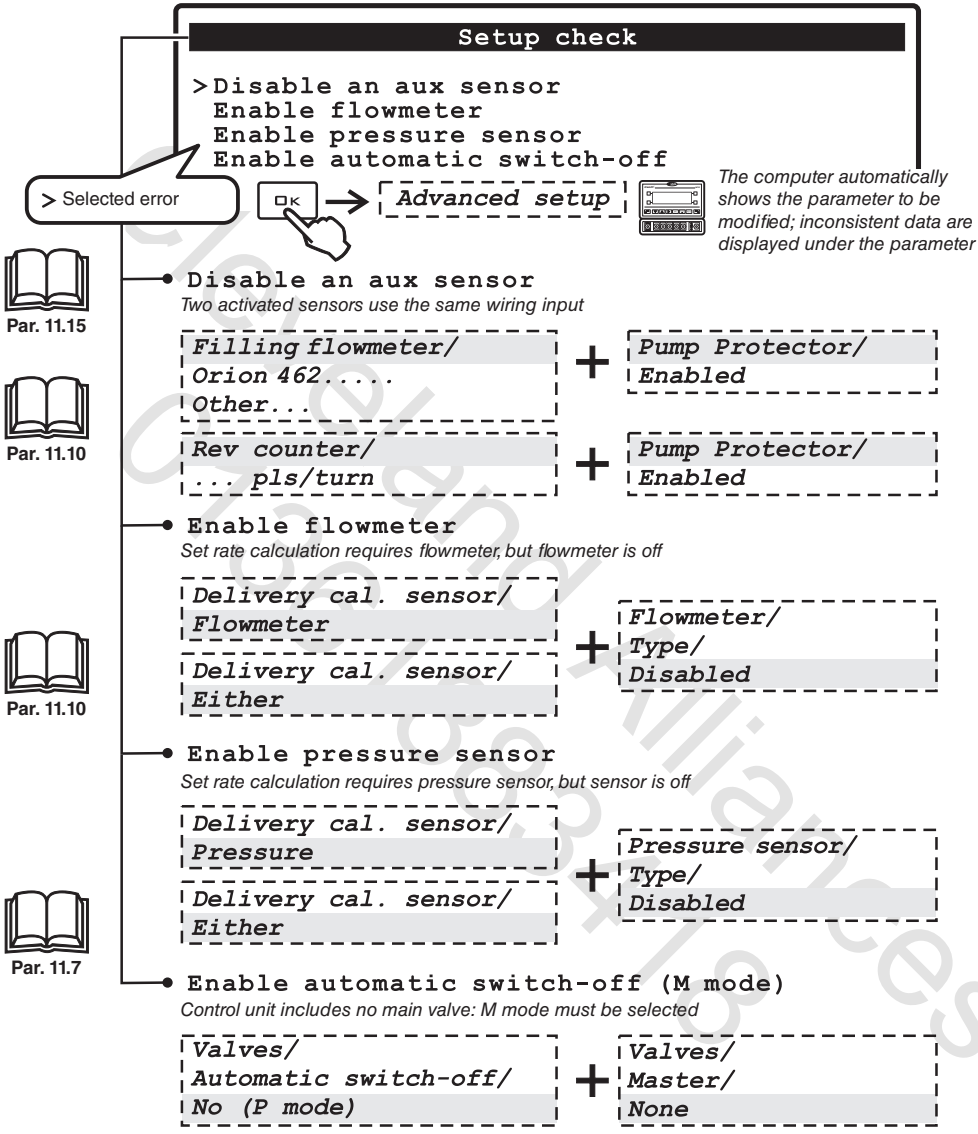
▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

11.18 Configuration check upon completion of advanced setup

This display screen appears upon exiting Advanced setup in the event any errors are found:



▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data	Esc ⏻	Quits function or changes to data

Speed

- Source: wheel sensor, GPS
- Selected wheel type: 1÷3
- Wheels setting:
  Constant calculation: Manual, Automatic
  Wheel constant 1÷3: 0.01 ÷ 150.00 cm/pls

DEF:
- Source: wheel sensor
- Selected wheel type: 1
- Wheel setting:
Constant calculation: Manual
Wheel costant 1: 50 cm/pls

Jobs setup

- Job 01÷19:
- Target rate: Disabled, Variable, 2÷9999 l/ha
- Nozzle: ISO01÷20, Type A÷E

DEF	Job 01	Job 02	Job 03
Target rate	60 l/ha	90 l/ha	120 l/ha
Nozzle	ISO01 Orange	ISO015 Green	ISO02 Yellow

Nozzles setup

- Nozzle ISO01÷20, Type A÷E
- Flowrate: Tab.12
- Pressure: Tab. 12
- Minimum pressure alarm: disabled, 0.1÷99.9 bar
- Maximum pressure alarm: disabled, 0.1÷99.9 bar

DEF:
• Minimum pressure alarm: disabled
• Maximum pressure alarm: disabled

Working limits

- Nozzles wear check: disabled, 1 ÷ 50%
- Min. spraying speed: disabled, 0.1 ÷ 999.9 km/h
- Regulation lock type: disabled, speed, pressure
- Min. regulation speed: disabled, 0.1 ÷ 999.9 km/h
- Min. regulation pressure: disabled, 0.1 ÷ 99.9 bar

DEF:
• Nozzle wear check: disabled
• Min. sprayimg speed: disabled
• Regulation lock type: disabled
• Min. regulation speed: 2.0 km/h
• Min. regulation pressure: 1.00 bar

Flowrate correct. factor

- 0.01 ÷ 10.00

DEF: 1.00

User preferences

- Sound alarm: disabled, enabled
- Display contrast: 01 ÷ 10

DEF:
- Sound alarm: enabled
- Display contrast: 05

Date & Time

- Modification locking code: No, 0000÷9999
- Date: dd-mm-yyyy
- Time: hh:mm:ss

DEF:
• Modification locking code: No

Data logger

- Disabled, 1, 2, 5, 10 sec.

DEF: Disabled

Test

- Speed simulation: No, Yes
- Speed, flowrate, pressure, filling flowm., rev counter
- Battery voltage
- Display
- Keyboard & Switches
- Software version

DEF:
• Speed simulation: No

Load/save setup

- Load from SD card
- Save to SD card

DEF = *default value*

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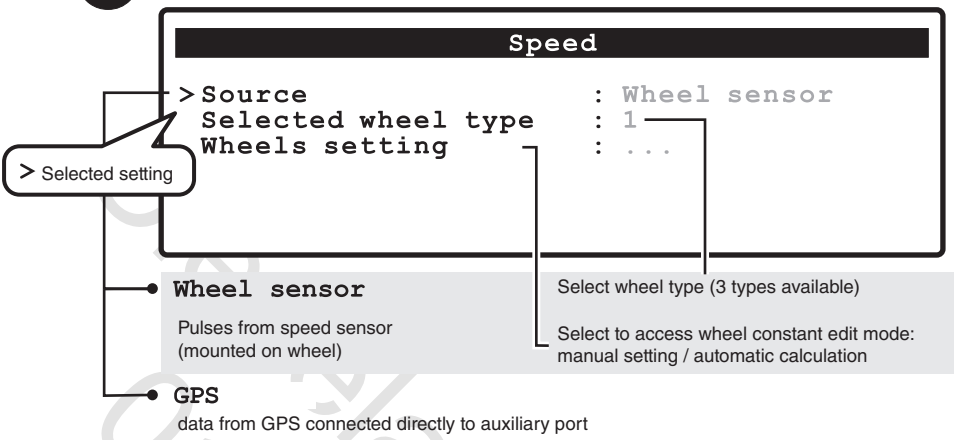
Fig. 18

The minimum and maximum settable values for the parameters are given in paragraph 16.1 - Units of measurement.

12.1 Speed

- Access speed calculation setup



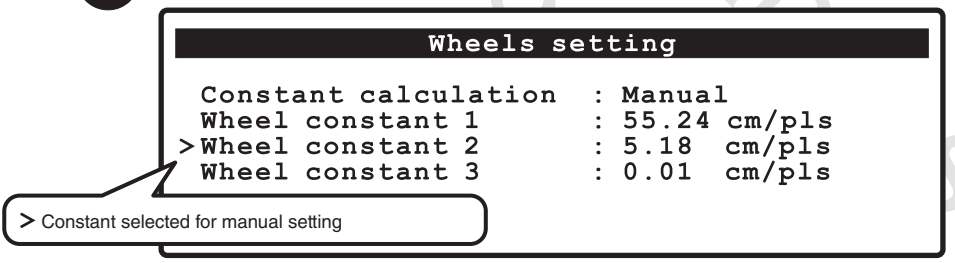
12.1.1 Wheel constant: manual setting

Constant formula:

$$Kwheel = \frac{\text{distance travelled (cm)}}{\text{no. of measurement points x no. of wheel revolutions}}$$

<distance travelled>
distance 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.

- Select a constant and access calculated value setup



Take measurement with the tyres at operating pressure.

WHEEL CONSTANT: AUTOMATIC CALCULATION --->

▲ ▼ Used to scroll data or edit values	OK Confirms access or change to data
CLR Sets data to zero	ESC Quits function or changes to data

12.1.2 Wheel constant: automatic calculation

- Select a constant and access automatic calculation

```
Wheels setting

 Constant calculation  : Automatic
 Wheel constant 1      : 55.24 cm/pls
>Wheel constant 2      : 5.18  cm/pls
 Wheel constant 3      : 0.01  cm/pls
```

> Constant selected for automatic calculation

Take measurement with the tyres at operating pressure.

```
Automatic calculation

>Start counting        :
 Reference distance    : 100 m
 Received pulses       : 236

Start counting  OK
Stop counting   OK
```

The longer the distance travelled, the more accurate wheel constant calculation

- Measure a straight path at least 100 m (300 feet) long.
- Enter measured value at "`Reference distance`".
- Press OK to confirm count start.
- Travel the required distance: the number of pulses will increase during travel.
When finished, stop the tractor.
- Press OK to stop count. The computer will show the number of cm (inches) per pulse.
Wheel constant has been stored.

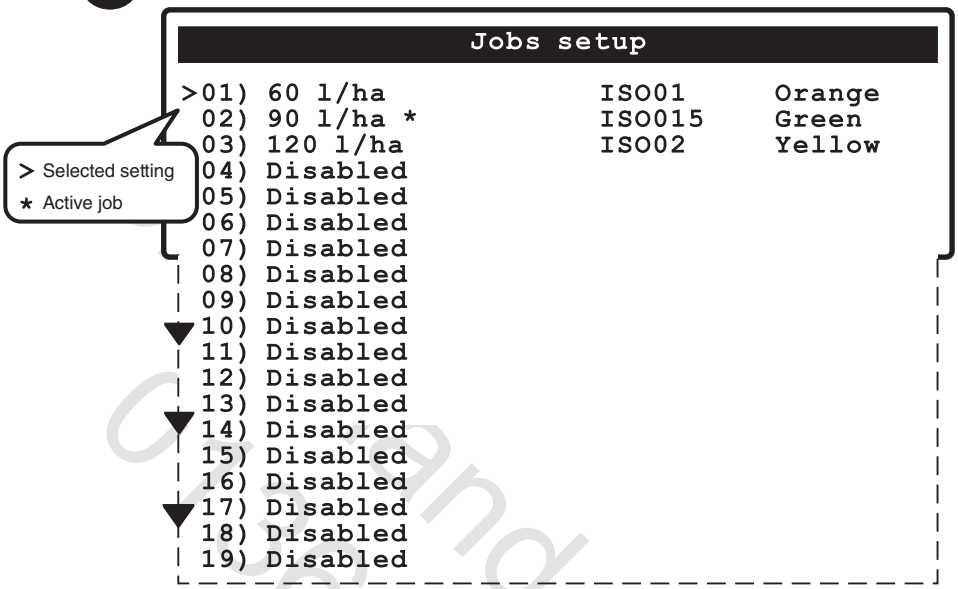
This test must be performed on medium-hard terrain.
For application to very soft or very hard terrain, rolling diameter may vary, leading to inaccurate output calculation; when this is the case, repeat the procedure.
For automatic setting, cover the distance with the tank filled up to half capacity with plain water.

! `Error: Inadeguate number of pulses`

Invalid procedure: repeat calculation

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

- Access job data setup



Select the job you wish to set (there are 19 available); set the types to be used and disable the others. Current active job CANNOT BE EDITED

CONTINUES

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▲ ▼ Used to scroll data or edit values	OK Confirms access or change to data
CLR Sets data to zero	ESC Quits function or changes to data

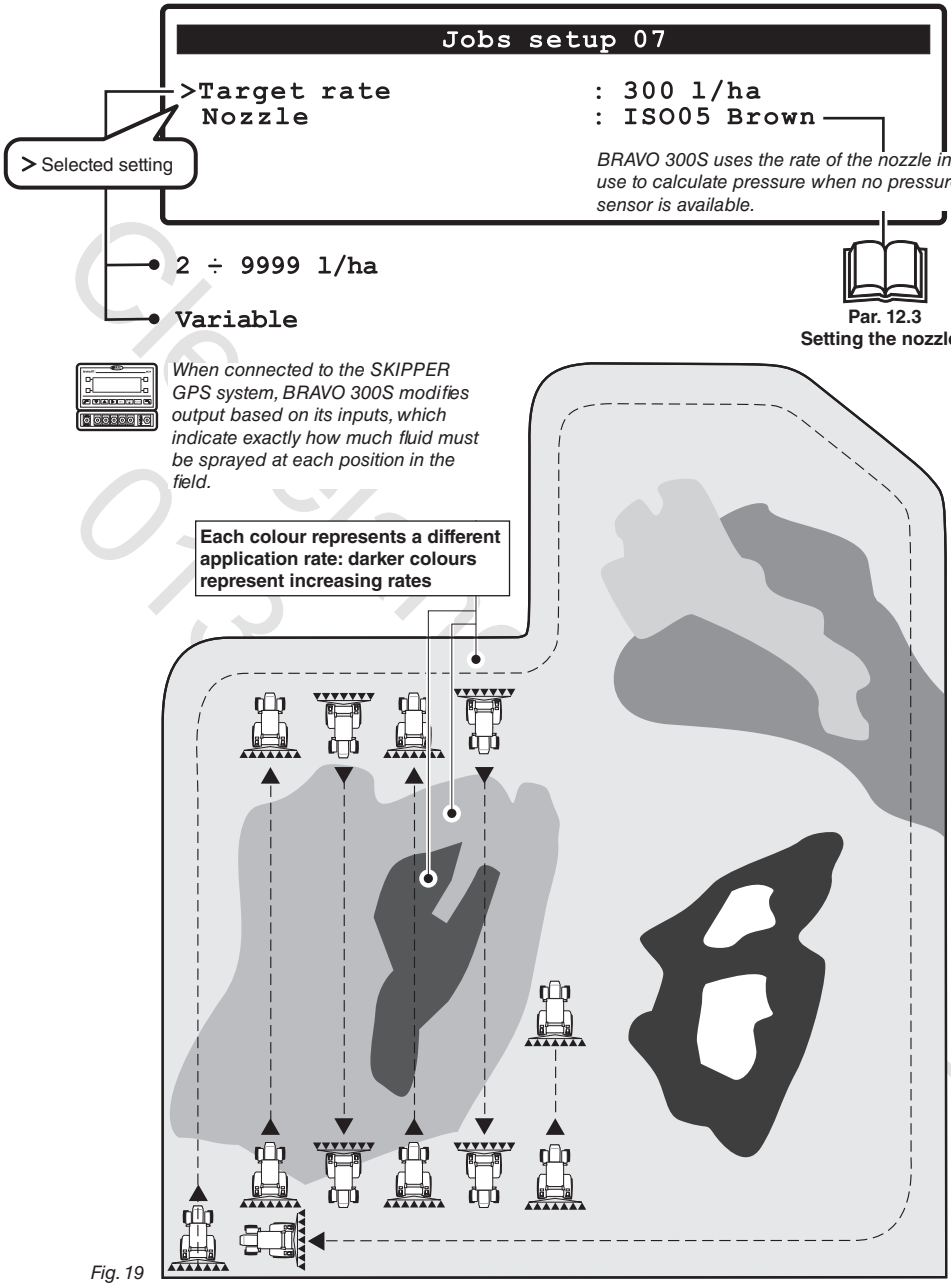
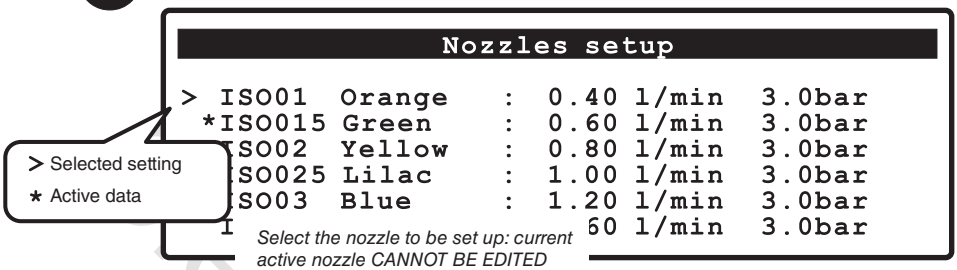
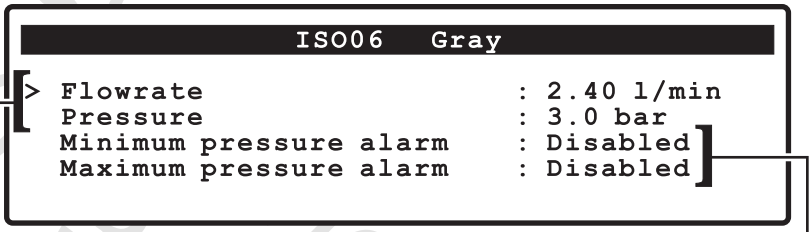

Jobs setup 07
>Target rate : 300 l/ha
Nozzle : ISO05 Brown
> Selected setting
BRAVO 300S uses the rate of the nozzle in use to calculate pressure when no pressure sensor is available.
2 ÷ 9999 l/ha
Variable
Par. 12.3
Setting the nozzles
When connected to the SKIPPER GPS system, BRAVO 300S modifies output based on its inputs, which indicate exactly how much fluid must be sprayed at each position in the field.
Each colour represents a different application rate: darker colours represent increasing rates

Fig. 19

- Access the parameter settings for each nozzle (available configurations: 12 ISO + 5 “user’s”)





NON-EDITABLE settings for ISO NOZZLES
(See table below)

- Outside the set values, the computer triggers an alarm:
- **Go slow!** **High pressure**
- **Go fast!** **Insufficient pressure**

- If set to **Disabled**: *alarm is disabled*

Nozzle colour	ISO code	Flowrate (l/min)	Pressure (bar)
Orange	ISO01	0,40	3,0
Green	ISO015	0,60	3,0
Yellow	ISO02	0,80	3,0
Lilac	ISO025	1,00	3,0
Blue	ISO03	1,20	3,0
Red	ISO04	1,60	3,0
Brown	ISO05	2,00	3,0
Gray	ISO06	2,40	3,0
White	ISO08	3,20	3,0
Light blue	ISO10	4,00	3,0
Light green	ISO15	6,00	3,0
Black	ISO20	8,00	3,0
Type A		1,00	5,0
Type B		2,00	5,0
Type C		3,00	5,0
Type D		4,00	5,0
Type E		5,00	5,0

User data: 0,01 ÷ 99,99

Tab. 12

The alarm ONLY operates during automatic application monitoring.

▲ ▼ Used to scroll data or edit values	OK Confirms access or change to data
CLR Sets data to zero	ESC ⏻ Quits function or changes to data

12.4 Working limits

- Access agricultural machine work parameter setup

```
Working limits

  Nozzles wear check          : Disabled
>Min. spraying speed          : 0.1 km/h
  Regulation lock type        : Speed
  Min. regulation speed       : 2.0 km/h
```

> Selected setting

- **Nozzles wear check**
  BRAVO 300S compares pressure sensor and flow-meter readings:
  when the difference in percent is greater than the preset limits, the computer triggers an alarm.
- **Min. spraying speed**
  BRAVO 300S stops spraying when measured speed is lower than set speed.
- **Regulation lock type**
  Disabled
  Speed
  Pressure
  ] BRAVO 300S shuts down automatic proportional valve regulation when measured speed or pressure is lower than the set limits (see below).
- **Min.regulation speed / Min.regulation pressure**

Below set values, the computer stops spraying or shuts down automatic proportional valve regulation
Disabled: *shutdown disabled*

12.5 Flowrate correct. factor

- Access dispensed liquid density factor setup

```
Flowrate correct. factor

>1.00
```

When using a paddle wheel flowmeter, inaccurate readings may result if dispensed liquid does not have the same density as water; when this is the case, set the density factor of dispensed liquid so as to achieve correct calibration:
- *decrease factor if there is fluid left in the tank after application is finished;*
- *increase factor if sprayer runs out of fluid before completing application.*

ORION flow-meters (code 462xxx) are unaffected by liquid density: set factor to 1.00.

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

12.6 User preferences

- Access system setup

```
User preferences

>Sound alarm            : Enabled
 Display contrast       : 5
```

> Selected setting

Enables/disables warning sound associated with alarms

12.7 Date & Time

- Access clock setup

```
Date & Time

>Modification locking code : No
 Date                     : 22/02/06
 Time                     : 14:54:57
```

> Selected setting

Locks out editing of date and time set in the computer so as to achieve real reports.

Enter a number to lock out date and time editing; you will need to use the same number to unlock editing.

12.8 Data logger

- Access setup for work data logging to SD memory card: set a save interval (1, 2, 5, 10 s) to enable data recorder

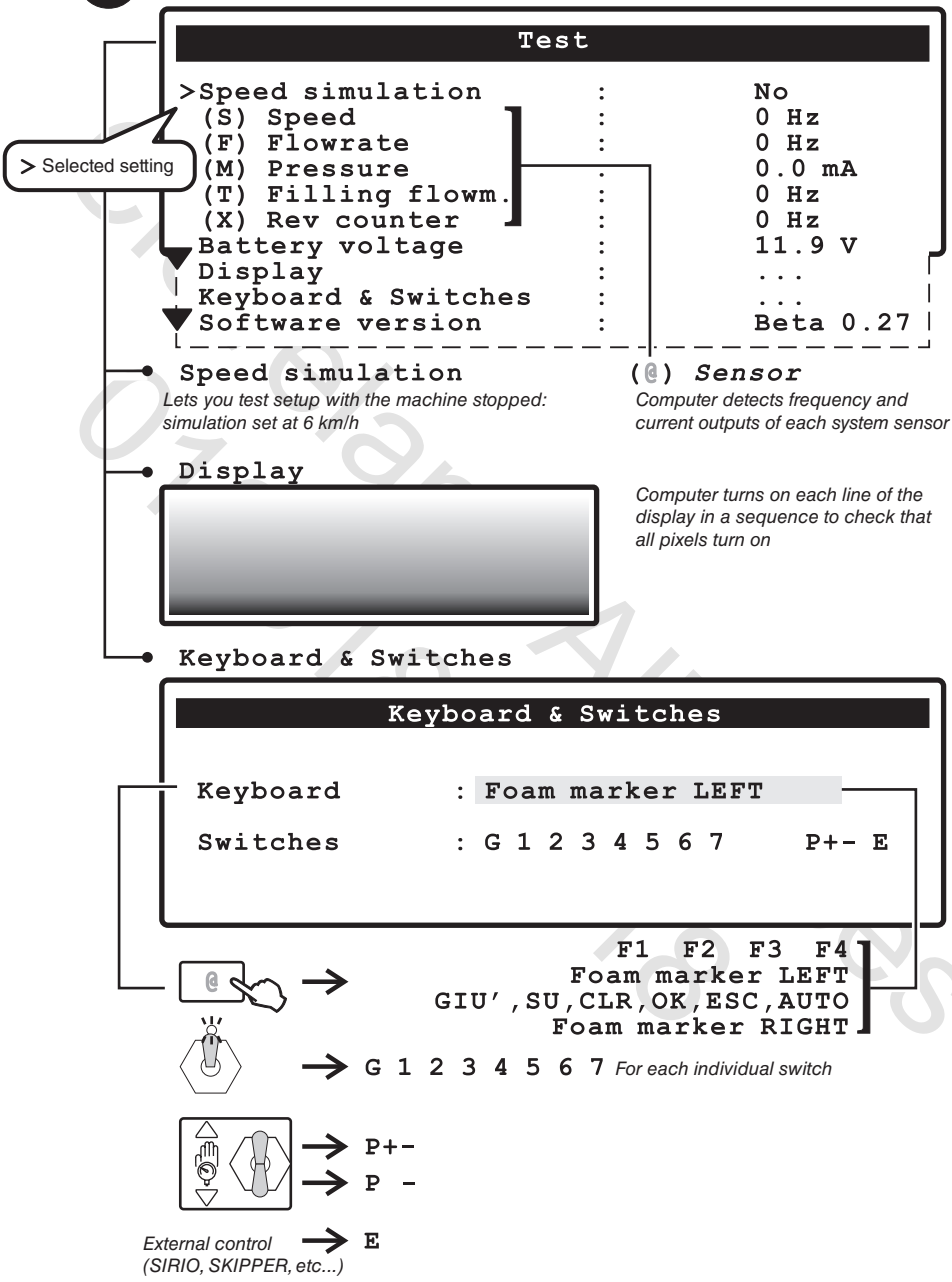
```
Data logger

>Disabled
```

When a GPS receiver or the SKIPPER GPS system is connected to the system, the **Data logger** *(if appropriately enabled) will also record the instantaneous position of the machine as it operates in the field.*

For detailed information on SD memory card data management, please read ADD_IN code D30037, available for download at www.aragnet.com

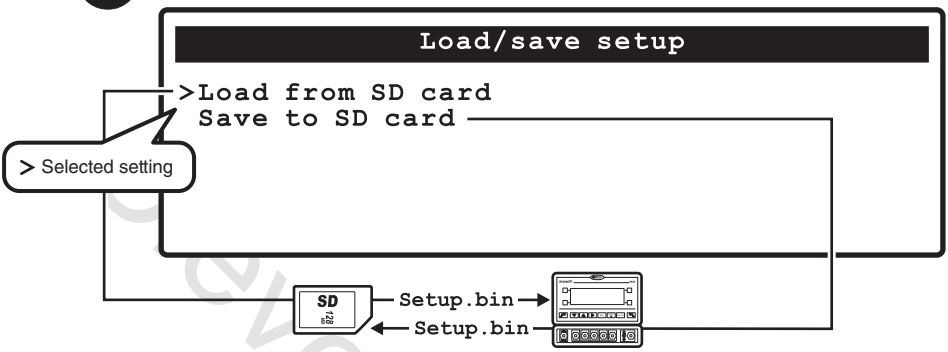
▲ ▼ Used to scroll data or edit values *DATE AND TIME: data scroll will not work*	OK Confirms access or change to data
CLR Sets data to zero *DATE AND TIME: scrolls data during editing*	ESC Quits function or changes to data

- Verify correct operation of the computer: **tests are READ-ONLY**



12.10 Load/save setup

- Access data transfer between SD memory card and computer



Error messages

```
SD card not found!
SD card write protected!
SD card full!
SETUP.BIN: File not found!
```

We recommend saving system setups to the SD memory card after you have completed installation and verified correct machine operation.
Download or save your settings to an SD memory card so you will be able to restore computer setup from the memory card, troubleshoot a problem or set up another BRAVO 300S.

CAUTION: WHEN YOU UPLOAD THE FILE setup.bin FROM THE SD MEMORY CARD TO BRAVO 300S, ALL CURRENT SETTINGS IN THE COMPUTER WILL BE LOST.

For detailed information on SD memory card data management, please read ADD_IN code D30037, available for download at www.aragnet.com

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▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC	Quits function or changes to data

13 FUNCTION KEYS

For a detailed description of function keys, please see chap. 10 - Menu structure.

13.1 Job selection

- Job selection: ONLY enabled jobs are displayed (par. 12.2)

Job selection

```
>01)   60 l/ha          ISO01   Orange
 02)   90 l/ha *        ISO015  Green
 05)  180 l/ha          ISO03   Blue
```

> Selected setting
* Active data

After job has been selected, BRAVO 300S will prompt you to reset all data stored for the previous active job.
If you choose to do so, all deleted data will automatically be saved to the SD memory card.

13.2 Job's data

- Access job data display: the computer will show the active job

```
>Job No.: 01                    >Job No.: 03
```

F1 F2

Job's data

```
>Job No.                 : 02 [Active]
 Covered area            : 0.128    ha
 Applied quantity        : 16       l
 Application time        : 0:01     hh:mm
 Productivity            : 11.0     ha/h
 Target rate             : 90       l/ha
 Rate applied            : 93.5     l/ha
 Nozzle                  : ISO015
 Date                    : 16/02/06
 Time                    : 12:28
 Distance traveled       : 0.001    km
 Save to SD card         : R02-0004.TXT
 Report number           : 0004
```

> Selected setting

CLR **Resetting the totalizers**
- individual data item: select data item;
- all data: select job number;
the system will ask you to confirm that you wish to delete selected data

Cap. 16
Technical data

+ **Flow rate ON** = **Covered area count ENABLED** = **Distance travelled and time count ENABLED**

For detailed information on SD memory card data management, please read ADD_IN code D30037, available for download at www.aragnet.com

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

13.3 Zero transducer setup

- Access pressure sensor residual signal reset

```
Zero transducer setup

>0.7 bar


          Press OK to reset
```

Advanced Setup/
Pressure sensor
Type: xxx

Par. 11.11

Signal out of range! Check transducer

This alarm appears when abnormal pressure values have been detected: check transducer for correct operation; if problem persists, check for residual pressure in the system.

13.4 Tank

- Tank filling control

```
Tank

>Filling up          : 3000 l
 Level               : 1540 l
 Filled quantity     :    0 l
```

If the filling flowmeter is connected to the system, the display will show filling data in real time.

Par. 11.13

Filling up
BRAVO 300S shows the tank capacity set during the advanced setup procedure

Level
BRAVO 300S shows the actual quantity of fluid in the tank

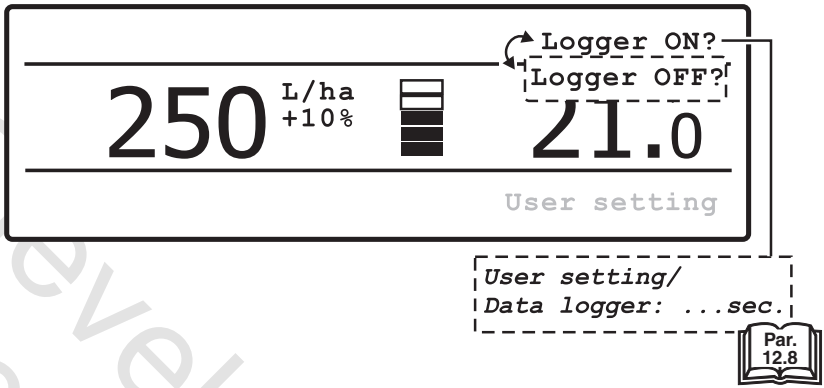
Filled quantity
As soon as the tank is filled, BRAVO 300S shows the amount of fluid loaded

ATTENTION! Maximum level reached
Stop the filling pump: tank filled to capacity

▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

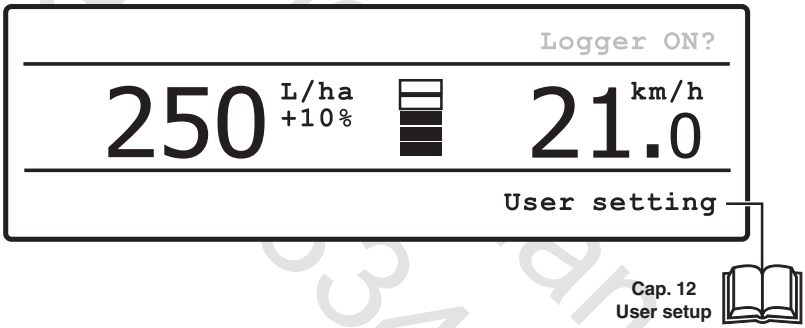
13.5 Logger ON?

- Enable/disable application data logging



13.6 User setting

- Access user setup parameters



▲ ▼	Used to scroll data or edit values	OK	Confirms access or change to data
CLR	Sets data to zero	ESC ⏻	Quits function or changes to data

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14 USE

14.1 Preliminary setup before application

When	Setting	User setup	Function key	Par.
FIRST START-UP	Speed	•		12.1
	Job setup	•		12.2
	Nozzle setup	•		12.3
	Operating limits	•		12.4
	Rate correction factor	•		12.5
	User's preferences	•		12.6
	Date and time	•		12.7
	Data recorder	•		12.8
	Setup logging to SD memory card	•		12.10
BEFORE EACH APPLICATION	Type of wheel	•		12.1
	Rate correction factor	•		12.5
	Type of job		•	13.1
	Tank parameter		•	13.4
	Totalizer reset (at user's option)		•	13.2
	Work data logging (at user's option)		•	13.5

Tab. 13

When finished with the above settings, choose MANUAL or AUTOMATIC operation and begin application.

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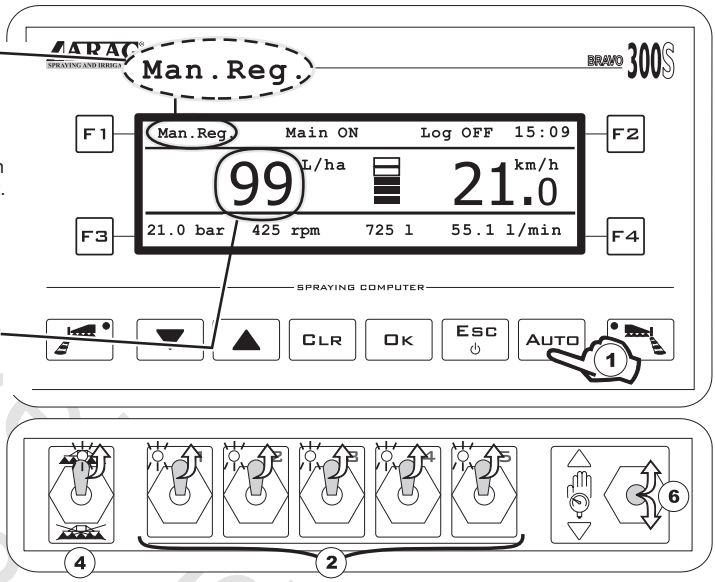
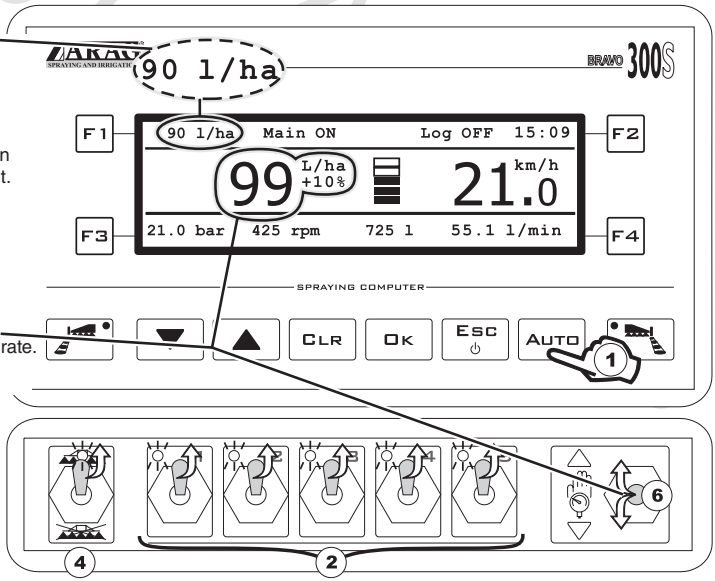
14.2 Manual operation

1. Enable manual operation.
2. Open the required section valves.
3. Drive tractor to field position where application is to start.
4. Set main switch to ON.
5. Begin application.
6. Use control valve switch to achieve desired quantity.



14.3 Automatic operation

1. Enable automatic operation.
2. Open the required section valves.
3. Drive tractor to field position where application is to start.
4. Set main switch to ON.
5. Begin application.
6. Use control valve switch to make temporary adjustments to application rate.

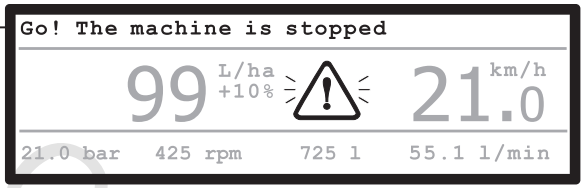


The computer maintains set system output

Chap. 9 - Controls and display

15 MAINTENANCE / DIAGNOSTICS / REPAIRS

15.1 Errors during operation



Tab. 14

	Alarm message	What do to
Par. 9.4	**Disable spraying command!** Main switch ON upon computer power-up	• Flip down main switch lever (set to OFF).
Par. 14.3	**Go! The machine is stopped** **ONLY for automatic operation:** Main switch ON with machine stopped	• Move off the machine. • Flip down main switch lever (set to OFF).
Par. 14.3	**Start pump! No flowrate** **ONLY for automatic operation:** Main switch ON, machine stopped, rate equals zero	• Start the pump and move off the machine.
Par. 12.3	**Go slow! High pressure** Pressure exceeds maximum level allowed for nozzle in use	• Slow down machine speed. • Set operating pressure to within the limits set for the nozzles in use. • Repeat the alarm setup procedure for nozzle minimum and maximum pressure alarms.
Par. 12.3	**Go fast! Insufficient pressure** Pressure below minimum level allowed for nozzle in use	• Increase machine speed. • Set operating pressure to within the limits set for the nozzles in use. • Repeat the alarm setup procedure for nozzle minimum and maximum pressure alarms.
Par. 12.2	**Go slow! Insufficent flowrate** Rate below minimum level required for application	• Slow down machine speed. • Verify correct setting of flow-meter constant.
Par. 12.2	**Go fast! High flowrate** Rate exceeds level required for application	• Increase machine speed. • Verify correct setting of flow-meter constant.
Par. 11.13	**Reduce rotation speed!** RPM exceeds maximum value allowed	• Reduce RPM of moving part.
Par. 11.13	**Increase rotation speed!** RPM below minimum value	• Increase RPM of moving part.
Par. 11.15	**Stop immediately! Pump fault** Pump oil level too low or water in oil	• Stop the machine and check pump condition.
Par. 11.8	**Flowmeter out of range** Rate outside limits allowed by flow-meter	• Set operating pressure to within the limits set for the nozzles in use. • Verify correct setting of flow-meter constant.
Par. 8.2 - 12.10	**SD card not found!** Memory card was not inserted correctly	• Shut down computer and check that memory card is correctly seated in its slot.
Par. 8.2 - 12.10	**SD card write protected!** Memory card is locked	• Shut down computer and unlock memory card.
Par. 12.10	**SD card full!** No space available on memory card	• Make space for new data: delete any files you don't need from the memory card.
Par. 12.10	**SETUP.BIN: File not found!** Computer setup was not saved	• Save data.
Par. 13.3	**Signal out of range!Check transducer** Abnormal pressure readings	• Verify pressure sensor condition and check for residual pressure in the system.

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

15.2 Troubleshooting

FAULT	CAUSE	REMEDY
Display will not turn on	Power supply missing	• Check power supply cable connections.
	Computer is OFF	• Press the ON button.
Section valve controls take no effect	Valves not connected	• Connect the connectors.
One valve will not open	No power supply to valve	• Check wiring connection and valve operation.
Display does not show speed	Wrong setup	• Check wheel constant setting (**par. 12.1**).
	No signal from speed sensor	• Check connections to speed sensor.
Speed readout inaccurate	Wrong setup	• Check wheel constant setting (**par. 12.1**).
Volume sprayed readout inaccurate	Wrong setup	• Check boom width setting (**par. 11.8**). • Check flow-meter constant setting (**par. 11.10**). • Check wheel constant setting (**par. 12.1**). • Check section valve type setting (**par. 11.9**). • Check connections to speed sensor.
Covered area count displayed does not match actual covered area	Wrong setup	• Check boom width setting (**par. 11.8**). • Check wheel constant setting (**par. 12.1**). • Check connections to speed sensor.
	Covered area count not reset	• Reset counter.
Distance travelled count displayed does not match actual distance covered	Wrong setup	• Check wheel constant setting (**par. 12.1**). • Check connections to speed sensor.
	Distance travelled count not reset	• Reset counter.
Dispensed fluid count displayed does not match litres/gpm actually dispensed	Wrong setup	• Check flow-meter constant setting (**par. 11.10**). • Check section valve type setting (**par. 11.9**).
	Distance travelled count not reset	• Reset counter.
	Three-way section valves in use, but no backflow calibration	• Perform calibration.
Time count displayed does not match actual time worked	Work time count not reset	• Reset counter.
Spray volume set for automatic operation cannot be achieved	Wrong setup	• Check application rate setting (**par. 12.2**). • Check boom width setting (**par. 11.8**).
	System not adequately sized to provide required rate	• Check maximum pressure valve setting. • Make sure control valve is adequate for specific system.
	Control valve malfunction	• Check valve operation.
Instantaneous pressure readout inaccurate	Wrong setup	• Check pressure sensor full scale setting.
	Pressure sensor not calibrated	• Perform calibration (**par. 13.3**).
	Pressure sensor improperly installed	• Check connections to pressure sensor.
Instantaneous pressure not displayed	Wrong setup	• Check pressure sensor setting (**par. 11.11**).
	Computer receives no signals from speed sensor	• Check connections to pressure sensor.
	Pressure sensor improperly installed	• Check connections to pressure sensor.
RPM readout inaccurate	Wrong setup	• Check RPM sensor constant setting (**par. 11.15**).
RPM not displayed	Computer receives no signals from RPM sensor	• Check connections to RPM sensor.
	RPM sensor improperly installed	• Check connections to RPM sensor.
Pump failure alarm permanently active	Computer receives no signals from Pump Protector sensor	• Check connections to Pump Protector sensor.

Tab. 15

Cleveland Motion Controls
Part 88634

16 TECHNICAL DATA

16.1 Data and units

• Advanced menu

Datum	Description	Min.	Max.	UM	Notes
Language	Display language	--	--	--	Languages available: Italian, English, Spanish, Portuguese, French, German, Czech, Polish, Russian
Unit of measurement	Measurement unit displayed	--	--	--	Possible settings: Metric, US
Section valves number	Number of section valves installed in the system	--	--	--	Possible settings: 1 ÷ 7
Boom setup	Width of each boom section	0,0	99,99	Metric: m US: ft	Data item is displayed when width of each boom section is set
Valves	Boom section	--	--	--	Possible settings: 2-way - no calibrated backflow 3-way - calibrated backflow
	Automatic shutoff				Possible settings: No (P mode) Yes (M mode)
	Pressure control				Possible settings: 2-way 3-way
	Main				Possible settings: 2-way 3-way None
Flowmeter	Type of flow-meter	--	--	--	Possible settings: Disabled, Orion 462xxAxxxxx, Other...
	Min rate alarm	Disabled	999,9	Metric: l/min US: gal/min	Minimum rate for correct flow-meter operation
	Max rate alarm	Disabled	999,9	Metric: l/min US: gal/min	Maximum rate for correct flow-meter operation
	Flow-meter constant	1	32000	Metric: pls/l US: pls/gal	Data required for rate calculation
Pressure sensor	Type	--	--	--	Possible settings: Disabled, 466112.200, 466112.500, Other..
	Max pressure	0,1 1	50,0 2200	Metric: bar US: psi	Data required to determine instantaneous pressure
Delivery cal. sensor	Sensor used to calculate output	--	--	--	Possible settings: Flowmeter, Pressure, Either
Tank	Tank capacity	1	10000	Metric: l US: gal	
	Tank reserve value	0 0	1998 528	Metric: l US: gal	Below this value, the computer triggers an alarm message with a warning sound
Filling flowmeter	Type	--	--	--	Possible settings: Disabled, Orion 462xxAxxxxx, Other...
Rev counter	Rev counter constant	Disabled	999	Metric - US: pls/turn	
	Minimum speed alarm	No	10000	Metric - US: pls/turn	Below this value, the computer triggers an alarm
	Maximum speed alarm	No	10000	Metric - US: pls/turn	Above this value, the computer triggers an alarm
Foam marker	Foam marker operation	--	--	--	Possible settings: Automatic, Semi-autom., Manual
Pump Protector	Pump diaphragm failure alarm	--	--	--	Possible settings: Enabled, Disabled

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• User programming

Datum	Description	Min.	Max.	UM	Notes
Speed	Source	--	--	--	Possible settings: Wheel sensor, GPS
	Selected wheel type	--	--	--	Up to three wheel types can be stored
	Wheels setting	--	--	--	Includes the following submenus: Constant calculation, Wheel constant
	Constant calculation	--	--	--	Possible setting: Manual, Automatic
	Wheel constant	0,01	150	Metric: cm/pls US: inches/pls	Number of constant to be set: 1 ÷ 3
	Reference distance	20	1000	Metric: m	Distance to be travelled during automatic constant calculation
		60	3000	US: feet	
Jobs setup	Available job selection	--	--	--	Possible setting: 01 ÷ 14
	Application rate	Disabled	9999	Metric: l/ha US: gpa	Supports “Varying application rate”
	Nozzle	--	--	--	Possible settings: ISO 01 ÷ 20, Type A ÷ E
Nozzles setup	Flowrate	0,01	99,99	Metric: l/min US: gpm	Value can ONLY be edited for custom-made nozzles
	Pressure	0,1	99,9	Metric: bar US: psi	
	Minimum pressure alarm	Disabled	99,9	Metric: bar US: psi	Value can be edited for custom-made and ISO nozzles
	Maximum pressure alarm	Disabled	99,9	Metric: bar US: psi	
Working limits	Nozzle wear monitoring	Disabled	50	Metric / US: %	
	Min spraying speed	Disabled	999,9	Metric: km/h US: mph	
	Regulation lockout type	--	--	--	Includes the following optionsi: Disabled, Min. regulation speed, Min. regulation pressure
	Min regulation speed	0,1	99,99	Metric: km/h US: mph	
	Min regulation pressure	0,1	99,9	Metric: bar US: psi	
Flowrate correct. factor		0,1	10,0	--	

Tab. 17

CONTINUES

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• **Delivery values**

Datum	Description	Min.	Max.	UM
Applied quantity	Quantity of fluid dispensed per unit of surface area	0	9999	Metric: l/ha
		0	999	US: gpa
Speed	Vehicle speed	0	99	Metric: km/h US: mph
Flowrate	Quantity of fluid dispensed per unit of time	0	999,9	Metric: l/min US: gpm
Pressure	Spraying pressure	0	999,9	Metric: bar
		0	9999	US: psi
Tank level	Fluid level left in tank	0	9999	Metric: l US: gal
Rev counter	RPM	0	9999	Metric / US: RPM

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• **Counters**

Datum	Description	Min.	Max.	UM
Covered area	Area covered	0,000	99999	Metric: ha US: acres
Applied quantity	Dispensed fluid	0	99999	Metric: l US: gal
Time	Time worked	00:00	99999	Metric: h US: h
Distance traveled	Distance travelled	0,000	99999	Metric: km US: miles

Tab. 19

16.2 Computer technical data

Description	BRAVO 30XS
Display	White backlit 240 x 73 graphic LCD
Power supply	11 ÷ 14 Vdc
Consumption (only computer)	450 mA
Working temperature	0 °C ÷ 60 °C +32 °F ÷ +140 °F
Digital inputs	for open collector sensors: max. 2000 imp./s
Analog inputs	4 ÷ 20 mA
Weight	1015 g (Bravo **cod. 46730501** without wiring)
Protection against reversal of polarity	•
Protection against short circuit	•

Tab. 20

17 DISPOSAL AT THE END OF SERVICE

Dispose of the system in compliance with the established legislation in the country of use.

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18 GUARANTEE TERMS

1. ARAG s.r.l. guarantees this apparatus for a period of 360 day (1 year) from the date of sale to the client user (date of the goods delivery note). The components of the apparatus, that in the unappealable opinion of ARAG are faulty due to an original defect in the material or production process, will be repaired or replaced free of charge at the nearest Assistance Centre operating at the moment the request for intervention is made.
   The following costs are excluded:
   - disassembly and reassembly of the apparatus from the original system;
   - transport of the apparatus to the Assistance Centre.
2. The following are not covered by the guarantee:
   - damage caused by transport (scratches, dints and similar);
   - damage due to incorrect installation or to faults originating from insufficient or inadequate characteristics of the electrical system, or to alterations resulting from environmental, climatic or other conditions;
   - damage due to the use of unsuitable chemical products, for spraying, watering, weedkilling or any other crop treatment, that may damage the apparatus;
   - malfunctioning caused by negligence, mishandling, lack of know how, repairs or modifications carried out by unauthorised personnel;
   - incorrect installation and regulation;
   - damage or malfunction caused by the lack of ordinary maintenance, such as cleaning of filters, nozzles, etc.;
   - anything that can be considered to be normal wear and tear.
3. Repairing the apparatus will be carried out within time limits compatible with the organisational needs of the Assistance Centre.
   No guarantee conditions will be recognised for those units or components that have not been previously washed and cleaned to remove residue of the products used.
4. Repairs carried out under guarantee are guaranteed for one year (360 days) from the replacement or repair date.
5. ARAG will not recognise any further expressed or intended guarantees, apart from those listed here.
   No representative or retailer is authorised to take on any other responsibility relative to ARAG products.
   The period of the guarantees recognised by law, including the commercial guarantees and allowances for special purposes are limited, in length of time, to the validities given here. In no case will ARAG recognise loss of profits, either direct, indirect, special or subsequent to any damage.
6. The parts replaced under guarantee remain the property of ARAG.
7. All safety information present in the sales documents regarding limits in use, performance and product characteristics must be transferred to the end user as a responsibility of the purchaser.
8. Any controversy must be presented to the Reggio Emilia Law Court.

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Conformity Declaration CE

ARAG s.r.l.
Via Palladio, 5/A
42048 Rubiera (RE) - Italy
P.IVA 01801480359

Dichiara

che il prodotto

descrizione: **Computer**
modello: **Bravo 300S e Bravo 300S Selejet**
serie: **46730xxx, 46731xxx, 46734xxx e 46736xxx**

risponde ai requisiti di conformità contemplati nelle seguente Direttiva Europea:

2004/108/CE e successive modificazioni
(Compatibilità Elettromagnetica)

Riferimenti alle Norme Applicate:

EN ISO 14982:2001
(Macchine agricole e forestali - Compatibilità elettromagnetica
Metodi di prova e criteri di accettazione)

Rubiera, 23 Aprile 2009

Giovanni Montorsi

(Presidente)

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Only use original ARAG accessories and spare parts, to maintain safety conditions foreseen by the constructor. Always refer to the ARAG spare parts catalogue.

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D20154_GB-m03 10/2009

42048 RUBIERA (Reggio Emilia) - ITALY
Via Palladio, 5/A

Tel. 0522 622011
Fax 0522 628944

http://www.aragnet.com
info@aragnet.com