



**bravo400sLT**


**COMPUTER BRAVO 400S LT  
WITH INTEGRATED GPS NAVIGATOR**

**CE**

**4674L0701  
4674L0713**

**INSTALLATION**

 = 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 any future reference; ARAG reserves the right to modify product specifications and instructions at any moment and without notice.*

**1 RISKS AND PROTECTIONS BEFORE ASSEMBLY**

All installation works must be done with 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 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 cabin of the farming machine it is installed in. The computer is directly connected to the system by means of two cables connected to the hydraulic and control unit valves and the sensors. In the cabin you find all controls necessary to manage the system ensuring great safety during the job. Bravo 400S LT features a satellite navigator that – through the external GPS receiver – can be used for agricultural applications and navigation.

 **Bravo 400S LT is not designed for use on public roads and should only be used on farmland.**

**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 2004/108/EC 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 voltage (12 VDC).
- In case of voltaic arc welding, remove connectors from Bravo 400S LT and disconnect the power cables.
- Only use ARAG genuine spare parts and accessories.
- Bravo 400S LT can control hydraulic valves to open / close the boom.

The computer does not feature emergency stop devices: the manufacturer must provide all necessary safety devices for the hydraulic boom control. Any time one hydraulic boom section is opened or closed the computer emits an acoustic signal and the display shows the relevant indication. The manufacturer should also provide acoustic and optical warnings in the vicinity of the boom.

**4 PACKAGE CONTENT**

The table below indicates the components that you will find in the Bravo 400S LT computer package:

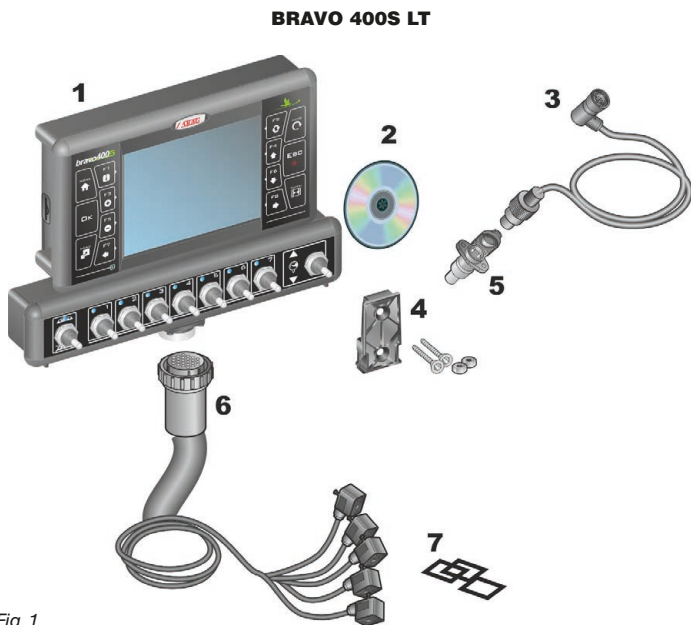


Fig. 1

**Legend:**

- 1 Bravo 400S LT
- 2 Instruction manual (DVD-ROM)
- 3 Power cable
- 4 Fixing kit
- 5 Power supply connector
- 6 Valve and sensor harness
- 7 Control unit valves connector seals

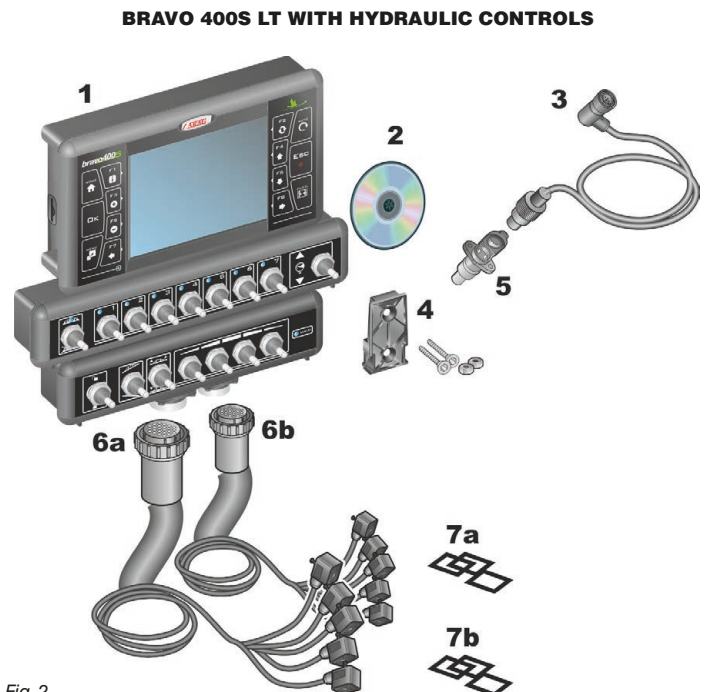


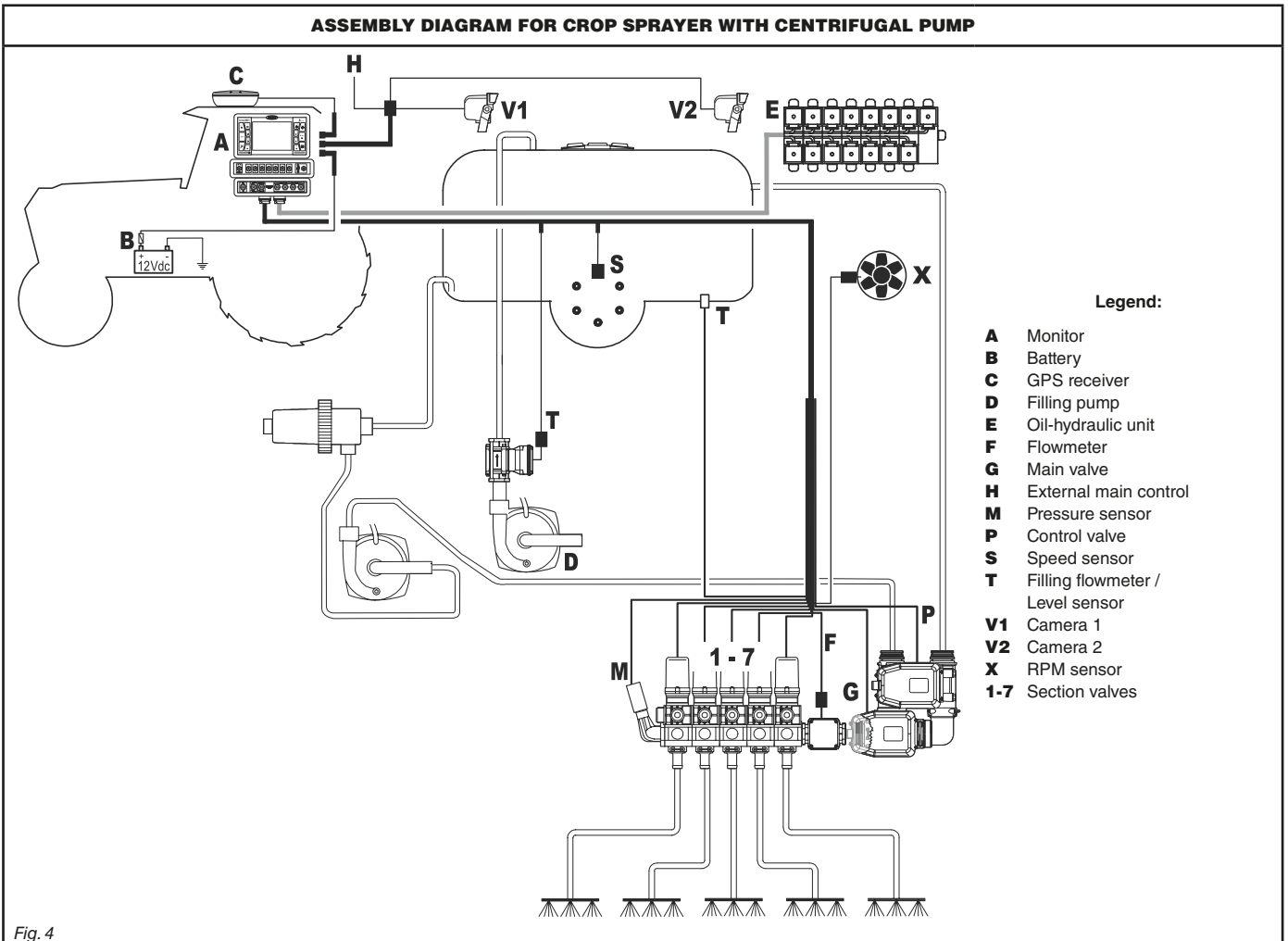
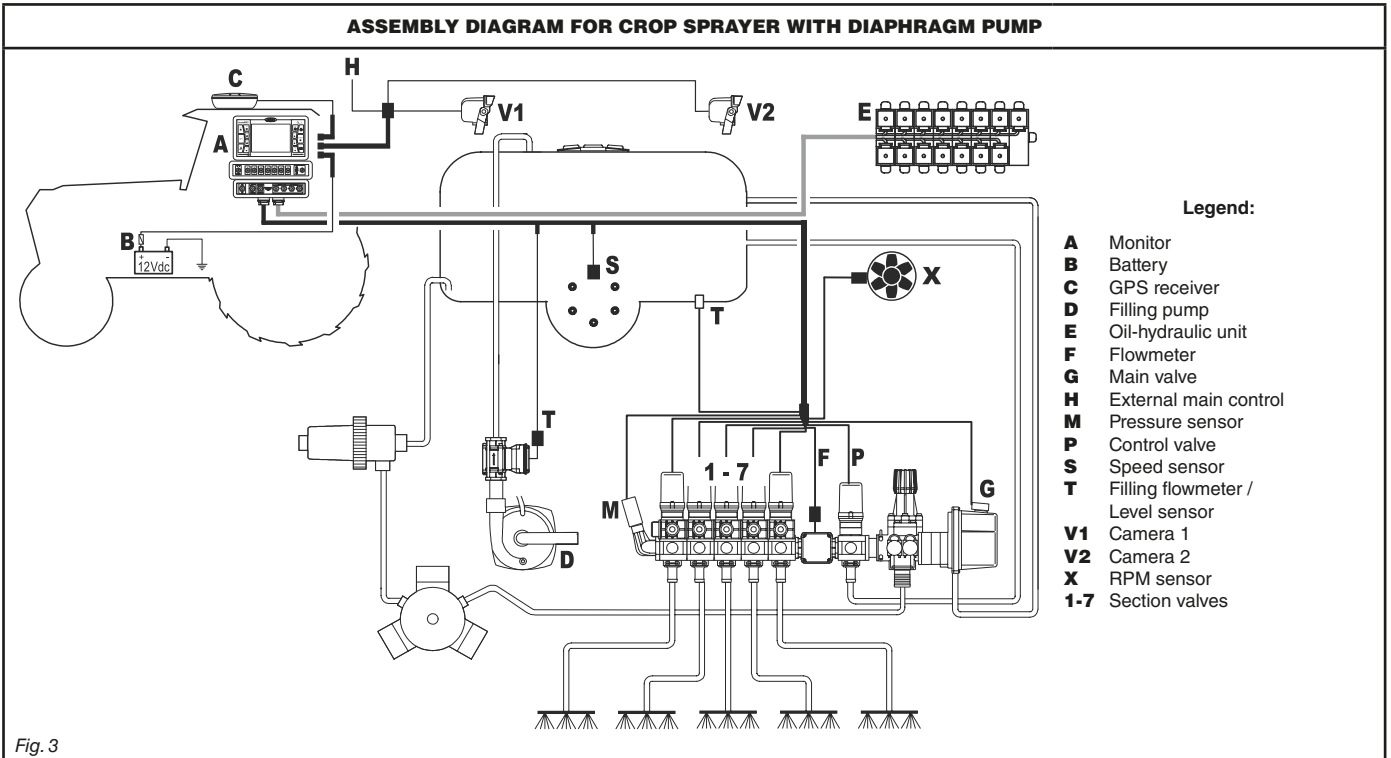
Fig. 2

**Legend:**

- 1 Bravo 400S LT
- 2 Instruction manual (DVD-ROM)
- 3 Power cable
- 4 Fixing kit
- 5 Power supply connector
- 6a Valve and sensor harness
- 6b Hydraulic unit harness
- 7a Control unit valves connector seals
- 7b Hydraulic valves connector seals


5 POSITION ON FARMING MACHINE


5.1 System recommended composition



5.2 Computer positioning


• The computer series Bravo 400S LT must be placed in the control cabin of the farming machine. Observe the following precautions:

-  - Do NOT install the computer in areas where it would be subjected to excessive vibrations or shocks, to prevent any damage or accidental use of the control keys;
- Install the device in 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.

 Consider all necessary connections of the computer (Fig. 5), the cable length, and make sure there is enough space for connectors and cables.

An identification symbol is located next to each connector to indicate its function.

ITEM	CONNECTION POINTS
1	SD memory card
2	USB (2)
3	GPS receiver
4	Auxiliary functions
5	Power supply
6	Control unit and sensors
7	Hydraulic unit

 For any reference to the system configuration read par. 5.1 System recommended composition.

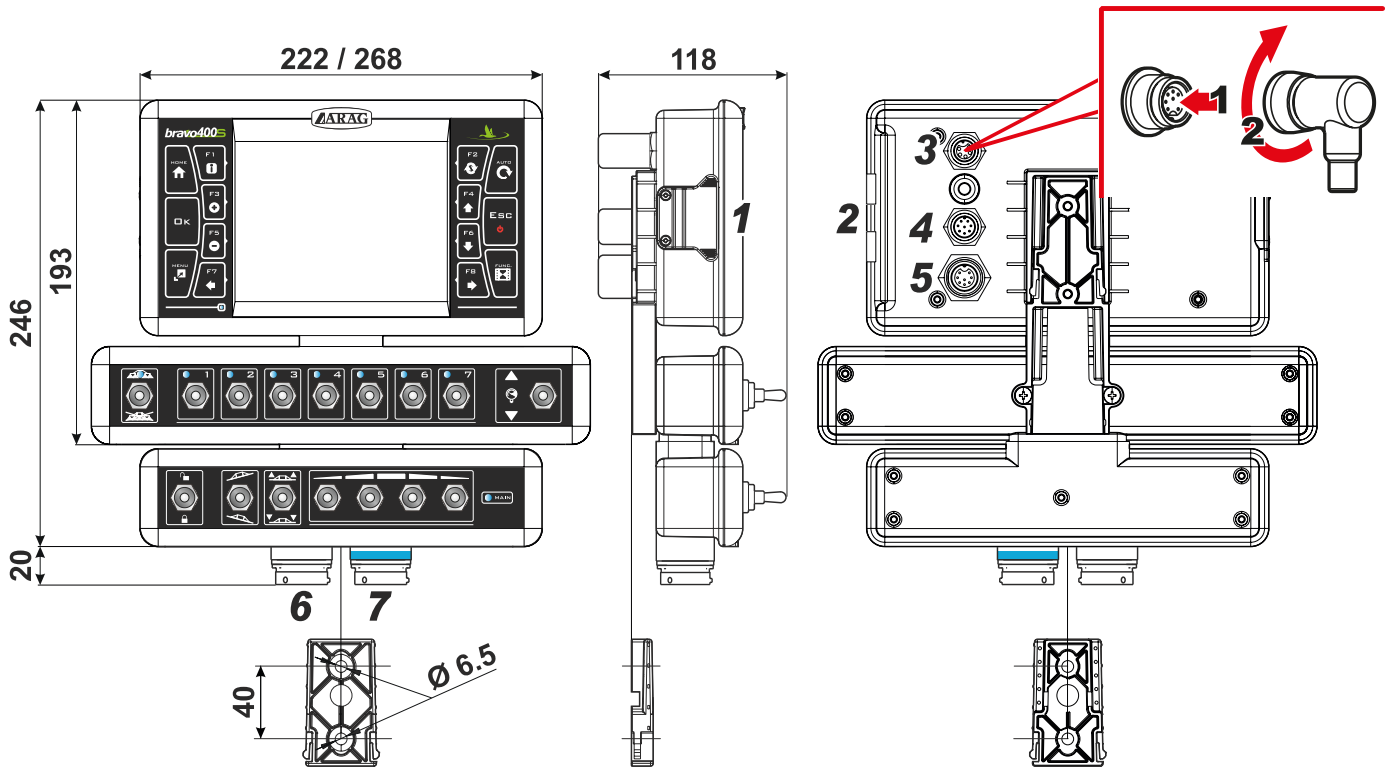


Fig. 5

**5.3 Bracket fixing**

The computer must be mounted after having fixed the bracket at the desired location (the previous paragraph shows the bracket drilling template). The bracket must be slid out of the computer seat (A, Fig. 6) and fixed using the supplied screws (B). Make sure the bracket is securely mounted, fit the computer on it, and push it until it locks in place (C).

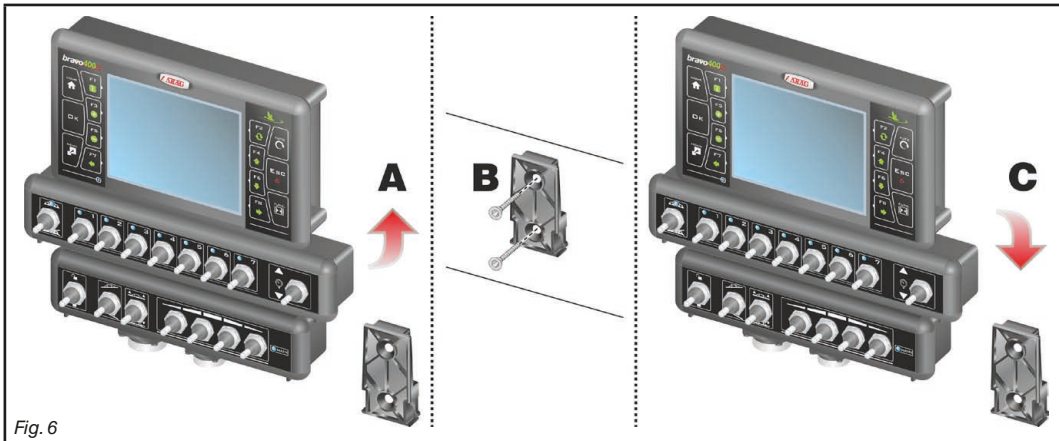


Fig. 6



**WARNING: the computer Bravo 400S LT must only be fastened through the supplied bracket, using suitable screws. NO OTHER TYPE OF FASTENING IS ALLOWED. ARAG is not liable for damages to the equipment, persons or animals caused by failure to observe the above instructions.**

**5.4 Control unit position**

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



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

**5.5 Hydraulic unit positioning**

The hydraulic unit shall be secured to the machine, making sure it is well protected against the elements and the fluid sprayed by the machine.



**ARAG IS NOT LIABLE FOR ANY DAMAGE RESULTING FROM THE INSTALLATION BY UNSKILLED PERSONNEL. ANY SYSTEM DAMAGE CAUSED BY A WRONG INSTALLATION AND/OR CONNECTION AUTOMATICALLY VOIDS THE WARRANTY.**



**WARNING! DO NOT CONNECT HYDRAULIC UNITS OTHER THAN THE SPECIFIED ONES (SEE ARAG GENERAL CATALOGUE). ARAG IS NOT LIABLE FOR ANY DAMAGE TO THE PRODUCT, MALFUNCTION ERRORS AND ANY KIND OF RISK IF THE MODULE IS CONNECTED TO NON ORIGINAL UNITS OR UNITS NOT SUPPLIED BY ARAG.**

## 6 WIRING CONNECTIONS



### WARNING:

To avoid short circuits, do not connect the power cables to battery before the installation is completed. Before powering up the computer, make sure the tractor battery voltage is as specified (12 VDC).

- Only use ARAG harnesses suitable for Bravo 400S LT computer.
- Take care not to break, pull, tear or cut the cables.
- Use of unsuitable cables not provided by ARAG automatically voids the warranty.
- ARAG is not liable for damages to the equipment, persons or animals caused by failure to observe the above instructions.

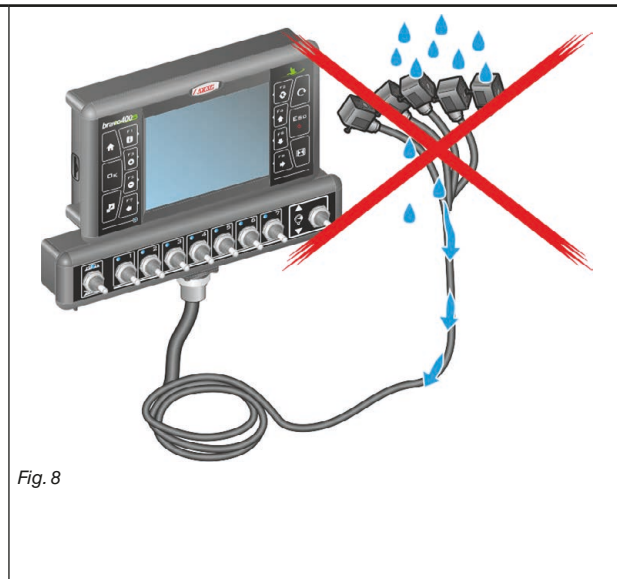
### 6.1 General precautions for a correct harness position

#### • Securing the cables:

- secure the harness so that it does not interfere with moving parts;
- route the harnesses so that they cannot be damaged or broken by machine movements or twisting.

#### • Routing the cables to protect against water infiltrations:

- the cable branches must ALWAYS be face down (Fig. 7).



#### • Fitting the cables to the connection points:

- do not force the connectors by pushing too hard or bending them: the contacts may be damaged and computer operation may be compromised.

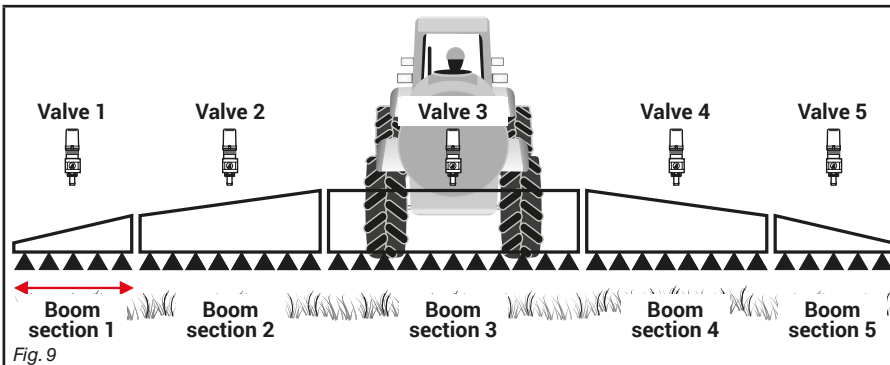


Use **ONLY** the cables and accessories indicated in the catalogue, having technical features suitable for the use to be made of them.

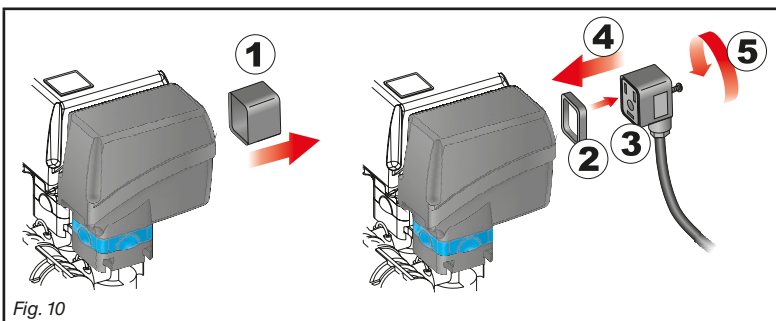
6.2 Control unit valve connection



- System only works if connected to the 3-wire type valves.
- Use ARAG valves: use of unsuitable valves 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.
- All valve connectors must be provided with seals before being connected (Fig. 10).
- Make sure the seals are correctly fitted to avoid water infiltration when using the control unit.



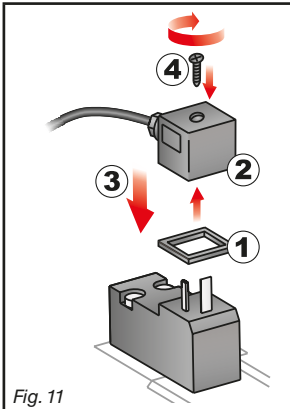
Connector 1 shall control the valve which in turn is connected to the boom section 1, and so on with the other valves. Connect "connector 1" to "valve 1", and then the other connectors with increasing numbers from left to right **the boom section 1 is the furthest from the machine on the left, looking at the machine from the rear side** (Fig. 9).



Fix the connectors to the relevant valves according to the initials indicated in your assembly general diagram (par. 5.1 System recommended composition)

- Remove the protection cap (1, Fig. 10) from the electric valve.
- Place the seal (2) onto the connector (3), and push the connector fully on (4): be careful not to bend the contacts upon insertion on the valve.
- Tighten the screw (5) fully home.

6.3 Hydraulic valves connection



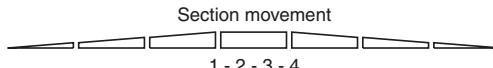


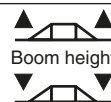








Bravo 400S LT can control up to 7 hydraulic functions through double-acting valves.

Fix the connectors to the relevant valves according to the initials indicated in your assembly general diagram (par. 5.1).

- Position seal (1) onto connector (2), then connect the latter pressing it fully home (3): **during this operation, take special care not to bend valve electric contacts.**
- Insert screw inside connector, and screw it (4) until it is tightened.

The function of each switch on the hydraulic function control panel is described below.

Connect the connector marked with "DD" to the pilot valve, and then the other connectors, as specified on the table:

CONTROL	MOVEMENT	CONNECTOR
 <p>Section movement 1 - 2 - 3 - 4</p>	Opening 	1 ÷ 4 A
	Closing 	1 ÷ 4 C
 <p>Boom height</p>	Opening 	AA
	Closing 	AC
 <p>Boom locking</p>	Opening 	BA
	Closing 	BC
 <p>Boom leveling</p>	Opening 	CA
	Closing 	CC



6.4 Sensor connection

Fix the connectors to the relevant functions according to the initials indicated in your assembly general diagram (par. 5.1).

**Harness cables are marked with a symbol denoting their functions: please see the table for correct harness connection.**



**Use ARAG sensors: use of unsuitable 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.**

ITEM	MAIN CONNECTION	ALTERNATIVE CONNECTION
<b>F</b>	Flowmeter	-
<b>M</b>	Pressure sensor	-
<b>S</b>	Speed sensor	-
<b>T</b>	Filling flowmeter	Level sensor
<b>X</b>	RPM sensor	-

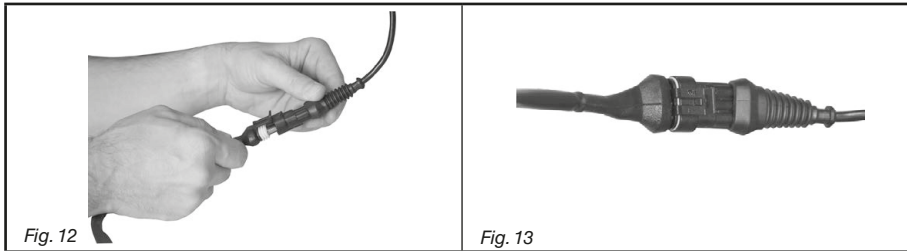
- The products are supplied with the sensor installation instructions.  
The following speed sensors can also be used as RPM sensors:

- inductive speed sensor (**code 467100.086**);
- magnetic speed sensor (**code 467100.100**).

- Connection of:

- flowmeter;
- pressure sensor;
- level sensor
- filling flowmeter;
- RPM sensor.

All ARAG sensors use the same type of connector. Connect the sensor connector to the relevant harness; make sure it is correctly fitted and push it until locking it.



6.5 Auxiliary functions

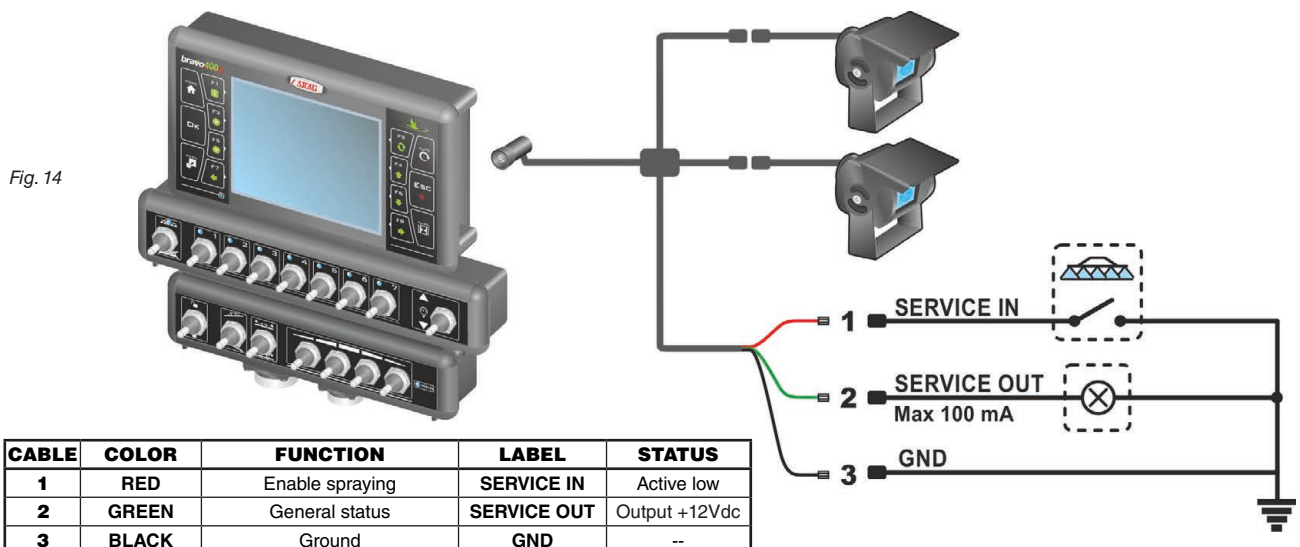
Depending on the auxiliary functions requested, various harnesses are available for connecting cameras, spraying activation signal and treatment status (ARAG general catalog).

• Camera connection

Bravo 400S LT can be connected to one or two cameras **code 46700100** (purchased separately) using the suitable cables listed in the ARAG general catalog. Connect the connector to the computer (see connection points at par. 5.2) and the other cable end to the camera: ensure it is correctly in place and turn the ring nut clockwise until blocking it.

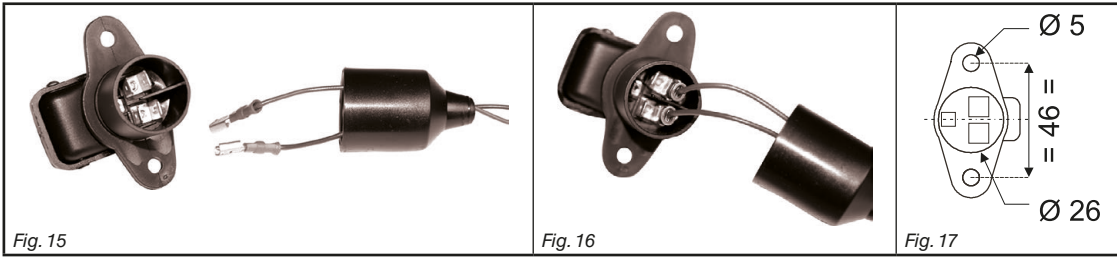
• Enable spraying

The harness that connects Bravo 400S LT to a spraying activation control is available on the ARAG general catalog.



6.6 Power supply connection

The package includes the power connector (component 5, Fig. 1 / Fig. 2) to be connected to the farming machine battery; Fig. 17 shows the drilling template of the power connector. Connect the power connector to the battery wires using two 6-mm faston connectors, as indicated in Fig. 15 and Fig. 16. Use the cable provided with the package (component 3, Fig. 1 / Fig. 2) to connect the computer to the power supply.



**WARNING:**

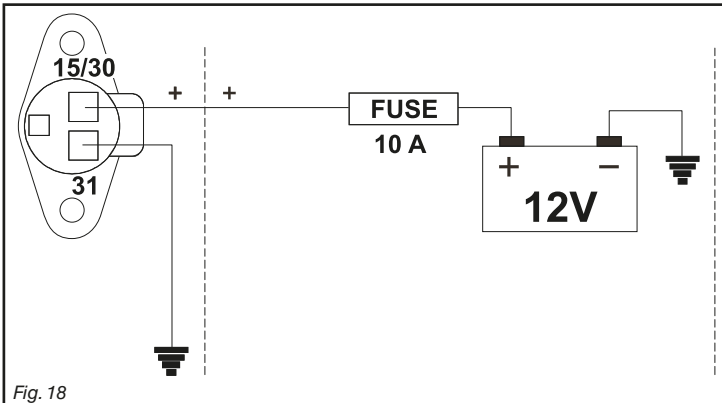
**To avoid short circuits, do not connect the power cables to battery before the installation is completed. Before powering up the computer and control unit, make sure the battery voltage is as specified (12 Vdc).**

Bravo 400S LT is supplied directly by the farming machine battery (12 Vdc): ALWAYS switch on the computer through the monitor, and then remember to switch it off using the specific key on the control panel.



**If Bravo 400S LT remains on for a long time with the machine off, the tractor battery could run flat: in case of prolonged breaks of the machine with engine off, make sure the computer is off, too.**

The power source must be connected as indicated in Fig. 18: **the computer must be connected directly to the farming machine battery. DO NOT connect the computer to key-operated switch (15/54).**



**WARNING:**

- The power circuit shall ALWAYS be protected by a 10 A fuse like the ones for automotive applications.
  - All cables connected to the battery shall have a minimum cross-section of 2.5 sq. mm.
- To avoid short-circuits, connect the power cable connector only after completing installation.
- Use cables with suitable terminals ensuring correct connection of all wires.

## 7 ACCESSORIES

### 7.1 SD memory card

The SD memory card may be used to exchange data with computer Bravo 400S LT.



**Before use, format the SD board in FAT 32 mode; make sure that the board is not protected and can be read by the system (Fig. 19). The system is ONLY compatible with SD or SDHC memory cards, up to 8 Gb of memory.**

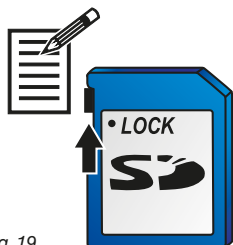


Fig. 19



Fig. 20

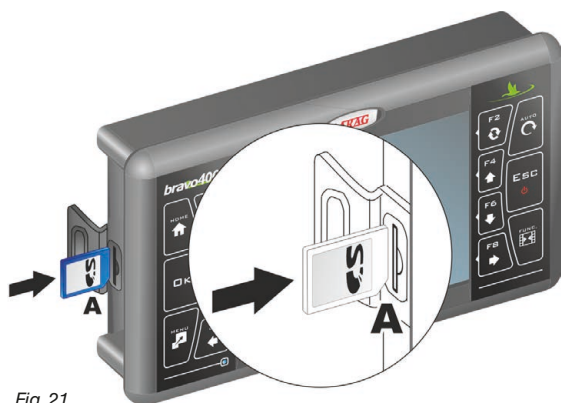


Fig. 21

#### • Insertion

Insert the memory card making sure to orient it correctly: the card cut edge A must be face down. Push the card until it engages into place and close the slot with the cover.

#### • Removal

Press and immediately release the card into the slot and slide it out.

### 7.2 Pendrive

The pendrive may be used to exchange data with computer Bravo 400S LT.



**Before use, format the SD board in FAT 32 mode; make sure that the board is not protected and can be read by the system. Compatible with pendrive, up to 8 Gb of memory.**

**8 MAINTENANCE / DIAGNOSTICS / REPAIRS**

**8.1 Troubleshooting**

FAULT	CAUSE	REMEDY
The display does not switch on	No power supply	• Check power supply connection
	Computer is OFF	• Press the ON key

**8.2 Cleaning rules**

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

**9 TECHNICAL DATA**

DESCRIPTION	BRAVO 400S LT
Display	LCD 5,7", 65000 colori, 500 cd/m <sup>2</sup>
Rated supply voltage	12 Vdc (9 ÷ 15 Vdc)
Consumption (valves excluded)	0,5 A @ 12 Vdc
Operating temperature	0 °C ÷ 45 °C +32 °F ÷ +113 °F
Storage temperature	-10 °C ÷ 60 °C 14 °F ÷ +140 °F
Weight (without cables)	1300 g (cod. 4674L0701) 1720 g (cod. 4674L0713)
Digital inputs	for open collector sensors: max 2000 pulse/s
Analog input	4 ÷ 20 mA
Spraying activation input (SERVICE IN)	Active low
Spraying status output (SERVICE OUT)	•
No. 2 camera inputs	PAL
No. 2 RS232 serial ports	until 115200 baud
SD card reader	•
N° 2 USB 2.0 ports	HOST
Power supply for GPS receiver	12 Vdc (max 300 mA)
Power supply for cameras	max 300 mA
Protection against polarity inversion	•
Protection against short-circuit	•

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## 10 END-OF-LIFE DISPOSAL

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This device contains a lithium polymer battery that, at end of life, must be disposed of according to the prevailing rules.

Should it be necessary to replace the battery, do not disassemble the device but contact ARAG directly.



**The device must be used and stored at the temperature indicated in chapter "Technical data" of this manual.**

**Excessive temperature oscillations may cause acid leakage, overheating, explosion or self-combustion of the battery and consequent injuries and/or damages to persons.**

**Do not open, remove, drill or throw the device in the fire.**

**In case of battery leakage and accidental contact with the leaked out fluids, thoroughly rinse the concerned area and seek immediately medical advice.**

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## 11 GUARANTEE TERMS

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1. ARAG s.r.l. guarantees this apparatus for a period of 360 days (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 Center 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 Center.
2. The following are not covered by the guarantee:
  - damage caused by transport (scratches, dents 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 unauthorized 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 organizational needs of the Assistance Center.  
No guarantee conditions will be recognized 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 recognize any further expressed or intended guarantees, apart from those listed here.  
No representative or retailer is authorized to take on any other responsibility relative to ARAG products.  
The period of the guarantees recognized 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 recognize 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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## 12 EU CONFORMITY DECLARATION

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The declaration of conformity is available at [www.aragnet.com](http://www.aragnet.com), in the relevant section.

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*Only use genuine ARAG accessories or spare parts to make sure manufacturer guaranteed safety conditions are maintained in time. Always refer to ARAG spare parts catalog.*

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

Tel. +39 0522 622011  
Fax +39 0522 628944

<http://www.aragnet.com>  
[info@aragnet.com](mailto:info@aragnet.com)