

**MOTORIZED CONTROL UNITS FOR
SPRAYERS**

VIKING

**OPERATING, SET-UP, SERVICE
AND SAFETY INSTRUCTIONS**

Eng



**IDROMECCANICA
BERTOLINI**

Reggio Emilia - Italy

You have decided to choose “**BERTOLINI**” and you purchased a product manufactured using the latest technology and the finest materials for the best in quality, duration and functionality. We are grateful for your confidence in us. Read this booklet and always keep it at hand; you will find it useful in resolving any doubts you may have on the features and functionality of the product.

Thank you for choosing “Bertolini”

This instruction manual provides all the specific information necessary for familiarisation and use of the remote control in your possession.

ATTENTION!

READ CAREFULLY THE INSTRUCTIONS CONTAINED IN THIS BOOKLET BEFORE INSTALLING THE CONTROL AND REFER TO THEM WHENEVER DOUBTS ARISE ON USE OR DURING MAINTENANCE OPERATIONS.

IDROMECCANICA BERTOLINI S.p.A. DECLINES EVERY CIVIL OR CRIMINAL LIABILITY FOR DAMAGES AND ACCIDENTS, TO OBJECTS OR PERSONS, THAT MAY ARISE FROM FAILURE TO OBSERVE THE SAFETY INSTRUCTIONS PROVIDED IN THIS BOOKLET AND/OR SAFETY REGULATIONS IN FORCE IN THE COUNTRY WHERE THE PRODUCT IS USED.



SAFETY INSTRUCTIONS

- **Do not operate** in the area of action of the system without being protected by suitable protective goggles and clothing;
- **Do not carry out operations** without disconnecting the P.T.O. (stop the pump);
- **Install adequate protection guards** for all moving parts such as the shaft, pulleys, couplings, etc;
- **Do not remove** the guards for the moving parts;
- **Do not modify** the control installation conditions and in particular do not modify the mounting and hydraulic connections;
- **Do not operate** any taps not connected to a usage which may prevent accidental leakage of the liquid being pumped;
- **Make sure** that there is safety valve of adequate capacity in the delivery circuit, in addition to the pressure regulation valve;
- **Make sure** that the hoses are properly fixed before use by checking all the connections;
- **Carry out**, before use, the checks as specified in paragraph 6.
- **Protect** the control against icing in the winter period.
- **Never leave** the control at rest with the pumped liquid inside. Persistence of liquid in contact with the internal parts of the control, when not necessary, can cause the control to deteriorate more quickly.
- **Stop the pump** and release the pressure from the pressure circuit before carrying out all maintenance or checks;
- **Always DISCONNECT** supply cables during maintenance on the machine or during long periods of non-use;
- **Children** and animals must be kept far away from the pump;
- **Do not use** liquids with a temperature greater than 62°C or 145°F, or less than 5°C or 41°F;
- **Do not introduce:**
 - Aqueous solutions with density and viscosity greater than those of water;
 - Inflammable liquids or liquefied gases;
 - Chemical solutions for which there is not guaranteed certainty of their compatibility with the materials of which the control is made;
 - Water for food purposes;
 - Any kind or type of paints and varnishes;

- Solvents and thinners for any kind or type of paints and varnishes;
- Fuels or lubricants of any kind or type;
- Liquids containing granules or solid parts in suspension.

- Before any maintenance:

- Always make sure that the system pump is not operating and that the motorization of the drive is completely disconnected.
- Make sure that the entire hydraulic circuit is not in pressure; therefore, close the pump suction, relieve the pressure of the hydraulic circuit.
- Make sure that electrical supply connection is disconnected and that the metallic body of any drive mechanisms is isolated.
- Always remove the battery connection cables while it is being recharged.
- Do not carry out electric welding with the power wires connected; make sure that they are both (+ and -) disconnected, in order to avoid uncontrollable voltage peaks.

- Before using the system:

- Make sure that the connection hoses of the circuit are properly fastened by checking the connections.
- Carry out adjustment of the distributor before work, only with clean water, making sure that the various joints and connections are not leaking.
- Every time the tractor is started and stopped the general valve must be brought to the OFF position ("by-pass"), in order to avoid inconvenient problems;
- In order to avoid danger to persons or the environment, it must be washed with clean water at the end of every treatment.



**Protect the environment from the liquids contained in the system.
Clean up residues and dispose of them regularly; no residue must enter the canalization network or the ground.**

ALL RIGHTS RESERVED. THIS MANUAL IS INTENDED EXCLUSIVELY FOR USE BY THE CUSTOMER. ALL OTHER USES ARE FORBIDDEN.

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1. General instructions and warnings

1.1 Assistance Service

It is possible to obtain assistance in all countries where the equipment is officially distributed by *Idromeccanica Bertolini* (during and after the warranty period).

Any type of intervention required on the control unit must be carried out in accordance with the information of this manual, or by following any agreements taken with *Idromeccanica Bertolini*.

If this is not the case, the relevant warranty conditions may be annulled.

1.2 Warranty

Idromeccanica Bertolini S.p.A. undertakes, within a maximum of **twelve (12) months** from the date of delivery of the product, to provide a replacement for any parts that have manufacturing defects.

The warranty is valid only when the defect can be verified by the “Assistance Service” and when it cannot be blamed on improper use or poor maintenance of the product.

Parts subject to normal wear and tear from use are excluded from the warranty (parts made of rubber or plastic, gaskets), as well as labour costs and any other request for damages or indemnity (for example, due to damages or interruption in the use of the products).

“*Idromeccanica Bertolini S.p.A.*” IS NOT responsible in terms of warranty and compensation, for damage caused in the case of:

- Transport damage (breakages, scratches, marks or similar)
- Use of the product different to those indicated in the manual
- Use that does not comply with the specific regulations in force
- Improper installation or defects originating from insufficiency or inadequacy of the electrical system, or alterations deriving from environmental, climate or other types of conditions.
- Use of unsuitable liquids
- Negligence, neglect, tampering, unskilled use or repairs carried out by unauthorised personnel.

Poor maintenance

- Modifications or interventions not authorized expressly by **“*IDROMECCANICA BERTOLINI S.p.A.*”**
- Use of spare parts and accessories that are not original and/or specific for the product
- Use of hoses and connections that are not prescribed by this manual or not suitable for the product and its use.

Furthermore, the following are not covered by the warranty:

- Installation and adjustment
- System consultancy or makeshift inspections
- Various maintenance operations (such as cleaning of filters, nozzles etc.)
- Normal depreciation due to use

And in any case:

The restoration of the equipment will be carried out within time limits that are compatible with the organizational requirements of the Assistance Centre.

- The products to be repaired must be washed in advance and cleaned of residues from chemical products use
- Repairs carried out under warranty do not give rise to extensions or renewal of the warranty
- NOBODY is authorized to modify the terms and conditions of warranty or to issue any other verbal or written warranties
- The parts replaced under warranty remain the property of “**IDROMECCANICA BERTOLINI S.p.A.**”.

Where the product has been tampered with, “**Idromeccanica Bertolini S.p.A.**”, declines all obligations under the warranty.

For all verifications, the products can be returned only on written authorisation from **Idromeccanica Bertolini S.p.A.** and only freight prepaid.

2. Product description

The spraying control units of Idromeccanica Bertolini are only applicable to the systems driven by diaphragm or piston volumetric hydraulic pumps. They are suitable for sprayers in agricultural field, atomizers, private and public hydraulic systems, fountains, etc.

The spraying control units are composed of motorized or/and manual electrical section valves conceived and studied to overcome the traditional product problems ensuring always high performances.

- The basic characteristics of those valves are:
- Non-deformable at high and low temperatures;
- Complete watertight seals;
- Free assembly position;
- Thermal protection against accidental circumstances;
- overtime duration;
- controllable with a simple bipolar switch;
- Single or parallel functioning;
- System versatility;
- No current absorption when adjusted.

The materials used are: high resistance plastic materials (polypropylene +Fiberglass), stainless steel, and Viton gaskets and this makes them compatible with very aggressive chemical solutions.

A motorized electric unit, modularly built in different configurations, each of them with specific characteristics, according to the client's need, is composed of section valves (until 7 max. sections), volumetric valve, adjustable pressure relief valve and main on-off valve.

The max working pressures, according to the technical characteristics of the components, are: 20 bar or 40 bar.

The motorized valves are controlled by sprayer controls or by computer B.Matic 500 (all of them supplied separately) and each of them is for DIN 43650-A/ISO4400 connections.

The voltage must be always:

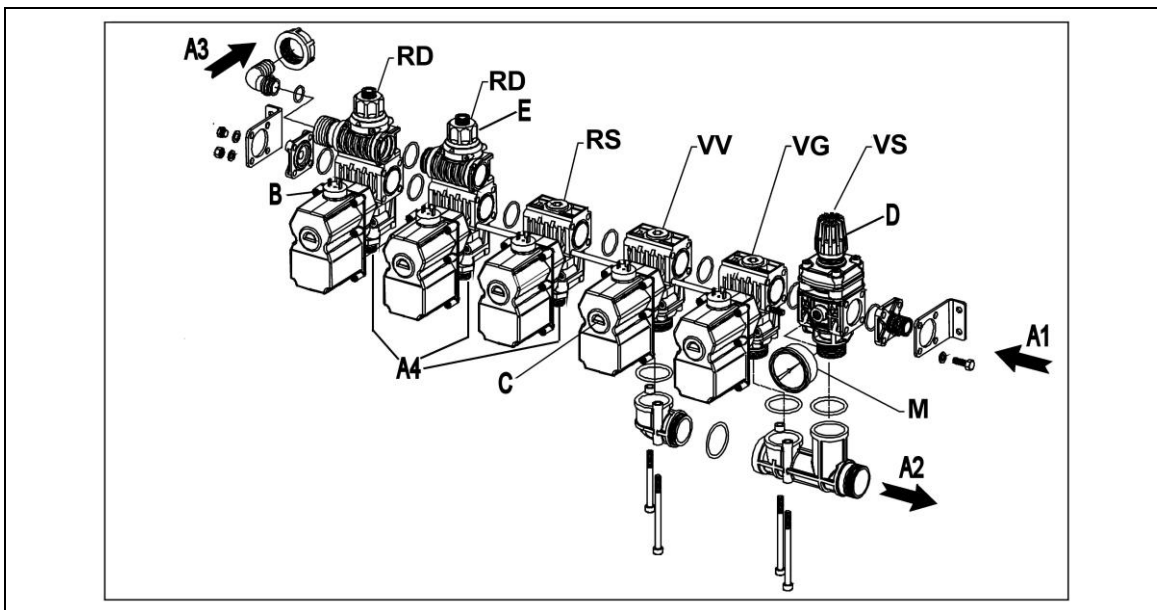
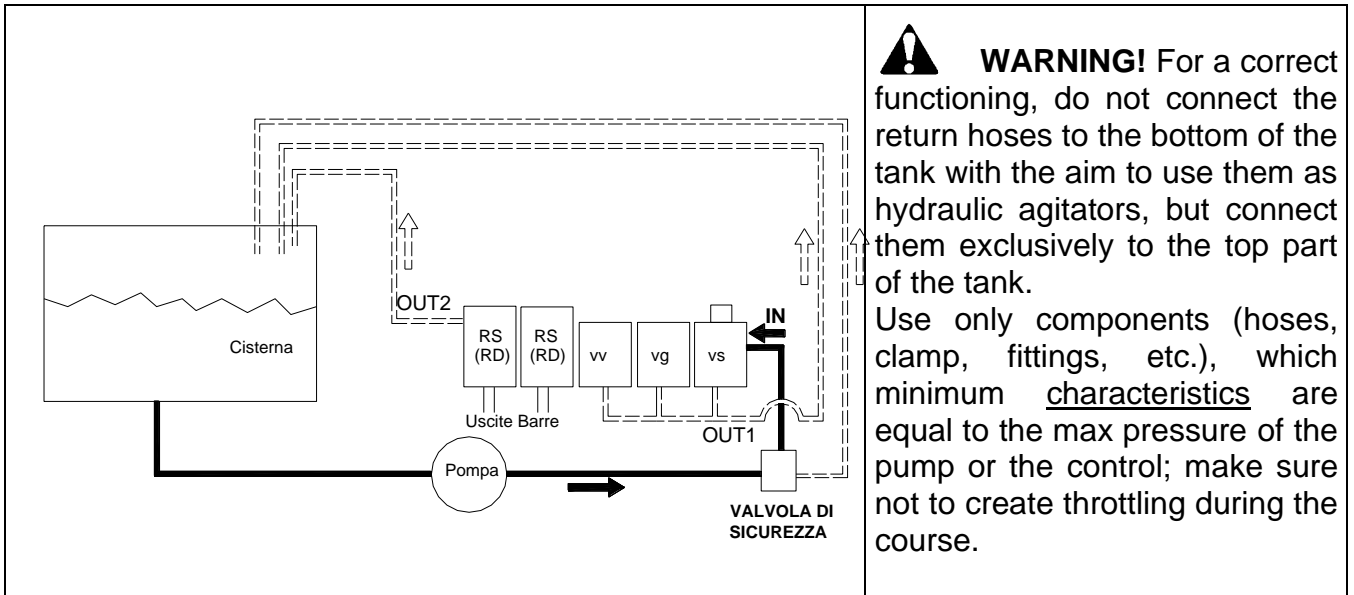
12 VDC \pm 2	0.5 A valve VV
12 VDC \pm 2	1.5 A valves: VG, RS, RD

This is the normal voltage for a battery in the most common agricultural equipment.

Out of this field, you may incur functioning problems or damages to the internal electronic circuit.

3. Identification and description of the components

INSTALLATION DIAGRAM



Components Index:

- **VS:** manual adjustable pressure relief valve;
- **VG:** main ON-OFF valve;
- **VV:** volumetric adjustable pressure valve
- **RS:** section valve RS
- **RD:** section valve RD
- **A1:** water inlet (connect the hose coming from the pump)
- **A2:** By-pass, section valve, general valve and volumetric valve discharges. (connect the return hose to the tank)
- **A3 (bypass):** RD section valves discharge (connect the return hose to the tank)
- **A4:** Delivery system (connect to the boom)
- **B:** DIN plug 43650-A (2 poles + ground)

- **C:** Position indicator, indicates, according to its colour, the ball position. The colours are RED and GREEN.
- **D:** adjusting pressure relief valve knob. Unscrewing manually this part the maximum pressure is increasing.
- **E:** compensating discharge adjustment knob. Unscrewing manually this component the water coming back to the tank decreases, therefore pressure increases.
- **M:** Pressure gauge

All the control units made by IDROMECCANICA BERTOLINI S.p.A. are always fitted with the VS adjustable pressure relief valve.

The adjustment of this valve is made by the operator, who must adjust the pressure to a value that is higher than the maximum working pressure, but lower than the maximum security pressure attainable by the hydraulic system.



ANYWAY THE MACHINE MUST BE PROVIDED WITH A SEPARATE SAFETY VALVE, SET AT THE WORKING PRESSURE THAT IS NOT HIGHER THAT 10% OF THE MAX.PRESSURE OF THE HYDRAULIC SYSTEM.

Description of the functions

1. **VS Pressure relief valve:** It is adjusted manually by its knob (screwing it, pressure increases, unscrewing it, pressure decreases).
It discharges into the tank the excess liquid when the adjustment pressure is obtained.
2. **VG: Main ON-OFF ball valve:** it opens or closes the discharge to the tank. The valve position is showed by the indicator:
 - “GREEN” position: discharge to the tank.
 - “RED” position: working condition.It is, for its function, always fitted after the VS valve, in order to use only one discharge hose.
3. **VV: volumetric adjustable pressure valve:** It adjusts manually the spraying pressure, if connected to a sprayer control or automatically if connected to a computer B Matic 500. In this case it provides to increase or to decrease pressure at variable driving speed of the tractor, keeping the same amount of liquid per surface unit (ex. Litre/hectare).

The liquid in excess is deviated to discharge.

The valve position is showed by the indicator:

- “GREEN” position: discharge to the tank
- “RED” position: working condition

The rotation of pin is not instantaneous but gradual; it can be 9 seconds (suggested for use with computer) or 21 seconds (suggested for use with sprayer control).

4. **RS section valve:** it opens or closes the corresponding boom section; it discharges the liquid in the tank by the VS valve or VG valve, if present.

The valve position is showed by the indicator:

- “GREEN” position : closed boom (discharge in the tank)
- “RED” position: working condition (liquid to the boom)

5. **RD section valve:** The RD valve is a “deviating valve” that adjusts in by-pass the liquid amount that you have established with reference to counter clockwise knob adjustment. This implies a pressure variation if all of the section valves are not adjusted at the same value (**ATTENTION THE ADJUSTMENT IS VERY IMPORTANT**).

If you want to increase the pressure to the boom the knob will be turned counter clock-

wise. If you want to decrease pressure you must turn it clockwise.

The section valve must be adjusted all the times that a different nozzle is used, so the constant liquid distribution is ensured.

6. **M Pressure gauge:** it shows the working pressure when the VG main valve is closed (red position showed by the indicator).

4. Installation



The control unit model must be chosen by the manufacturer, according to the chemical product nature and the system features. Failure to follow this warning can result in injury and/or property damage.

The sprayer manufacturer should take care of the proper selection and correct size of the hoses and connections that must correspond to the dimensions of the recommended fittings.

Be sure that the control unit is attached to a strong base plate and anchor it with bolts sufficiently strong to hold it in place. We recommend to protect your control unit from the bad weather and from the spraying effects during the treatment.

The hoses dimension should not be smaller than the control units' pipe fittings diameter.

5. Hydraulic connections

- Connect the delivery hose from the pump to the INLET fitting (IN) ;
- Connect the return hoses to the tank for the unused liquid to the by-pass fittings (by-pass);
- Connect the hoses to the boom to the delivery pipe fittings : they must be equivalent (same number) to the boom sections or hydro-agitators , if any;



Failure to follow this warning can result in personal injury or environmental damage and/or malfunctions of the control unit and consequently will void the product warranty.

6. Control unit functioning and use



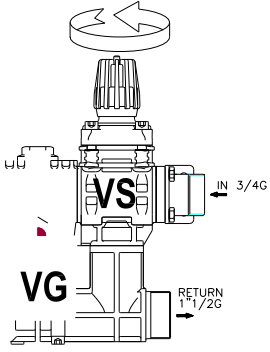
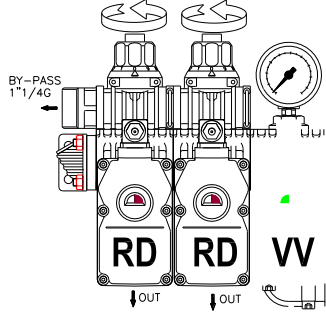
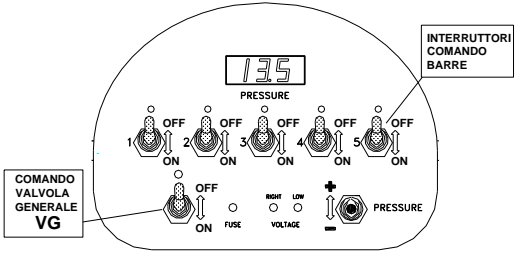
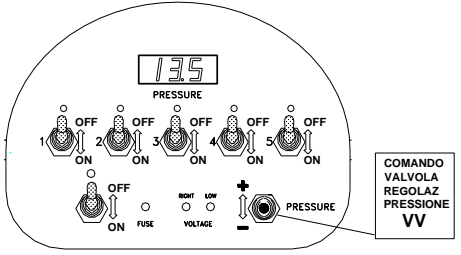
General checks before the use

- **At every use**, clean the filter on the control (if present) and every other filter present on the system; this simple operation will help you to keep the system efficient and to carry out the treatments in the best way possible.
- **Close all pressure hoses** connected to the nozzles or boom; an open nozzle can cause serious damage to persons, animals or things in the vicinity.
- **Check** the state of the hoses each time the system is used; also make sure that all connections are tight and secure.
- **Check** the state of connection cables and electrical connections each time the system is used; also make sure that the batteries are charged optimally (for motorized versions only).
- **Inspect** the control and its components periodically. Routine maintenance of the system protects your investment.
- **Make sure** that when the pump is being started up, the general valve is kept in by-pass position as indicated on the label.

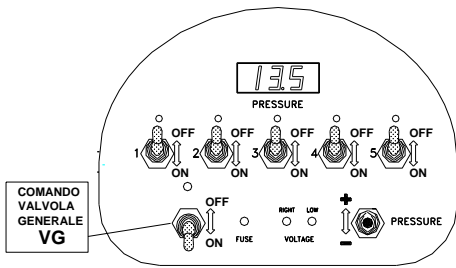


ADJUSTMENT (see Pict.1 page 9)



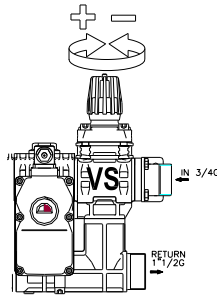
 <p>1 Unscrew completely the VS valve adjustment knob (minimum pressure)</p>	 <p>2 Unscrew completely the RD valve adjustment knob (if it is installed)</p>
 <p>3 Close all the RS or RD section valves operating the control panel switches ("OFF" position: led turned off) Close the VG main on/off valve operating the control panel switches ("OFF" position: led turned off)</p>	<p>3 Close all the RS or RD section valves operating the control panel switches ("OFF" position: led turned off) Close the VG main on/off valve operating the control panel switches ("OFF" position: led turned off)</p>
 <p>4 Operate the volumetric valve at the max. pressure, by turning the switch upwards.</p>	<p>4 Operate the volumetric valve at the max. pressure, by turning the switch upwards.</p>
<p>5 Start the pump and operate it to the correct R.P.M.</p>	

6



Open the VG main valve operating the control panel switch ("ON" position: led on)

7



Adjust the pressure relief valve **VS**, turning the knob in a clockwise direction, until pressure reaches the established value, make sure not to exceed the max pressure allowed. In any condition this safety value will never be overcome, unless the discharge hose is obstructed.

8

Open the booms operating the corresponding switches ("ON" position led on).

9

Operate the machine at the established working pressure, by turning the volumetric valve switch.

(10) RD valves adjustment (IF THEY ARE FITTED)

The RD valve adjustment must be carried out operating one boom each time.

- a) Close just one boom operating the corresponding switch. You will see in the pressure gauge a pressure change compared to the previous value.
- b) Adjust the pressure to the requested value moving the RD adjustable knob.
- c) Open and close the boom checking that pressure is constant.
- d) Repeat the operations of the previous steps for all the other booms.

The operations from step 6 to step 9 (10) must be repeated if the nozzles dimensions are changed



7. Control valve maintenance



ATTENTION!

Before starting any maintenance operation or inspection of the control unit, wash it first with pure water, then completely empty out all liquid contained.

Pay particular attention to the parking of the machine on which the control unit is mounted, in order to avoid danger to you or those around you.

Never carry out maintenance with children nearby!

Protect hands, eyes and body with suitable clothing; the control unit could have been used with chemicals that damage your health.

The control unit is made from inedible parts. Do not bite, suck, chew or ingest any part of the control unit for any reason.



Protect the environment from the liquids contained in the control unit.

Clean up residues and dispose of them regularly; no residue must enter the canalization network or the ground.



Attention! Bertolini electrical valves are designed in order not to be opened; therefore, when necessary, always replace the complete valve. Opening or tampering with valves by non-authorized personnel invalidates all terms of warranty.

USING “**ORIGINAL BERTOLINI SPARE PARTS**” INCREASES THE LIFETIME OF YOUR CONTROL UNIT, BY ALLOWING IT TO OPERATE IN THE BEST POSSIBLE CONDITIONS.

In the case where the control unit has to be dismantled, it is advised to change the sealing O-rings, since they could get damaged during this phase, causing leakage of liquid in the various valves.

Routine maintenance of the distributor protects your investment.

During the functioning it is possible that with closed valves (red colour indicator) the liquid is coming out from the boom, in this case it is possible that the ball and/or its gaskets are worn.

- **Ball and/or gaskets replacement:**

Remove the flange of the ball, take out the ball and the gaskets and check wear. Replace the necessary parts and reassemble.

The corresponding kit that must be ordered to IDROMECCANICA BERTOLINI, are the following:

- Part N° 24.5334.97.3 → VG (40 bar), VV Ø39 (9-21 sec.) valves;
- Part.N° 24.5335.97.3 → VG (20 bar) valve;
- Part.N° 24.5336.97.3 → RS (40 bar), VV Ø27 (9-21 sec.) valves;
- Part.N° 24.5337.97.3 → RD (20 bar), RS (20 bar) valves;
- Part.N° 24.5338.97.3 → RD (40 bar) valve
- Wash carefully with water the internal parts of the distributor after each treatment.
- Disconnect voltage during any maintenance.

8. Troubleshooting and cures

Before contacting the “*Bertolini Assistance Service*”, check the following chart:

TROUBLES	CAUSES	CURES
The regulator does not reach the desired pressure	Not enough liquid arrives at the control unit	<ul style="list-style-type: none"> Check that the pump rotation speed is correct Check that the pump flow rate is correct Check that there are no deviations open before the distributor Check that the nozzles are in good condition and of the correct dimension
	The discharge of the self-cleaning filter (if installed) is fully open	Close the discharge of the self-cleaning filter
	The safety valve is fully unscrewed	<ul style="list-style-type: none"> Consult the use and maintenance booklet Check the orientation of the valves balls Consult the use and maintenance booklet
	The volumetric valve (if installed) and/or the main on/off are fully open	
	The compensating discharges are not properly calibrated	
	The safety valve seat and/or the ceramic poppet are worn	Change the valve seat and/or the ceramic poppet
The ball and/or valve seals of the volumetric valve and /or of the main on/off valve are worn	Change the worn ball and seals	
Liquid comes out from the boom and the led of the motor geared is red	The ball and the section valve seals are worn	Replace the ball and the seals
	Wrong orientation of the ball	Check the ball position
	The ball doesn't rotate completely to 90°	Replace the section valve
Liquid is escaping from the control pin of the ball of the valve	The O- Rings of the control pin are worn	Replace O-Rings
Liquid is escaping from the knob of the safety valve	Diaphragm and/or O-Rings of the piston are worn	Replace the diaphragm and the O-Ring of the piston
Liquid is leaking from the RD discharge knobs or between valve bodies and the discharge	O-Rings on the knobs are worn	Replace
Liquid is escaping between the bodies of the section valves or between the RD discharge hoses	O-Rings are worn	Replace
Liquid is escaping between the valve body and the manifold or between the valve and the ball flange	O-rings are worn	Replace
The geared motors work but no water comes out from the nozzles	Clogged nozzles	Clean the nozzles
	Wrong position of the ball	Check the position of the ball
The control unit remains still in pressure	The main VG valve doesn't work	Check that the connections respect the electrical diagram
The pump pressure hose is bursting	Hose with unsuitable dimensions or characteristics	Use hoses with suitable dimensions or characteristics
	Pressure hose connected instead of the discharge hose	Check the hose connections using the correct diagram
	Discharge hose obstructed	Check the condition of the hose
With the section valves open and	Nozzles clogged	Clean the nozzles

the main on/off valve in the ON position, no water comes out of the nozzles	The ball of the main on/off valve is positioned incorrectly	Check the position of the ball
It is not possible to get an accurate pressure adjustment	Not enough liquid arriving at the control unit	Check that the pump RPM are correct Check that there are no deviations open before the control unit
When closing one or more sections the pressure is subject to wide variations	The RD outlets are badly calibrated	Consult the use and maintenance booklet
The delivery hose, the pressure gauge and/or the pressure value read by the sensor pulsate	The inflation pressure of the accumulator on the pump is not correct	Adjust the pressure to a value suitable to the working pressure (see the instruction booklet of the pump)
	Hydraulic agitator connected to the main discharge	Connect the agitator to a free section valve
Difference between the pressure read on the gauge and that read by the pressure sensor	Pressure gauge or sensor damaged	Check and change the damaged device
	The two instruments are situated in areas with different working pressures	Check the system and , if necessary, move one of the two devices
None of the geared motors are working.	Inversion of the power supply polarity of the panel	Check the connections of the control panel power supply
	Control panel and/or wiring not working	Check if all the connections of the cables are correct Change the control panel or the wiring
	Inadequate supply voltage	Check the charge level of the battery and/or that the alternator is functioning properly.
	No 12VDC power supply.	Check the state of the wiring and if necessary restore any interrupted connections. Check the protection fuse that may be present in the power supply circuit.
One or more valves do not work or work intermittently.	Not enough power to drive all the geared motors.	Check the charge level of the battery and/or that the alternator is functioning properly.
	Connectors not connected.	Check the wiring.
	Connectors connected badly	Restore any disconnected connections.
	Electric motor damaged	Change the geared motor
	Damaged/defective electronic circuit	Change the circuit.
The geared motor performs a movement and then stops working (the polyfuse intervenes).	Wrong electrical connections	Check that the connections reflect the electrical diagram
	Damaged/defective electronic circuit	Change the circuit.
	Excessive load on the ball	Reduce the load from the flange to the ball, slightly loosening the screws of the flange
	Presence of deposits on the ball or the rod.	Remove the deposits or change the components
	Moving mechanical parts worn / damaged	Change the geared motor or the components that are creating the problem
The motor is working but the control pin is not moving	Problem on the mechanical part of the geared motor	Replace the geared motor
When operating the volumetric valve pressure increases instead of decreasing and vice versa	Wrong electrical connections	Check that the connections follow the electrical diagram

9. Useful information

As a result of the normal wear of the nozzles it may become necessary to check their flow rate and therefore their efficiency periodically. To do this, proceed as follows:

- a. Take the system to working conditions.
- b. Measure the flow rate (Q – litres supplied in one minute) of a nozzle using a graduated container (Pict.17). Compare the values measured with the corresponding measurements given in the charts provided by the manufacturer of the nozzles used.

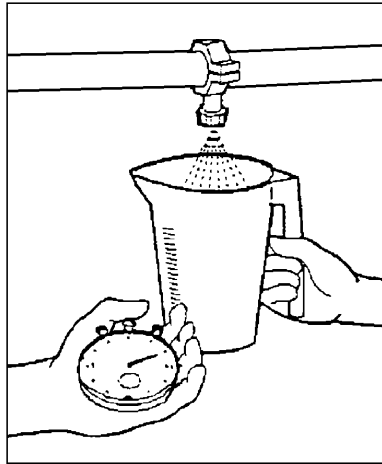


Fig. 17

If you wish to check the litres supplied per hectare (l/ha), insert the data in the following formula:

Where:

$$Lh = \frac{600 * Q}{I * V}$$

Lh = applied volume (l/ha)

Q = nozzle capacity (l/min)

I = interspace between the nozzles (m)

V = advancing velocity (km/h)

If instead you need to know the required flow rate, insert the data in the following formula:

$$Q = \frac{Lh * Lbarra * V}{600}$$

10. Components description Wiring diagrams

VS Adjustable pressure relief valve (20 – 25 – 40 Bar)

It is a manual pressure relief valve.

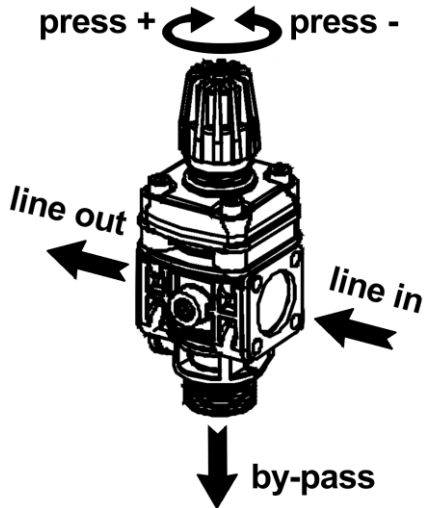


Fig. 2

Constructive features:

1. Valve seat made up of AISI 303 stainless steel;
2. Ceramic poppet;
3. Body made of polyamide strengthened with fibreglass;
4. NBR diaphragm.

It is available in 2 versions:

- up to 20 bar;
- up to 40 bar

Technical data:

Model	Part. Number	Max. pressure			Flow	OUT
		Bar	PSI	Lit/min.	USGPM	Gas
VS 20	24.5024.97.3	20	300	300	80	1"1/4
VS 25	24.5172.97.3	25	362	220	58	1"1/4
VS 40	24.5025.97.3	40	600	220	58	1"1/4

VG Main ON-OFF ball valve (20 – 40 Bar)

The main on/off valve is a motor powered valve with 2 positions (ON-OFF) and by-pass function.

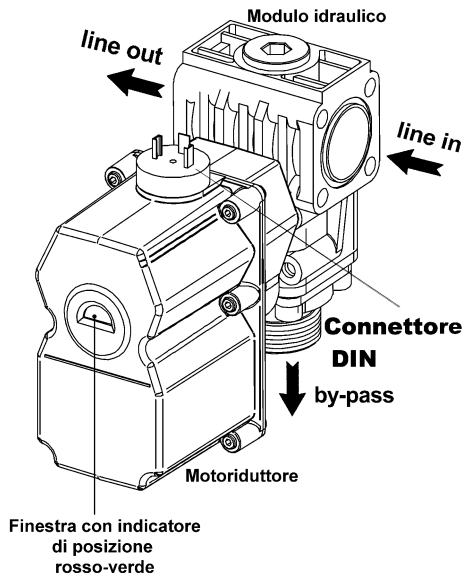


Fig. 3

Electrical Diagram

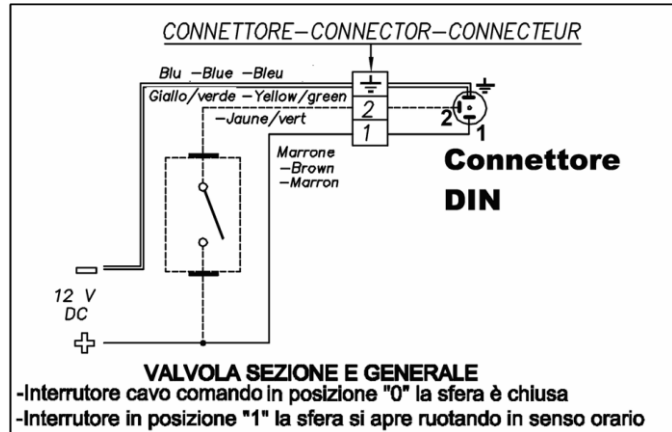


Fig. 4

Constructive features:

1. Polypropylene ball (20 bar) or stainless steel AISI 316 ball (40 bar);
2. PTFE seals;
3. Body made of polyamide strengthened with fibreglass;
4. DIN 43650-A / ISO 4400 connection;
5. IP 65 protection;
6. Viton gaskets.

Technical data:

Model	Part number	Ø Ball	Max. pressure		Flow		OUT
			Bar	PSI	Lit/min.	US GPM	Gas
VG 20	24.5125.97.3	39 P	20	300	450	120	1"1/4
VG 40	24.5137.97.3	39 I	40	600	120	32	1"1/4

P= Polypropylene I= Stainless steel

RS Section boom valve (20-40 Bar)

The section boom valve is a motor powered valve with 2 positions (ON-OFF).

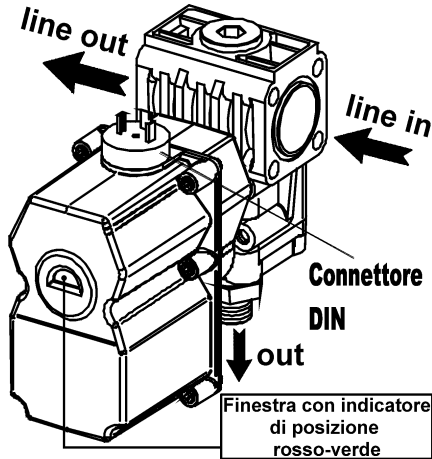


Fig. 7

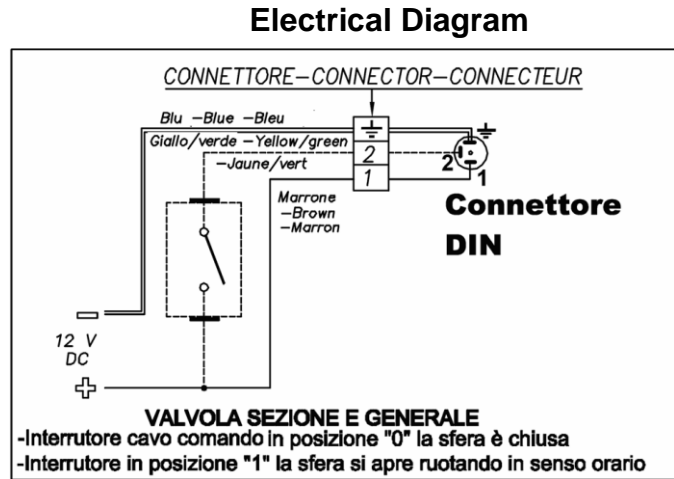


Fig. 8

Constructive features:

1. Polypropylene ball (20 bar) or AISI 316 stainless steel ball (40 bar);
2. PTFE seals;
3. body made of polyamide strengthened with fibreglass;
4. DIN 43650-A / ISO 4400 connection;
5. IP 65 protection;
6. Viton gaskets.

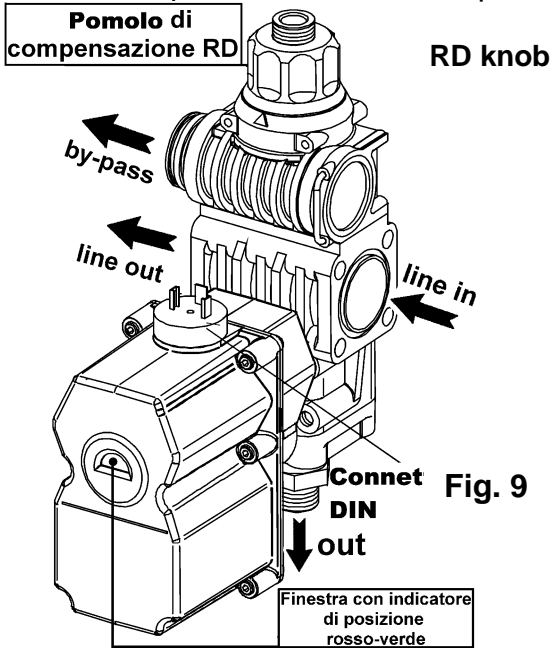
Technical data:

Model	Part number	Ø Ball	Max. pressure		Flow		OUT
			Bar	PSI	Lit/min.	US GPM	Gas
RS 20	24.5133.97.3	39 P	20	300	450	120	1"1/4
	24.5206.97.3	27.5 P			200	52	1"1/4
	24.5207.97.3	27.5 P			120	32	B
RS 40	24.5144.97.3	27.5 i	40	600	120	32	1/2

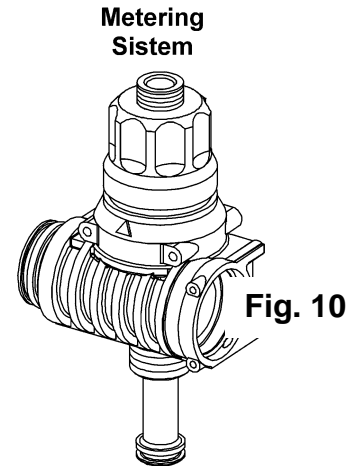
P= Polypropylene I= Stainless steel B= Hose tail with bayonet

RD Section boom valve (20-40 Bar)

It is a motor powered valve with 2 positions (ON-OFF).



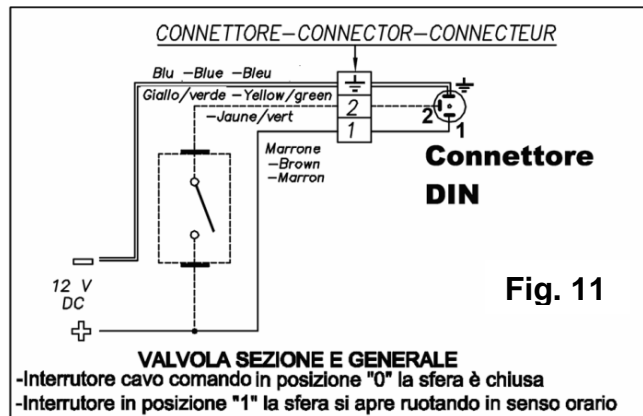
Component that originates the RD configuration



Constructive features:

1. Polypropylene ball (20 bar) or AISI 316 stainless steel ball (40 bar);
2. Body made of polyamide strengthened with fibreglass;
3. PTFE seals;
4. DIN43650-A / ISO4400 connections;
5. IP 65 protection;

Electrical Diagram



Model	Part Number	Ø Ball	Max. pressure		Flow		OUT
			Bar	PSI	Lit/min.	US GPM	Gas
RD 20 i	24.5128.97.3	27.5 P	20	300	120	32	B
	24.5129.97.3	27.5 P	20	300	200	52	1" 1/4
RD 20 t	24.5130.97.3	27.5 P	20	300	120	32	B
	24.5131.97.3	27.5 P	20	300	200	52	1" 1/4
RD 40 i	24.5140.97.3	27.5 I	40	600	120	32	1/2
RD 40 t	24.5142.97.3	27.5 I	40	600	120	32	1/2

i= intermediate t= terminal P= Polypropylene I= Stainless steel B= Hose tail with bayonet

VV Volumetric pressure valve

The Volumetric valve is a proportional motor powered valve.

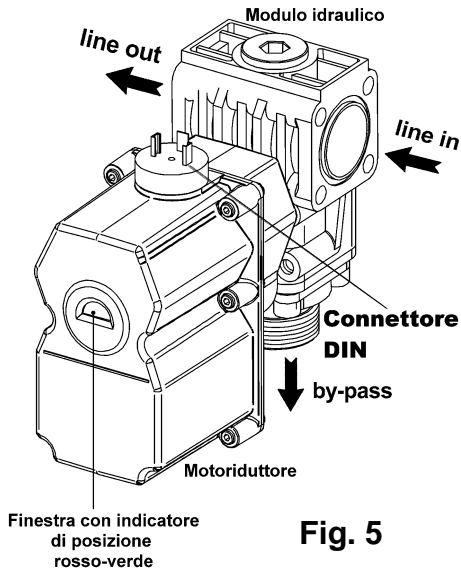


Fig. 5

Electrical diagram

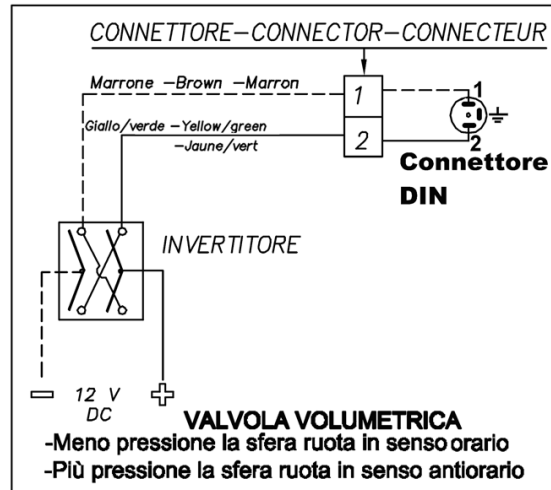


Fig. 6

PICT. 5 a) Hydraulic unit; b) geared motor unit; c) Window with red- green position display

PICT. 6 a) VOLUMETRIC VALVE. Downward pressure the ball turns clockwise; Upward pressure the ball turns counter clock-wise

Constructive features:

1. Ball or throttling system made up of AISI 316 stainless steel;
2. Body made of polyamide strengthened with fiberglass;
3. PTFE seals;
4. DIN 43650-A / ISO 4400 connections;
5. IP 65 protection;
6. Viton gaskets.

Technical data:

Valve model	Part Number	Ø Ball mm.	Time Sec.	Max. pressure		Flow		OUT
				Bar	PSI	Lt./min.	US GPM	Gas
VV	24.5180.97.3	27.5 I	9	0 ÷ 20	0 ÷ 300	150	40	1" 1/4
VV	24.5181.97.3		21					
VV	24.5126.97.3	39 I	9	0 ÷ 20	0 ÷ 300	200	52	1" 1/4
VV	24.5226.97.3		21					
VV	24.5138.97.3	Farfalla I	9	0 ÷ 40	0 ÷ 600	100	26	1" 1/4
VV	24.5238.97.3		21					

I= Stainless steel

M Pressure gauge

Two different types of pressure gauge can be supplied, on request:

- **Isometric pressure gauge in glycerine bath;**
- **Pressure sensor.**

Isometric pressure gauge: standard version with different measurement scales. It can be supplied with front or with rear connection.

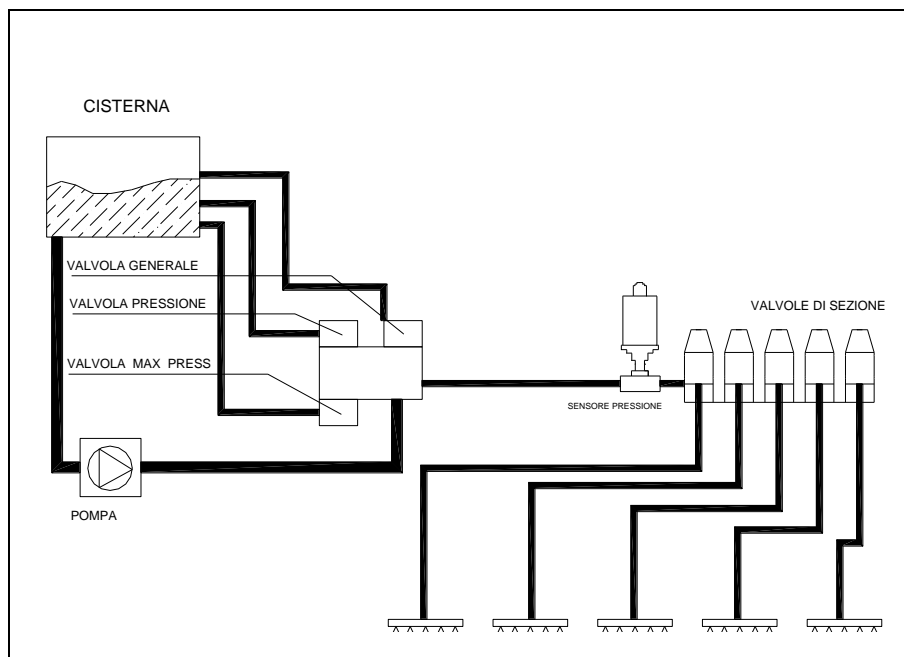
It is fitted, according to the working pressure, on the VS valve or on the VV valve.

- **Pressure sensor:** it is an electronic component that takes the pressure of the liquid on the boom sections. It is installed as indicated in Pict. 12 provided that it is protected against pressure peaks.

Install the sensor as close as possible to the user positions, in the pressure gauge holder connector on the section valves assembly and, anyway, always after the pressure adjustable valve.

As the pressure gauge is essential for the correct reading of the pressure parameters, protect the cable against breaking and/or abrasions that could occur during the use.

If it is necessary to fit an extension of the sensor-cable, contact the “*Bertolini Technical Service*”.



Pict. 12. Installation of the pressure sensor

N.B.

With the pressure sensor you may fit the RD section valves

Optional:

Even if not shown in the diagram, you may add:

- filter;
- flowmeter;
- further complementary kits.

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