

LARIUS GHIBLI MIX 2K

Double components
mixing machine





This manual is to be considered as an English language translation of the original manual in Italian. The manufacturer shall bear no responsibility for any damages or inconveniences that may arise due to the incorrect translation of the instructions contained within the original manual in Italian.

Due to a constant product improvement programme, the factory reserves the right to modify technical details mentioned in this manual without prior notice.



LARIUS GHIBLI MIX 2K

Double components mixing machine

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**WE ADVISE THE USE OF THIS EQUIPMENT ONLY BY PROFESSIONAL OPERATORS.
ONLY USE THIS MACHINE FOR USAGE SPECIFICALLY MENTIONED IN THIS MANUAL.**

Thank you for choosing a **LARIUS S.R.L.** product.
As well as the product purchased, you will receive a range of support services
enabling you to achieve the results desired, quickly and professionally.

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A WARNINGS

The table below provides the meaning of the symbols used in this manual in relation to using, earthing, operating, maintaining, and repairing of this equipment.

	<ul style="list-style-type: none"> • Read this operator's manual carefully before using the equipment. • An improper use of this machine can cause injuries to people or things. • Do not use this machine when under the influence of drugs or alcohol. • Do not modify the equipment under any circumstances. • Use products and solvents that are compatible with the various parts of the equipment, and read the manufacturer's warnings carefully. • See the Technical Details for the equipment given in the Manual. • Check the equipment for worn parts once a day. If any worn parts are found, replace them using ONLY original spare parts. • Keep children and animals away from work area. • Comply with all safety standards.
	<ul style="list-style-type: none"> • It indicates an accident risk or serious damage to equipment if this warning is not followed.
	<p>FIRE AND EXPLOSION HAZARD</p> <ul style="list-style-type: none"> • Solvent and paint fumes in work area can ignite or explode. • To help prevent fire and explosion: <ul style="list-style-type: none"> - Use equipment ONLY in well ventilated area. - Eliminate all ignition sources, such as pilot lights, cigarettes and plastic drop cloths (potential static arc). - Ground equipment and conductive objects. - Use only grounded hoses. - Do not use trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminium equipment. Such use can cause serious chemical reaction and equipment rupture, and result in death, serious injury, and property damage. - Do not form connections or switch light switches on or off if the air contains inflammable fumes. • If electrical shocks or discharges are encountered the operation being carried out using the equipment must be stopped immediately. • Keep a fire extinguisher at hand in the immediate vicinity of the work area.
	<ul style="list-style-type: none"> • It indicates wound and finger squashing risk due to movable parts in the equipment. • Keep away from moving parts. • Do not use the equipment without the proper protection. • Before any inspection or maintenance of the equipment, carry out the decompression procedure explained in this manual, and prevent any risk of the equipment starting unexpectedly.
	<ul style="list-style-type: none"> • Report any risk of chemical reaction or explosion if this warning has not been given. • (IF PROVIDED) There is a risk of injury or serious lesion related to contact with the jet from the spray gun. If this should occur, IMMEDIATELY contact a doctor, indicating the type of product injected. • (IF PROVIDED) Do not spray before the guard has been placed over the nozzle and the trigger on the spray gun. • (IF PROVIDED) Do not put your fingers in the spray gun nozzle. • Once work has been completed, before carrying out any maintenance, complete the decompression procedure.
	<ul style="list-style-type: none"> • It indicates important recommendations about disposal and recycling process of products in accordance with the environmental regulations.
	<ul style="list-style-type: none"> • Mark any clamps attached to earth cables. • Use ONLY 3-wire extension cords and grounded electrical outlets. • Before starting work make sure that the electrical system is grounded and that it complies with safety standards. • High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. • To help prevent injection, always: <ul style="list-style-type: none"> - (IF PROVIDED) Engage trigger lock when not spraying. - (IF PROVIDED) Do not put your hand over the spray tip. Do not stop or deflect leaks with your hand, body or other. - (IF PROVIDED) Do not point gun at anyone or at any part of the body. - (IF PROVIDED) Never spray without tip guard. - Do pressure relief if you stop spraying or being servicing sprayer and before any maintenance operations. - Do not use components rated less than sprayer Maximum Working Pressure. - Never allow children to use this unit - (IF PROVIDED) Brace yourself; gun may recoil when triggered. • If high pressure fluid pierces your skin, the injury might look like "just a cut", but it is a serious wound! Get immediate medical attention.
	<ul style="list-style-type: none"> • It is obligatory to wear suitable clothing as gloves, goggles and face shield. • Wear clothing that complies with the safety standards in force in the country in which the equipment is used. • Do not wear bracelets, earrings, rings, chains, or anything else that may hinder the operator's work. • Do not wear clothing with wide sleeves, scarves, ties, or any other piece of clothing that could get tangled up in moving parts of the equipment during the work, inspection, or maintenance cycles.



WARNING

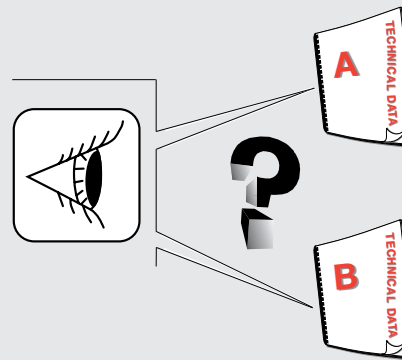
BEFORE USING LARIUS GHIBLI-MIX EQUIPMENT



The operator must possess and be familiar with the data sheets of the 2 components (A and B).

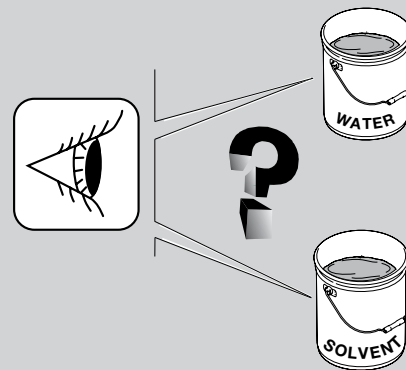


The operator must be familiar with the characteristics of both the wash fluid to be used with the catalyser B and the wash fluid to be used with the product A.



The catalyser and its relative circuit must never be cleaned with incompatible liquids.

Make sure that: if the product to be used is water-based, the relative circuit within the machine is cleaned using water. If, on the other hand, the product to be used is solvent-based, the relative circuit must be cleaned using a solvent.



LARIUS srl SHALL BEAR NO RESPONSIBILITY FOR ANY DAMAGES DERIVING FROM THE USE OF WASH FLUIDS INCOMPATIBLE WITH PRODUCTS A AND/OR B.



LARIUS srl SHALL BEAR NO RESPONSIBILITY FOR ACCIDENTS OR MALFUNCTIONS DERIVING FROM LACK OF FAMILIARITY WITH THE DATA SHEETS AND THE PRODUCTS UTILISED OR RESULTING FROM THE USE OF PRODUCTS WHICH ARE NOT COMPATIBLE WITH ONE ANOTHER.

B WORKING PRINCIPLE

The LARIUS GHIBLI-MIX is a bi-component mixing machine. It therefore provides for the dosage, mixture and application of double components products. This machine allows the user to work in low, medium or high pressure, with both airless or mist-less manual or automatic spray guns.

The dosing and the mixing of the components are regulated by an electronic control system.

The hydraulic assembly includes two wire encoders, which adjust the inlet of the two components into the mixing channels.

It is here that product mixing takes place thanks to a static mixer.

The machine is composed of 3 main units:

- Intake for components
- Hydraulic mixing unit
- Command and control unit

ADVANTAGES OF USING THE LARIUS GHIBLI-MIX

- The possibility of using every methodology (low-medium-high pressure / Mist-less / airless painting).
- Increased product savings and consequent waste disposal savings.
- "Ecological" painting: performed in complete respect for the working and external environment – Quick drying (even without a drying oven).
- High quality finish – Less use of paint thinners during cleaning phases.
- Increased resistance with respect to mono-component paints.

SECTORS OF USE: Generic metalworking, Woodworking and Furnishings, Aerospace industry, Plastics, Bicycles and motorcycles, Automobile components, Automobiles, Painting of furniture, Chairs, Doors, Varnishing, Emulsion painting.



C TECHNICAL DATA

LARIUS GHIBLI MIX 2K	
Paint compatibility	two-component water-soluble paints - two-component solvent-based paints
Mixing ratio % by volume	min. 1: 1 max 20: 1
Maximum flow rate of mixed product (*)	8 lt al minute
Max working pressure	0-280 bar
Max air supply pressure	7 bar
Power supply (*)	230 V (110 V)
Machine working temperature (**)	min. 5°C max. 50°C
Noise pressure level	74 dB

N.B. The pump is supplied with a bayonet connection.

* According to the characteristics of the paints used, the supply pressure, the mixing ratio.

** Temperatures referring to the machine, also check the technical data sheets of the products.

PARTS OF THE PUMP IN CONTACT WITH THE MATERIAL

GHIBLI 40:1 stainless steel A
GHIBLI 40:1 stainless steel B
VEGA 5:1 solvent stainless steel 1

Standard model aluminium:

- ALUMINIUM AISI 12 UNI 5076
- TEFLON
- GALVANIZED STEEL
- STAINLESS STEEL AISI 303

Stainless steel model:

STAINLESS STEEL AISI 316 E AISI 303

OTHER PARTS OF THE PUMP

Pump unit: aluminium

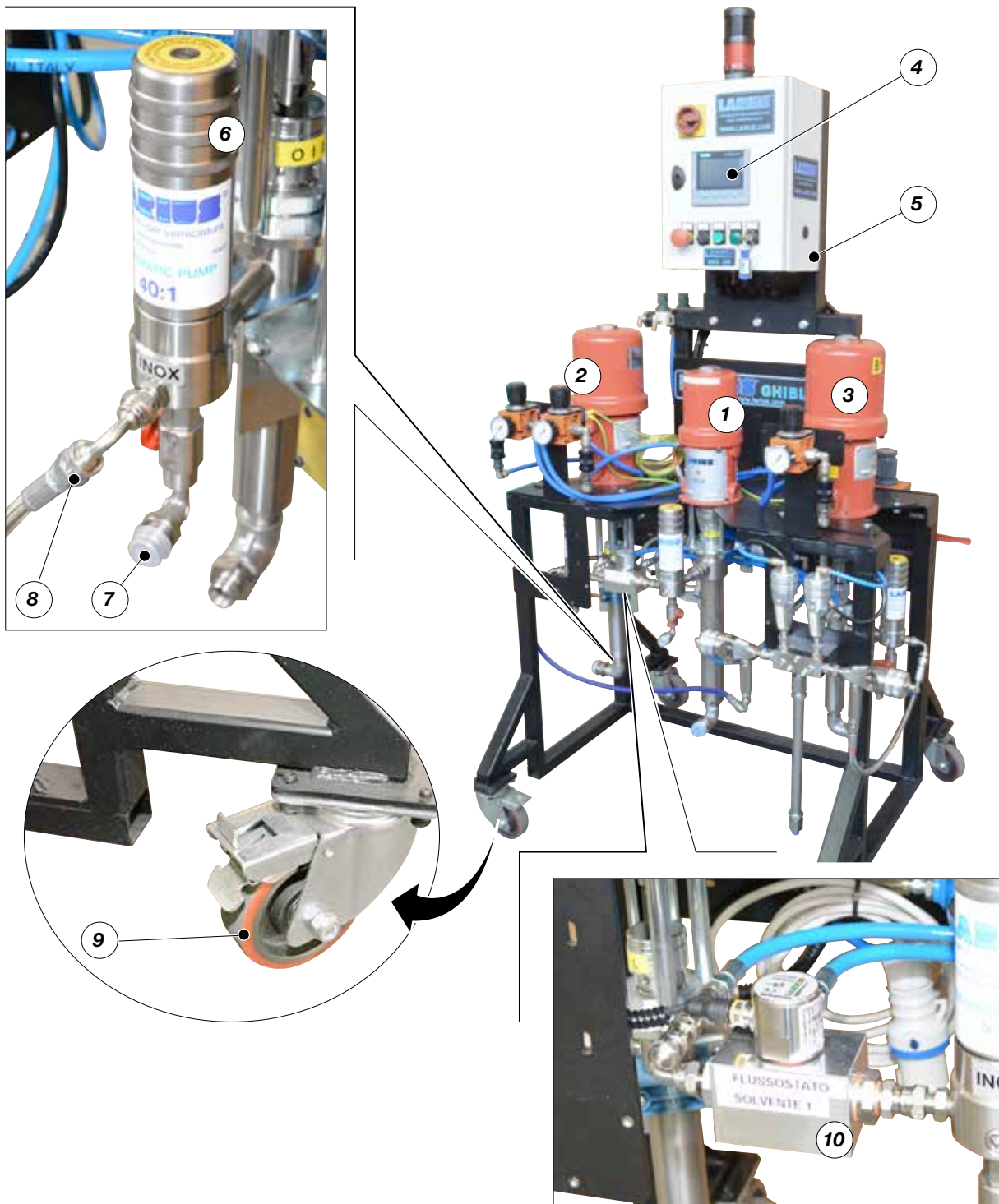
Support bracket: galvanized Steel



Always observe these informations carefully when evaluating the product compatibility and in case of disposal of some parts of the pump no more usable, in order to meet the environmental regulations on recycling process.



D DESCRIPTION OF THE EQUIPMENT



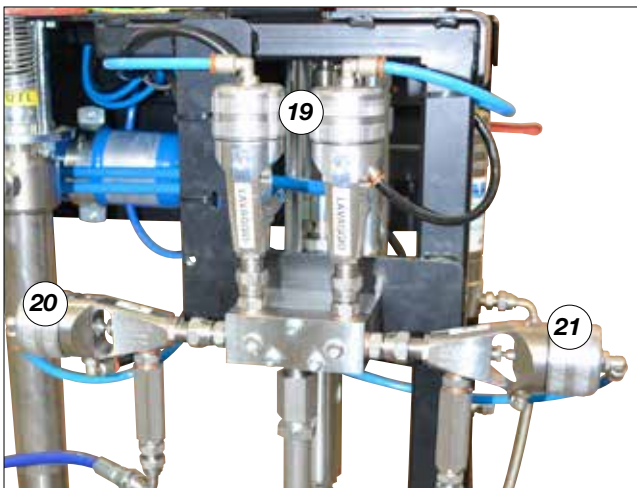
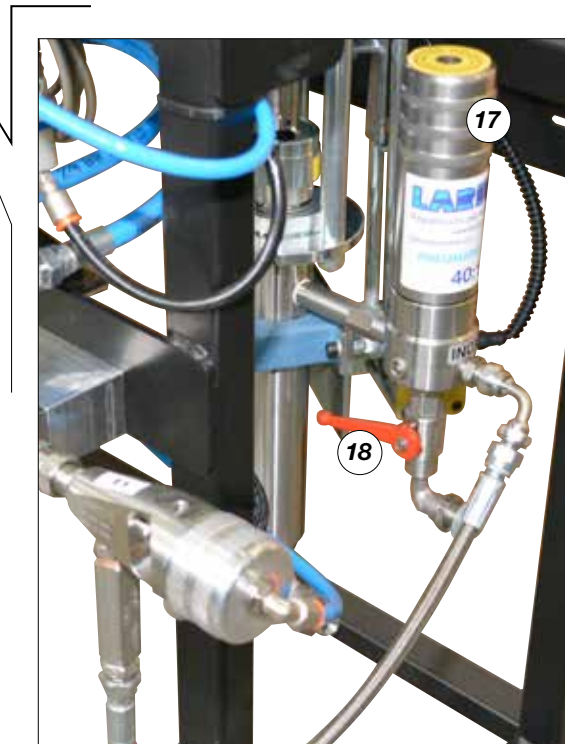
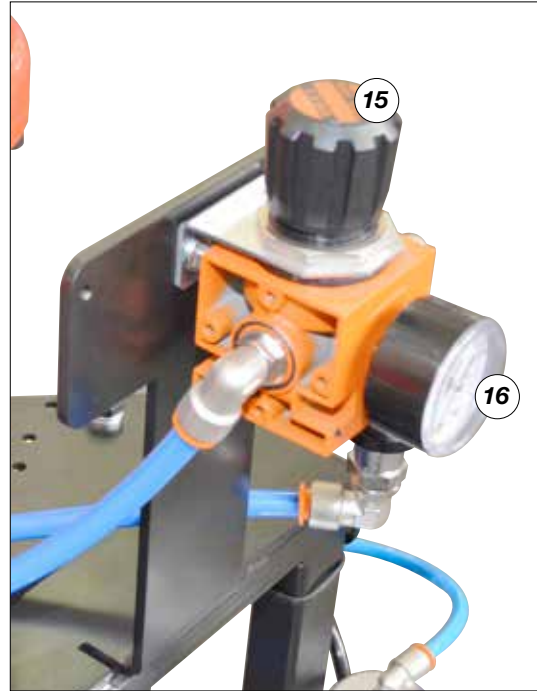
Pos.	Description
1	Vega Pump, washing solvent
2	GHIBLI product pump A
3	GHIBLI product pump B CATALYST
4	Operator Touch panel
5	Electrical panel

Pos.	Description
6	Solvent filter
7	Product delivery
8	Product recirculation/discharge
9	Wheels
10	Flussostato



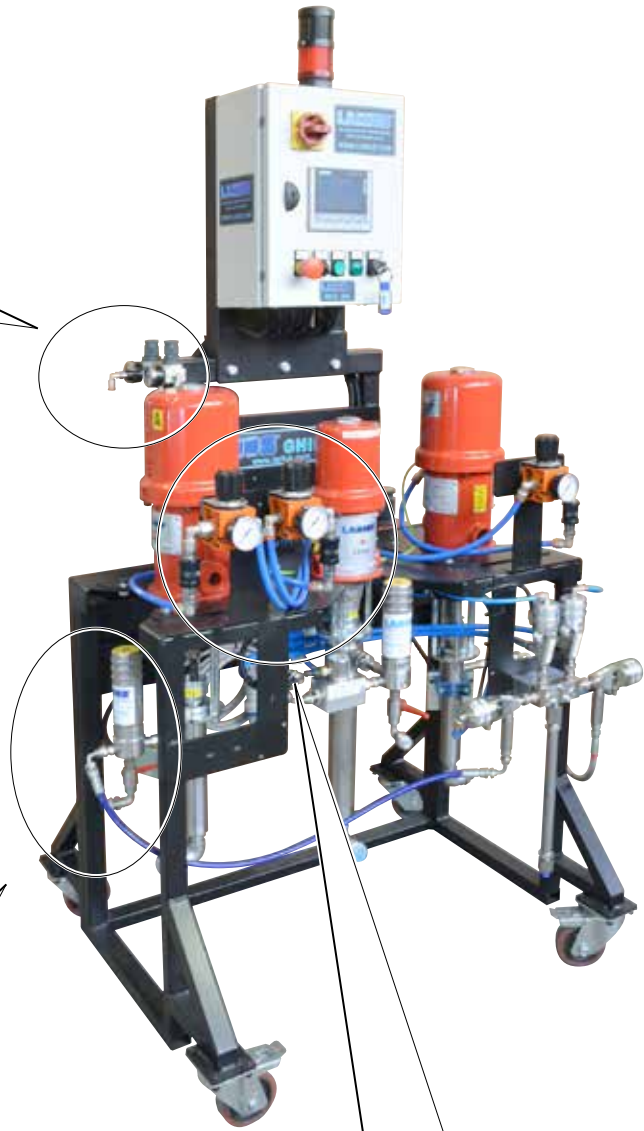
Pos.	Description
11	Light indicator
12	Elettrovalve Unit

Pos.	Description
13	Air treating Unit
14	Air supply tap



Pos.	Description
15	Air pressure regulator pump "B"
16	Pump B pressure gauge
17	Product filter "B"
18	Recirculation/drain tap

Pos.	Description
19	Spray gun for washing
20	Spray gun for product "A"
21	Spray gun for product "B" CATALYST



Pos.	Description
22	Atomization air adjustment
23	Fan air adjustment
24	Product filter "A"
25	Product A suction

Pos.	Description
26	GHIBLI. Product pump A
27	Washing pump air regulator
28	Product A pump air regulator



E PNEUMATIC DIAGRAM

N° 1 Product A pump A (PAINT)

GHIBLI 40:1

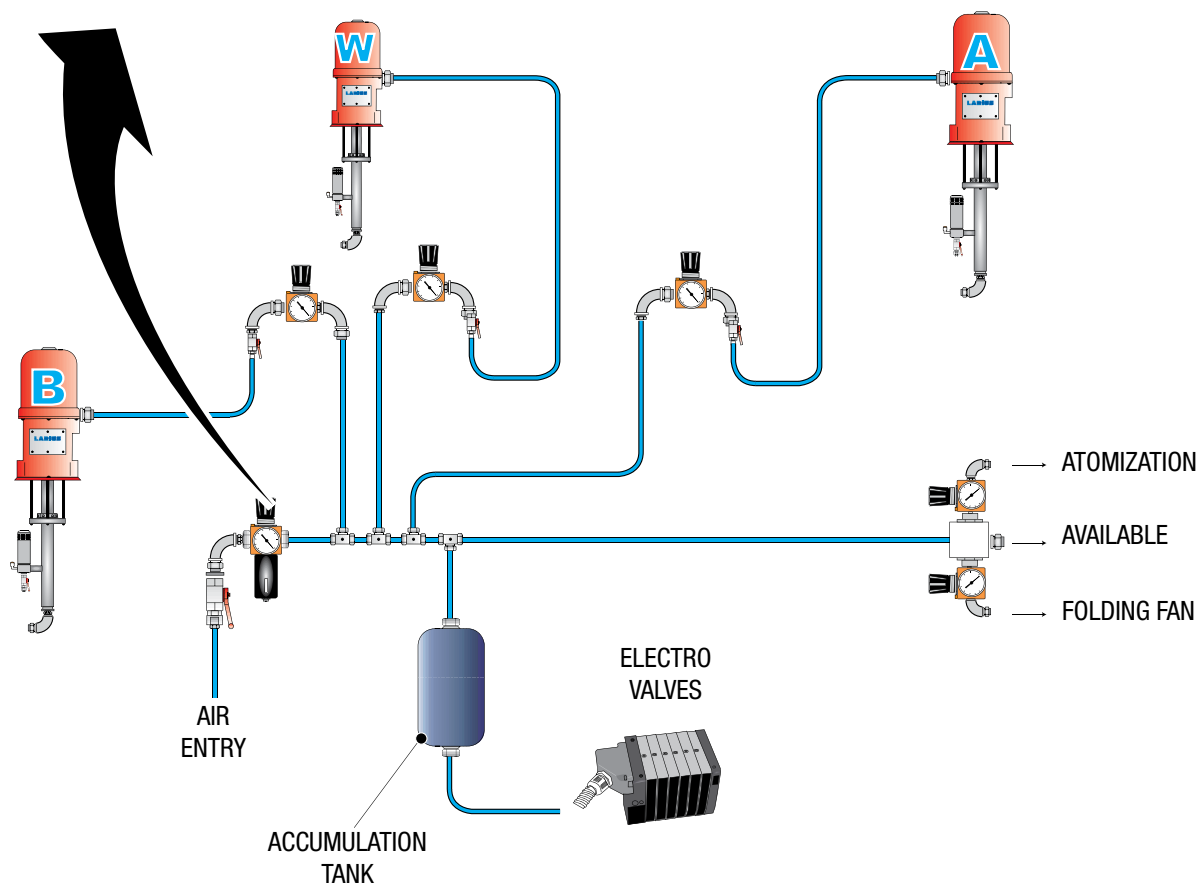
N° 1 Solvent pump (DILUENT) D

GHIBLI 40:1

N° 1 Pump used for washing VEGA 5:1

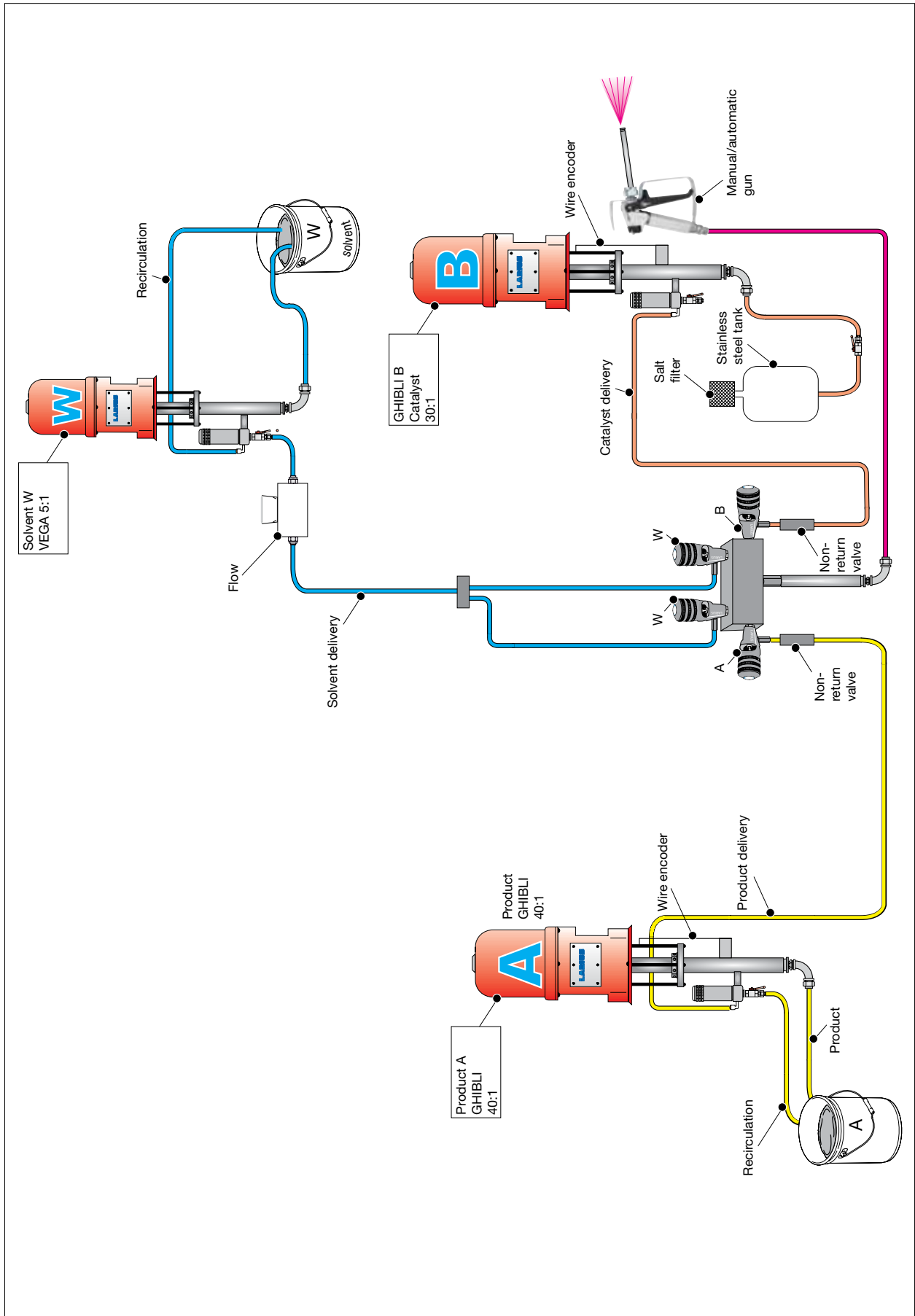
Washing liquid = solvent

The two washing guns are mounted in parallel and start at the same time: the first on the left washes circuit A (E1) and the second washes the catalyst circuit B (E2).





F PLANT DIAGRAM





G TRANSPORT AND UNPACKING

- The packed parts should be handled as indicated in the symbols and markings on the outside of the packing.
- Before installing the equipment, ensure that the area to be used is large enough for such purposes, is properly lit and has a clean, smooth floor surface.
- The user is responsible for the operations of unloading and handling and should use the maximum care so as not to damage the individual parts or injure anyone.

To perform the unloading operation, use only qualified and trained personnel (truck and crane operators, etc.) and also suitable hoisting equipment for the weight of the installation or its parts.

Follow carefully all the safety rules.

The personnel must be equipped with the necessary safety clothing.

- The manufacturer will not be responsible for the unloading operations and transport to the workplace of the machine.
- Check the packing is undamaged on receipt of the equipment. Unpack the machine and verify if there has been any damage due to transportation.

In case of damage, call immediately LARIUS and the Shipping Agent. All the notices about possible damage or anomalies must arrive timely within 8 days at least from the date of receipt of the plant through Registered Letter to the Shipping Agent and to LARIUS.



The disposal of packaging materials is a customer's competence and must be performed in accordance with the regulations in force in the country where the plant is installed and used. It is nevertheless sound practice to recycle packaging materials in an environment-friendly manner as much as possible.

H CONDITIONS OF GUARANTEE

The conditions of guarantee do not apply in the following situations:

- improper washing and cleaning of components causing malfunction, wear or damage to the equipment or any of its parts;
- improper use of the equipment;
- use that does not conform with applicable national legislation;
- incorrect or faulty installation;
- modifications, interventions and maintenance that have not been authorised by the manufacturer;
- use of non-original spare parts or parts that do not correspond to the specific model;
- total or partial non-compliance with the instructions provided.



I SAFETY RULES



Read carefully and entirely the following instructions before using the product. Please save these instructions in a safe place.



The unauthorised tampering/replacement of one or more parts composing the machine, the use of accessories, tools, expendable materials other than those recommended by the manufacturer can be a danger of accident.



The manufacturer will be relieved from tort and criminal liability.

- THE EMPLOYER SHALL TRAIN ITS EMPLOYEES ABOUT ALL THOSE RISKS STEMMING FROM ACCIDENTS, ABOUT THE USE OF SAFETY DEVICES FOR THEIR OWN SAFETY AND ABOUT THE GENERAL RULES FOR ACCIDENT PREVENTION IN COMPLIANCE WITH INTERNATIONAL REGULATIONS AND WITH THE LAWS OF THE COUNTRY WHERE THE PLANT IS USED.
- THE BEHAVIOUR OF THE EMPLOYEES SHALL STRICTLY COMPLY WITH THE ACCIDENT PREVENTION AND ALSO ENVIRONMENTAL REGULATIONS IN FORCE IN THE COUNTRY WHERE THE PLANT IS INSTALLED AND USED.
- KEEP YOUR WORK PLACE CLEAN AND TIDY. DISORDER WHERE YOU ARE WORKING CREATES A POTENTIAL RISK OF ACCIDENTS.
- ALWAYS KEEP PROPER BALANCE AVOIDING UNUSUAL STANCE.
- BEFORE USING THE TOOL, ENSURE THERE ARE NOT DAMAGED PARTS AND THE MACHINE CAN WORK PROPERLY.
- ALWAYS FOLLOW THE INSTRUCTIONS ABOUT SAFETY AND THE REGULATIONS IN FORCE.
- KEEP THOSE WHO ARE NOT RESPONSIBLE FOR THE EQUIPMENT OUT OF THE WORK AREA.
- **NEVER** EXCEED THE MAXIMUM WORKING PRESSURE INDICATED.
- (IF PROVIDED) **NEVER** POINT THE SPRAY GUN AT YOURSELVES OR AT OTHER PEOPLE. THE CONTACT WITH THE CASTING CAN CAUSE SERIOUS INJURIES.
- IN CASE OF INJURIES CAUSED BY THE GUN CASTING, SEEK IMMEDIATE MEDICAL ADVICE SPECIFYING THE TYPE OF THE PRODUCT INJECTED. **NEVER** UNDERVALUE A WOUND CAUSED BY THE INJECTION OF A FLUID.
- ALWAYS DISCONNECT THE SUPPLY AND RELEASE THE PRESSURE IN THE CIRCUIT BEFORE PERFORMING ANY CHECK OR PART REPLACEMENT OF THE EQUIPMENT.
- NEVER MODIFY ANY PART IN THE EQUIPMENT. CHECK REGULARLY THE COMPONENTS OF THE SYSTEM. REPLACE THE PARTS DAMAGED OR WORN.
- (IF PROVIDED) TIGHTEN AND CHECK ALL THE FITTINGS



FOR CONNECTION BETWEEN PUMP, FLEXIBLE HOSE AND SPRAY GUN BEFORE USING THE EQUIPMENT.

- ALWAYS USE THE FLEXIBLE HOSE SUPPLIED WITH STANDARD KIT.
- THE USE OF ANY ACCESSORIES OR TOOLING OTHER THAN THOSE RECOMMENDED IN THIS MANUAL, MAY CAUSE DAMAGE OR INJURE THE OPERATOR.
- THE FLUID CONTAINED IN THE FLEXIBLE HOSE CAN BE VERY DANGEROUS. HANDLE THE FLEXIBLE HOSE CAREFULLY. DO NOT PULL THE FLEXIBLE HOSE TO MOVE THE EQUIPMENT. NEVER USE A DAMAGED OR A REPAIRED FLEXIBLE HOSE.



The high speed of travel of the product in the hose can create static electricity through discharges and sparks. It is suggested to earth the equipment. The pump is earthed through the earth cable of the supply.



The gun is earthed through the high pressure flexible hose. All the conductors near the work area must be earthed.

Never spray over flammable products or solvents in closed places.

Never use the tooling in presence of potentially explosive gas.



Always check that the product is compatible with the materials composing the equipment (*pump, spray gun, flexible hose and accessories*) with which it can come into contact. Never use paints or solvents containing Halogen Hydrocarbons (as the *Methylene Chloride*). If these products come into contact with aluminium parts can provoke dangerous chemical reactions with risk of corrosion and explosion.



Avoid approaching too much to the pump piston rod when the pump is working or under pressure. A sudden movement of the piston rod can cause wounds or finger squashing.



If the product to be used is toxic, avoid inhalation and contact by using protection gloves, goggles and proper face shields.



Take proper safety measures for the protection of hearing in case of work near the plant.



J SETTING-UP

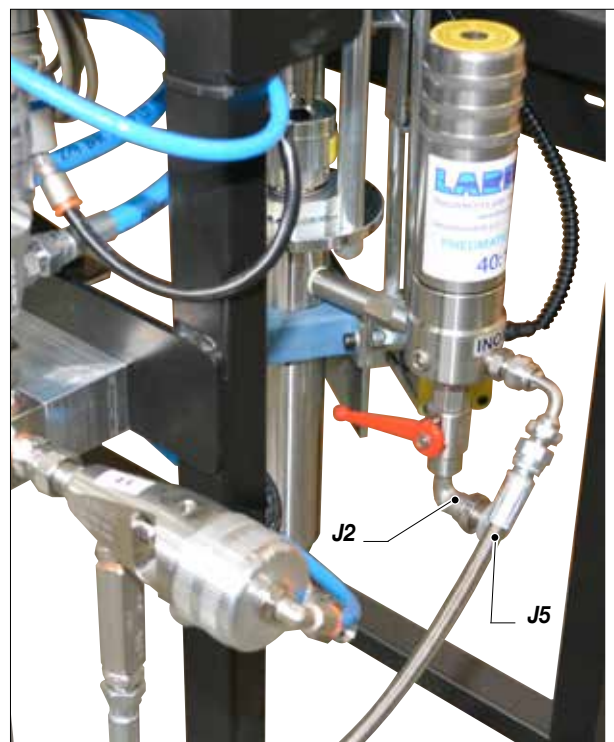
PIPING CONNECTION

Connect the draught lines on each pump:

- Product A (J1)



- Catalyst B (J2)
- Solvent W (J3)





Connect the recirculation lines:

- Product A (J4)
- Catalyst B (J5)
- Solvent W (J6)

Connect the mixed product supply spray gun hose (J7)



J7

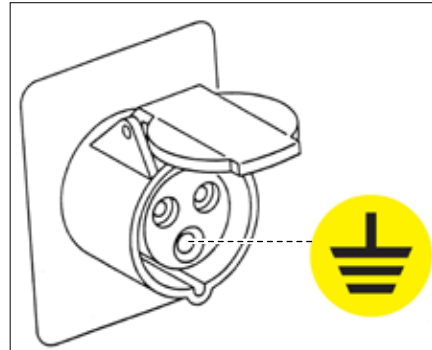


DO NOT use thread pastes upon the connections. It is recommended to use the tubes which have been supplied along with the machine. **NEVER** use a damaged or repaired flexible tube.

CHECK ON POWER SUPPLY



Make sure that the system is properly grounded. Use an electrical plug which guarantees the proper grounding of the system.



The machine requires a 220V alternating current power supply.



Should anyone use an extension cable between the tooling and the socket, it must have the same characteristics as the cable supplied (*minimum diameter of the wire 4 mm²*) with a maximum length of 50 mt. Higher lengths and lower diameters can provoke excessive voltage falls and also an anomalous working of the equipment.





To avoid electric shock when disassembling or checking the electronic equipment, wait 5 minutes after having disconnected the power supply cable, so that the electricity stored in the condensers while working can be dissipated.

Also check the condition of the earth cable to avoid any risk of shock.



Before carrying out any checks on the machine (maintenance, cleaning, or replacing parts) switch off the machine and wait until it has stopped altogether.



While checking stay away from electrical or moving parts to avoid any risk of shock or crushing of hands.



WARNING :

- **DO NOT** modify the plug for the earth socket in any way.
- **ONLY** use electrical connections that are earthed.
- **Make sure** that any earth extension cords are in good condition.
- **ONLY** use three-core extension cables.
- **Avoid direct contact with the rain.** Keep the equipment in a dry place.

CONNECTING THE EQUIPMENT TO THE PNEUMATIC LINE

Make sure that the air line to be connected to the machine is capable of constantly providing pressure at 7 bar. Before opening the air line, turn the ball valve (**J8**) on the general regulator (**J9**) to its closed position (*horizontal tap*). After supplying the machine with air, open the valve completely and set the regulator to maximum.

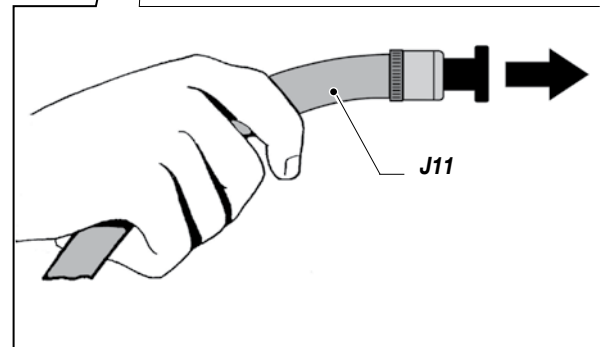
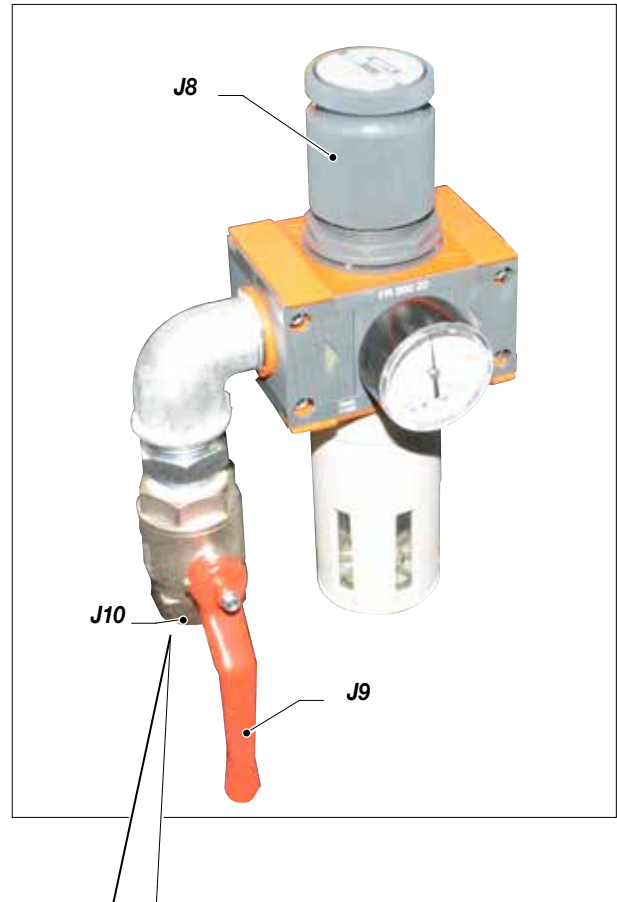
PNEUMATIC CONNECTION

The machine must be connected to the compressed air feeding system, which is necessary for the pneumatic interlocking. The connection must be carried out in the following way:

- Connect the air feeding pipe (**J10**) to the joint (**J11**).



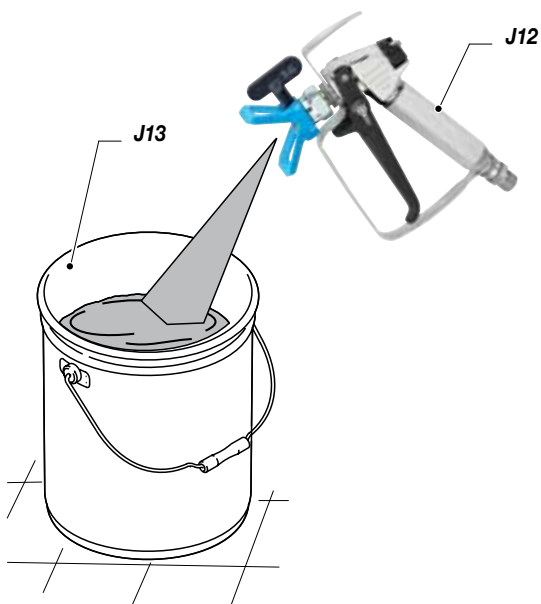
It is advisable to install an on-off valve on the frontal part of the machine





WASHING OF THE NEW EQUIPMENT

- The machine has been tested at the manufacturer's facilities. Perform a wash cycle with the paint thinner before suctioning any product.
- Place the suction tubes in the solvent containers or else pour solvent into the gravity tanks.
- Make sure that all of the taps are closed.
- Circulate the solvent within the output pumps and afterwards within the entire system.
- Open the machine's intake taps, as well as those at the flowmeter intake and leave the relative bleeder valves closed.
- Activate an automatic work cycle and circulate the solvent until it comes out of the machine clean.
- Stop the automatic work cycle and activate a wash cycle. This cycle will help the user set all of the wash settings so that that machine will be predisposed to perform future wash cycles during working phases.
- During the wash cycle, hold the spray-gun (J12) over a container (J13) and keep the trigger pulled.



Absolutely avoid to spray solvents indoors.



For disposing of the washing liquid, see the requirements laid down in the Standards in force in the country in which the equipment is used and act accordingly.

The Client is solely responsible for any irregular action taken before, during, or after disposing of washing liquid, or in interpreting and applying the current Standards in this regard.

- Now the machine is ready. When water-based paint has been used, in addition to washing using the cleaning liquid, we recommend washing with soapy water and then clean water.

PREPARING THE PRODUCTS

In order to prepare the products (*i.e. for dilution*), refer to the supplier's data sheets.



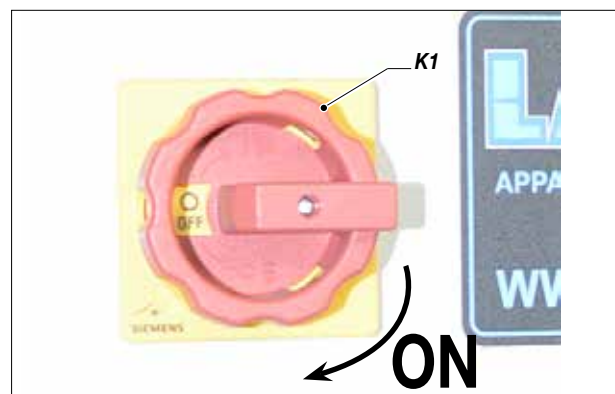
Make sure the product to be used is compatible with the materials employed for manufacturing the equipment (*stainless steel and aluminium*). Because of that, please contact the supplier of the product.

K WORKING

TURNING THE MACHINE ON

Connect the machine up to the current and then to the air line (supply at minimum 6bar).

Turn the machine on by pressing the switch (K1) on the side of the control box, setting it to ON.



If it is the first time the machine is used, wash. The machines are tested and there may be some oil residues remaining within.



After loading the two feed pumps and checking that the products come out of their relevant recirculation, make sure that the components are flowing, in their relative lines, up to the mixing block.

If the equipment is being used for the first time, wash it to make sure that there are no oil residues in the machine during the testing phase (see the page related to “washing new equipment”).

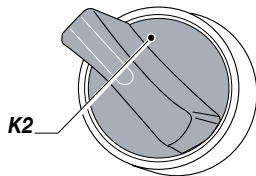


Make sure that the supply pumps provide the two components either with B>A with the same delivery pressure, or with pump B + 0.5/1 bar with respect to the pump A supply.

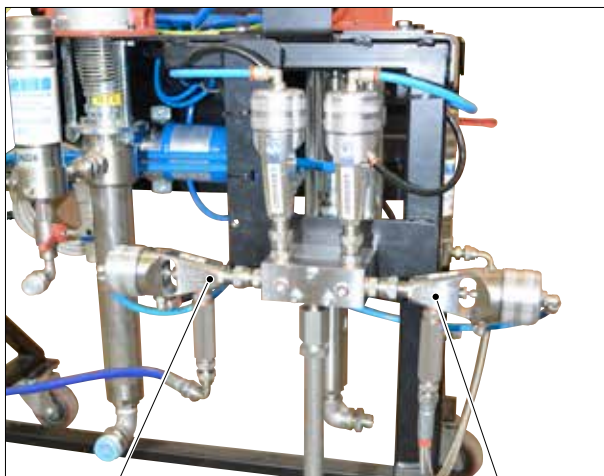
Check for any machine alarms. If present, consult the “alarms” page where the various modes of resolving alarm states are listed. If the machine does not have any alarms active, proceed with the setting of the machine’s parameters (see the relative chapter). Turn the selector (K2) to the AUTOMATIC position.



MAN / AUT



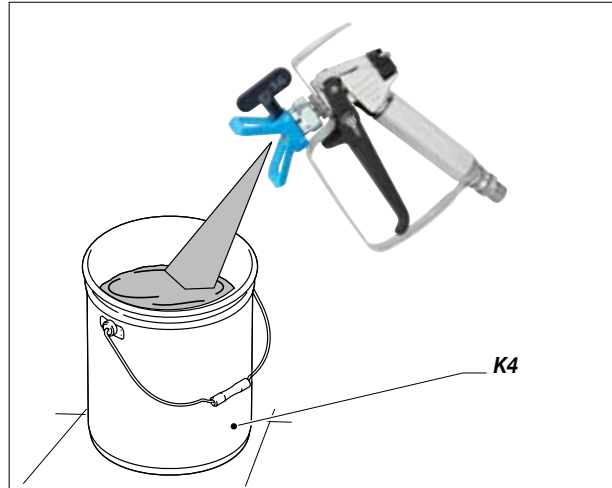
Wait for the flexible spray-gun tube to load (wait for the valves (K3) to shut off automatically). The panel displays the message “loading paint needed”.



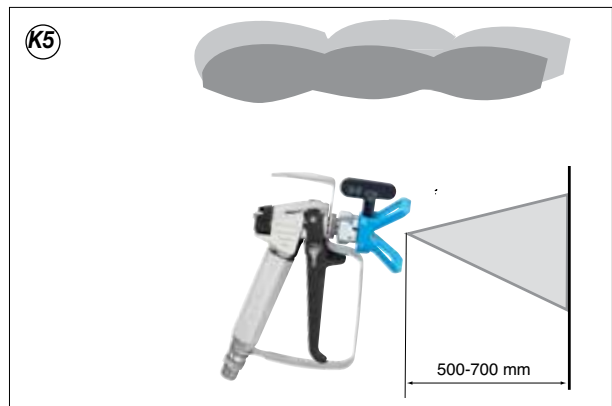
K3

K3

Before painting, spray the product into a container (K4) or into a part of the cab (K5) dedicated to purging, while keeping the spray-gun at a constant distance from the surface (500-700mm). Use this same distance for all other applications. This procedure will allow the user to perform any necessary adjustments, such as: widening the spray, atomising-air adjustment, adjustment of the various working pressures, etc.



K4



K5

500-700 mm

Once this purging phase has been completed, the operator can proceed with normal working operations.

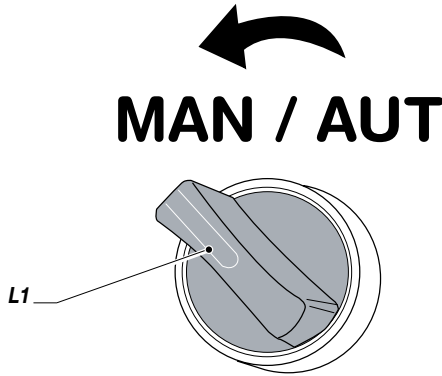


L START-UP PROCEDURES

The system has two operating modes:

- MANUAL MODE
- AUTOMATIC MODE

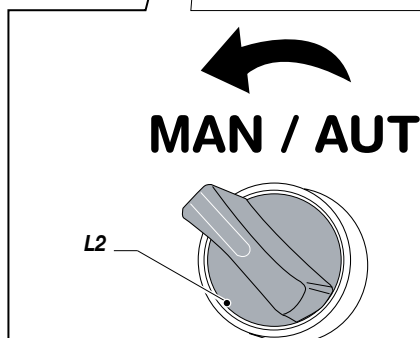
The operating mode can be selected using the 2-point selector (L1) located on the control panel.



MANUAL MODE

Manual operating mode allows the user to control manually all of the system's available functionalities as well as the wash function, calibration and dispence cycle.

In order to activate the manual operating mode, the user must turn the selector (L2) to the manual position.



Manual controls

Use these fields to switch/open each electro valve individually. Open the manual controls page by pressing the virtual key on the touch panel.

! This function is necessary also for performing a complete wash of the entire system when the two pumps have to be washed using two different wash fluids (i.e. component A requires water to be used as a wash fluid and the component B requires the use of a solvent).



The valves are recognisable as follows:

- Ev A: Pump A washing valve
- Ev B: Pump B washing valve
- Ev solv. 1: Solvent wash valve

The pages are password-protected as only authorized personnel can access.

The currently set password is

USER = Larius
 PASSWORD = Larius

Select the relevant field. The green button will turn red to indicate the valve opening. Vice-versa to close the valve, simply press the button, which will turn back to green.

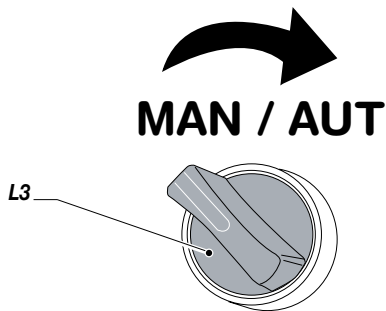




This operation (*manual valve opening*), must also be carried out when discharging pressures.
When a valve is opened in the absence of product, the pressure contained within the mixing block is released.
Perform this operation on all electro valves.

AUTOMATIC MODE

The automatic cycle is used for regular working functionality.
In order to activate automatic mode functionality, the operator must turn the selector (**L3**) to the automatic position.
To disable the automatic operating mode, just place the selector (**J3**) in the manual position.



When the automatic cycle is active, the program controls the sequence of the valves for the two components and doses them based on the requested ratio and based on the “impulse count frequency” settings.
Access the “General Settings” screen.



The “impulse count frequency” setting affects the frequency of the valve sequence.

Example:

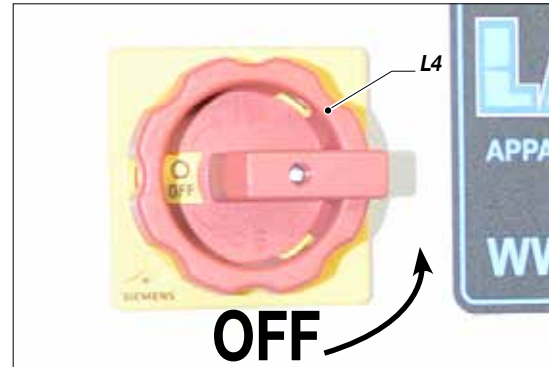
Let us suppose we are selecting a volume ratio of 3/1 (3 parts A and 1 part B) and setting a pulse frequency of 1. The programme will control the valve opening, counting 30 pulses of the A supply measurer and 10 pulses of the B supply measurer.
If a pulse frequency of 2 were set, the machine would count 60 pulses of A and 20 pulses of B.



The adjustment of the “impulse count frequency” must be done in such a way so as to avoid high frequencies which may not be supported by the components.

TOTAL SHUTDOWN OF THE CONTROL PANEL

The system shutdown procedure requires the main switch (**L4**) to be turned to the OFF position.
This operation completely arrests all of the system’s functionalities.



M OPERATOR INTERFACE PANEL

The explanations provided must be read by any personnel who will operate the system.

CONTROL PANEL

The Control panel (**M1**) is used in conjunction with the Operating Panel by the user to control machine function, to select the cycles (*manual, automatic*) and functionalities, as well as for immediately viewing the system’s functional status.
The light on the panel indicates whether any alarms are active.






OPERATING PANEL

The operating panel is connected to the system and is used for:

- inserting and viewing process variables;
- viewing alarms and signals in order for the operator to easily identify them while the system is in function;
- selecting the desired function in manual mode.

 **If the system functions in a different manner with respect to the information which has been inserted, the user is advised to communicate the event to the manufacturer so that a technician may verify the program which has been loaded onto the PLC.**

The machine is controlled by a touch screen panel.

Push buttons are represented graphically and the machine can be adjusted or its functions activated by simply touching these buttons.

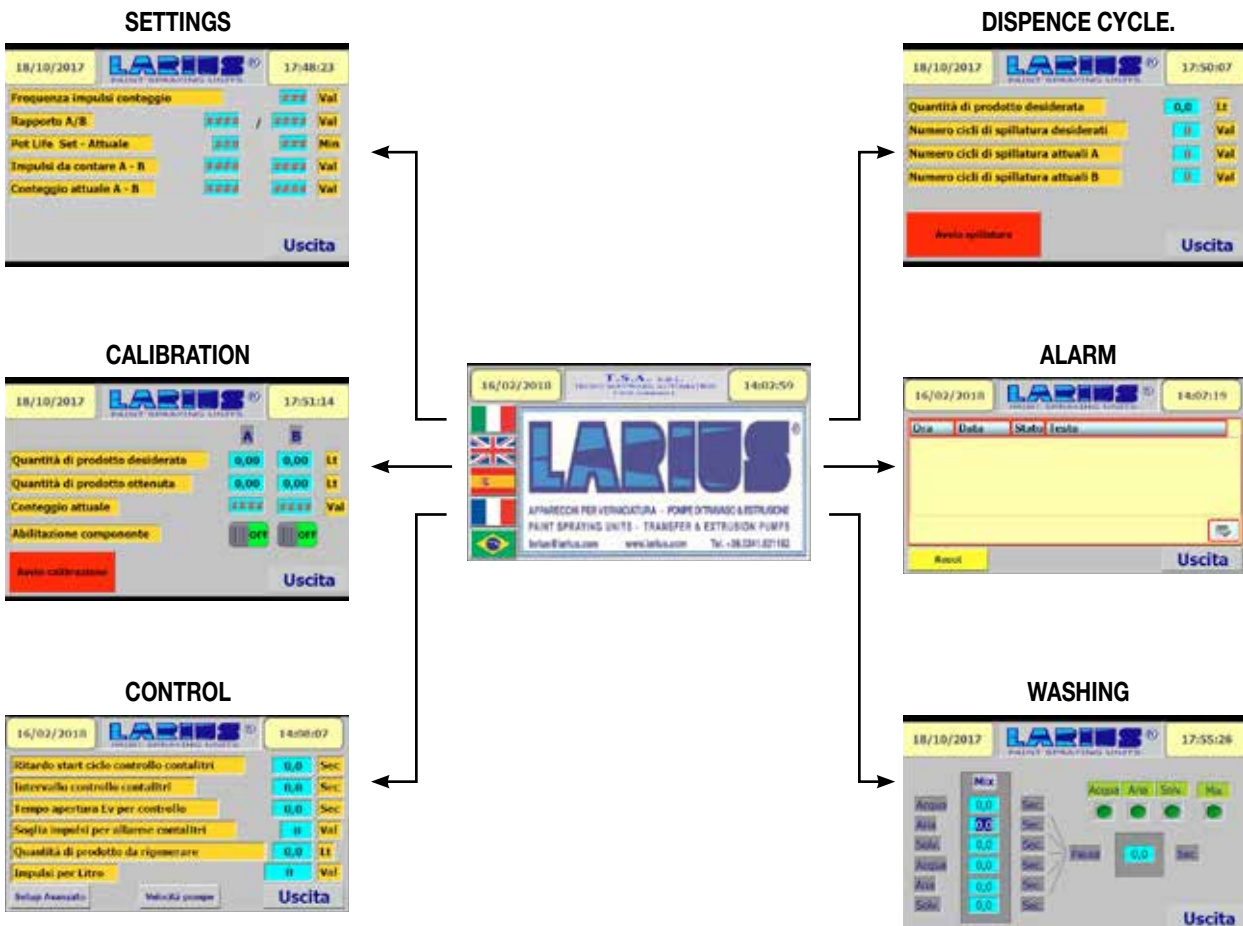
The control system has an intuitive design and is user friendly, so most operators learn how to operate the machine by simply using it.

When switching on the machine, after the program has been loaded, a welcome page with the LARIUS logo is displayed.

Use the touch panel to move within the selected page.

Procedure for selecting a field to modify:

- Move to the desired item using the monitor touch keys
- Click on the desired field using the virtual keypad

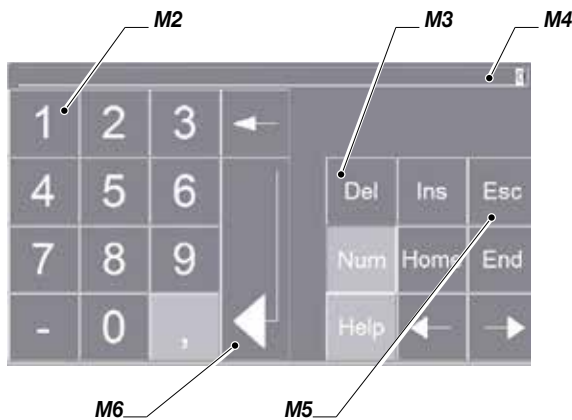




SYSTEM PAGES

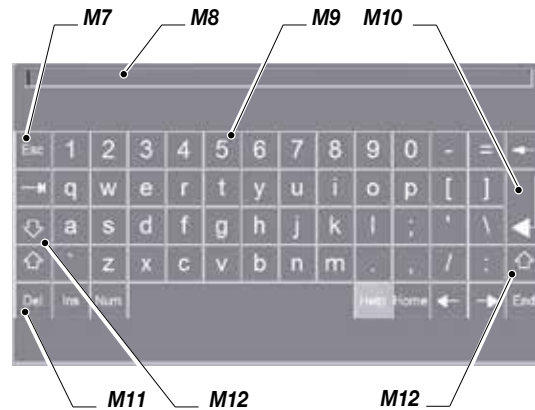
The programming panel contains further system pages:

Numeric page: It will be used to enter the data requested by the system.



- M2 - Numeric keypad
- M3 - Delete incorrect data
- M4 - Written value
- M5 - Exit button
- M6 - Confirmation button

Alphanumeric page: It will be used to write names where prompted by the system



- M7 - Exit button
- M8 - Written text
- M9 - Alphanumeric keyboard
- M10 - Confirmation button
- M11 - Delete incorrect data
- M12 - Upper case/lower case button

POWER STATUS

The power status is indicated by a green light located on the system's ON/OFF selector.

LOCKING SELECTOR

In order to prevent unauthorised personnel from modifying the machine's settings, a locking safety selector (**M13**) has been installed upon the panel.

The selector can be turned:

- to the right in order to allow for the machine's settings to be modified.
- to the left in order to protect the machine's settings with a secret password.

User: Larius
Password: Larius

The machine is furnished with two keys (*one spare key for use in the event that the regular key is lost*). The safety keys should be entrusted to a person who is authorised to modify the machine's settings and data.



24 VDC (M14) VOLTAGE ON INDICATOR: Indicates the presence of auxiliary voltage which powers all 24 VDC utilities, including the PLC.

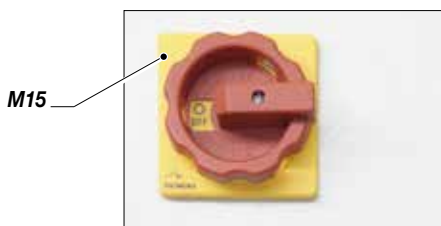


MAIN SWITCH (M15)

EMERGENCY BUTTON (M16): If pressed, immediately disables any operation in progress, whether it be a colour change or washing, by closing all the valves.

WASHING BUTTON (M17): when this button is pressed, the machine performs the washing cycle previously selected on the WASHING page, respecting the set times and the selection of the type of washing.

- 1 - Washing of color collector, mixer and gun hose (N.B. function not active)
- 2 - Catalyst manifold washing (N.B. function not active)
- 3 - Washing of the hose mixer and gun
- 4 - Washing of color collector, catalyst collector (N.B. function not active)



M16 M17 M14

END OF WORK

WASHING

- Position the AUT/MAN selector to Manual.
- Press the START WASHING button (M14).
- Open the paint spray gun.
MANUAL GUN the responsibility of the operator

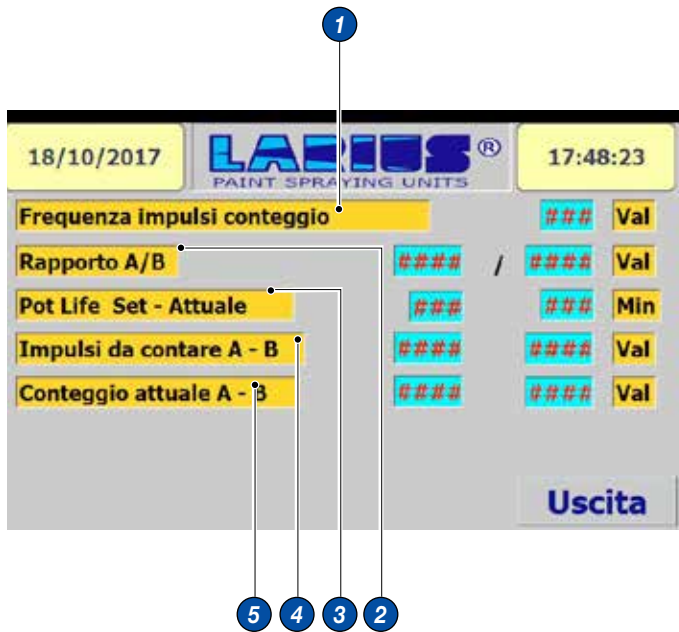
AUTOMATIC GUN by the painting robot manager

- Wait for the end of the washing cycle; if necessary repeat the cycle.
- The message (paint refilling necessary) will be displayed on the LARIUS panel.
- Close the main air valve.
- In the event of a Flow switch alarm, reset as per the procedure shown in the "ALARMS" screen in the "PANEL FUNCTION DESCRIPTION"
- Set the MAN /AUT selector to Manual.
- Switch off the electrical panel.



N DESCRIPTION OF THE PANEL'S FUNCTIONS

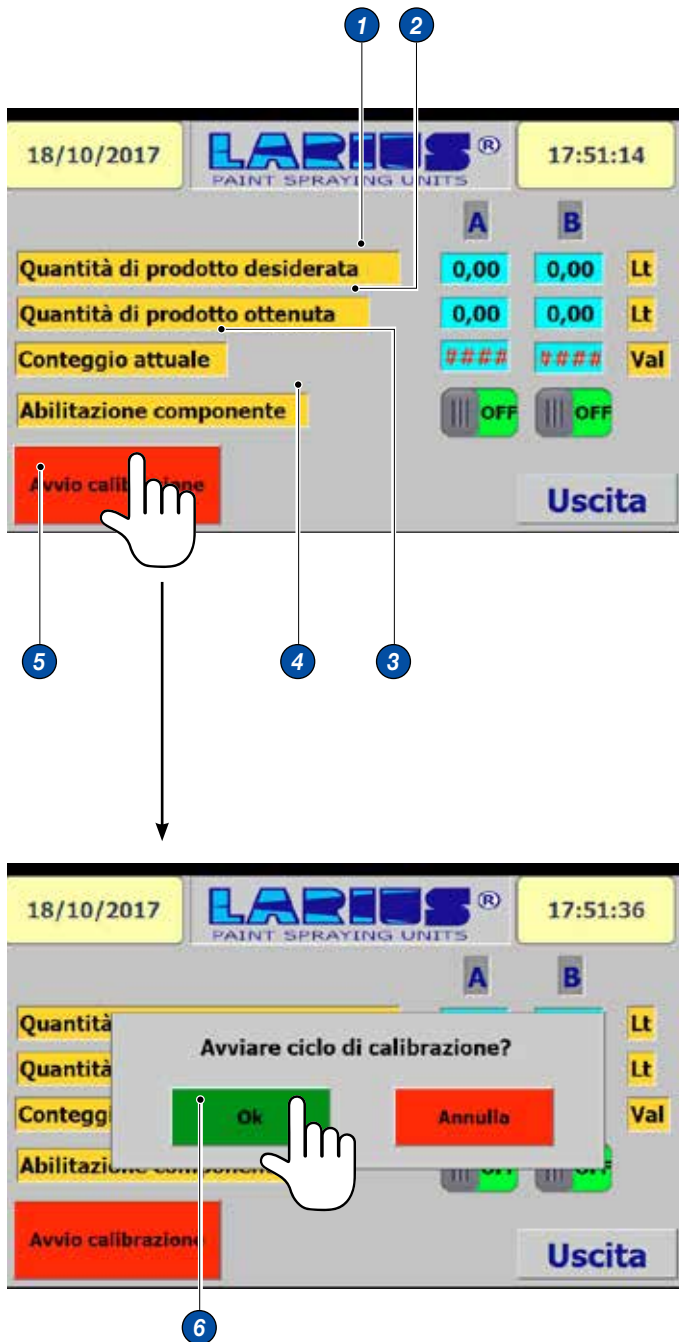
SETTINGS



- 1 **Counter pulse frequency:** Value that determines the opening frequency of dispensing valve B. The lower the value entered in the field, the higher the opening and closing frequency of valve B and vice-versa
- 2 **Ratio A:** Value expressed in parts to be dispensed by the metering valve A.
Ratio B: Value expressed in parts to be dispensed by the metering valve B.
- 3 **Pot life:** Lifetime of the product after its mixing expressed in minutes. The machine generates a Pot Life alarm when this time expires. The operator must renew the product or wash the mixed part. If the product is refilled, the value shown on the control page should pass to the higher quantity. The lit acoustic alarm resets automatically. If washing is to be performed, set the MAN/AUT selector to MAN, press the WASHING button, and be sure to press the paint gun to allow the solvent to come out.
- 4 **Impulses to count A-B:** Number of impulses that the PLC must reach before closing the respective dispensing valve. This value depends on the set ratio, on the count impulse frequency and on a multiplication constant.
- 5 **Actual count A-B:** Value in real time of the count of A and B.



CALIBRATION



- 1 **Quantity of material needed:** Enter the value that you wish to take in litres.
- 2 **Quantity of material obtained:** After having launched the calibration, enter the value that has actually been obtained for both circuit A and for circuit C
- 3 **Actual count:** Impulses counted during dispensing of the desired amount.
- 4 **Enable component:** Click on the symbol twice to enable or disable it.
- 5 **Start calibration:** Virtual button to start the calibration cycle.

Calibration procedure: Input value of 1 (ONE) litre in the field Desired amount of product A. Click twice on the Enable component A key: the message ON will appear. Make sure that the component A circuit has been loaded and is pressurised. If present, rotate the three-way tapping valve horizontally. Make sure that the compression nozzle is not clogged. Arrange a graduated container under the tapping valve output.

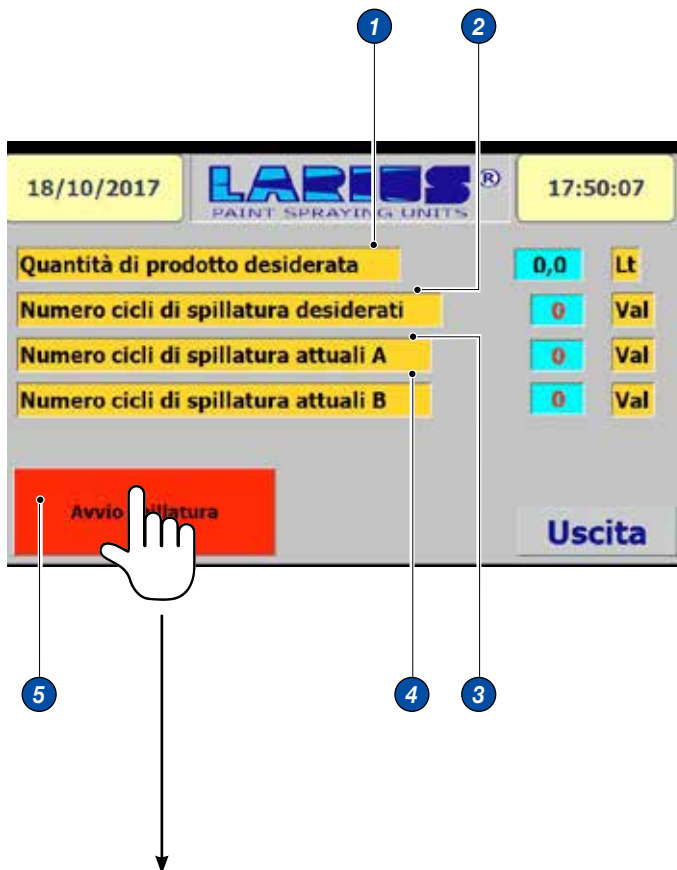
- 6 **OK:** Confirm calibration start.

Open the paint spray gun. Wait for the product to come out, enter the amount of product actually dispensed in the "OBTAINED AMOUNT OF PRODUCT" field. Proceed with the calibration of circuit B.

Note: Calibration must be performed one at a time. Enabling calibration of circuit A automatically excludes the possibility of calibrating circuit B and vice-versa.



SPILLATURA



Function used to verify the amount in volume of component A and component B with respect to the set ratio.

Enter the desired amount of product (1), example 1 (one) litre. The machine according to the set contribution (2) (for example 4:1) will produce 800 cc of component A and 200 cc of component B

- 1 **Quantity of material needed:** Enter the value in litres of the product.
- 2 **Requested cycles number**
- 3 **Actual cycles number A:** Product A value
- 4 **Actual cycles number B:** Product B value
- 5 **Start dispence cycle:** key for launching tapping.
- 6 **OK:** Confirm tapping start.

The MAN/AUT selector (7) must be set to MAN.

Take the product at the end of output from the painting spray gun, which must correspond with the desired amount of product.

Note: If three-way tapping valves are present on the machine for tapping, before starting the tapping cycle:

- Make sure that the counter-pressure nozzles on the outlet of these valves are clean and not clogged.
- Rotate the valve levers to the horizontal position.
- Position two graduated containers.
- We will find 800 cc. in container A.
- We will find 200 cc. in container B.
- Equal to ratio 800/200 - 4/1.



WASHING



On this page, you can set the operating times of the washes based on the machine configuration. Some machines have the possibility of a second washing (Solv. 2) with liquid other than solvent wash 1 (Solv. 1). In some cases we can have air blown between the washing Solv. 1 and the washing Solv. 2.

Si esegue il lavaggio del miscelatore statico, del tubo pistola e della pistola stessa, si possono impostare due fasi lavaggio con liquido di lavaggio (acqua) e due fasi di lavaggio con solvente intervallate da una pausa fra una fase e l'altra e da fase di soffiaggio aria.

Washing is activated by pressing the "WASHING" button with the MAN/AUT selector set to MAN. The robot places the gun with the nozzle down. With the gun open, the washing cycle starts and ends with the washing stop signal.

All the set washing times decrease as long as the flow meter signals are enabled.

If one of the flow meter signals fails, the count is reset and then starts again from the beginning.

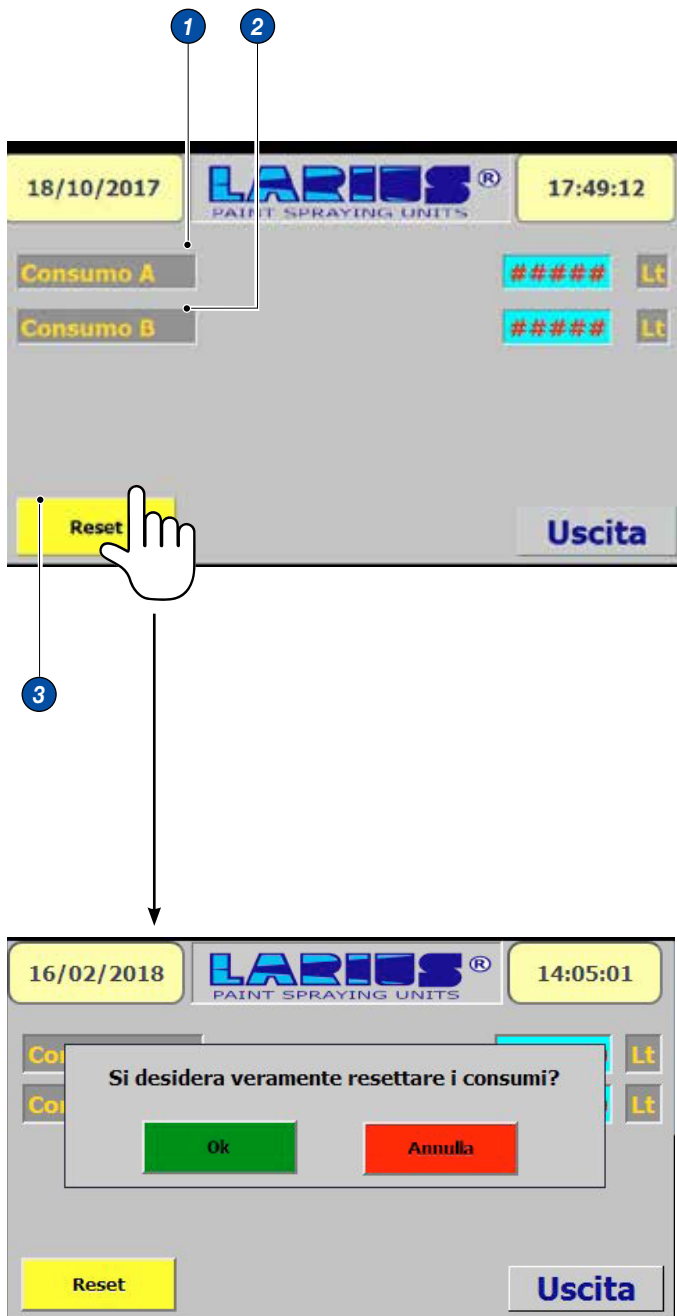
This function is essential in order to ensure that the washing liquid or solvent actually passes through the various circuits to allow cleaning. The flow meter is the device that is able to recognize, when the spray gun is open, if the washing liquid is actually passing.

N.B.: If the corresponding flow switch signal for washing with water or with solvent is missing after a certain time, the equipment reports the flow meter alarm acoustically and visually. The operator will then have to reset the acoustic alarm.

During washing, the panel will display the flashing message WASHING IN PROGRESS.



CONSUMPTION



- 1 **Consumption A:** Display of litres relative to circuit A counted with cycle in Automatic or in Tapping.
- 2 **Consumption B:** Display of litres relative to circuit B counted with cycle in Automatic or in Tapping.
- 3 **RESET:** Press the RESET button and then OK to reset values.

NOTE

This function is useful for daily checks of the amount of paint and catalyser used.



ALARM



FLOW METER ALARM RESET

During system washing functions or colour change, the Washing solvent flow meter alarm may activate because the operator did not press one of the above functions on the paint spray gun within a certain amount of time.

The DO NOT BLOCK OPERATION alarm on the machine can only be reset after the washing cycle or the colour change has been completed.

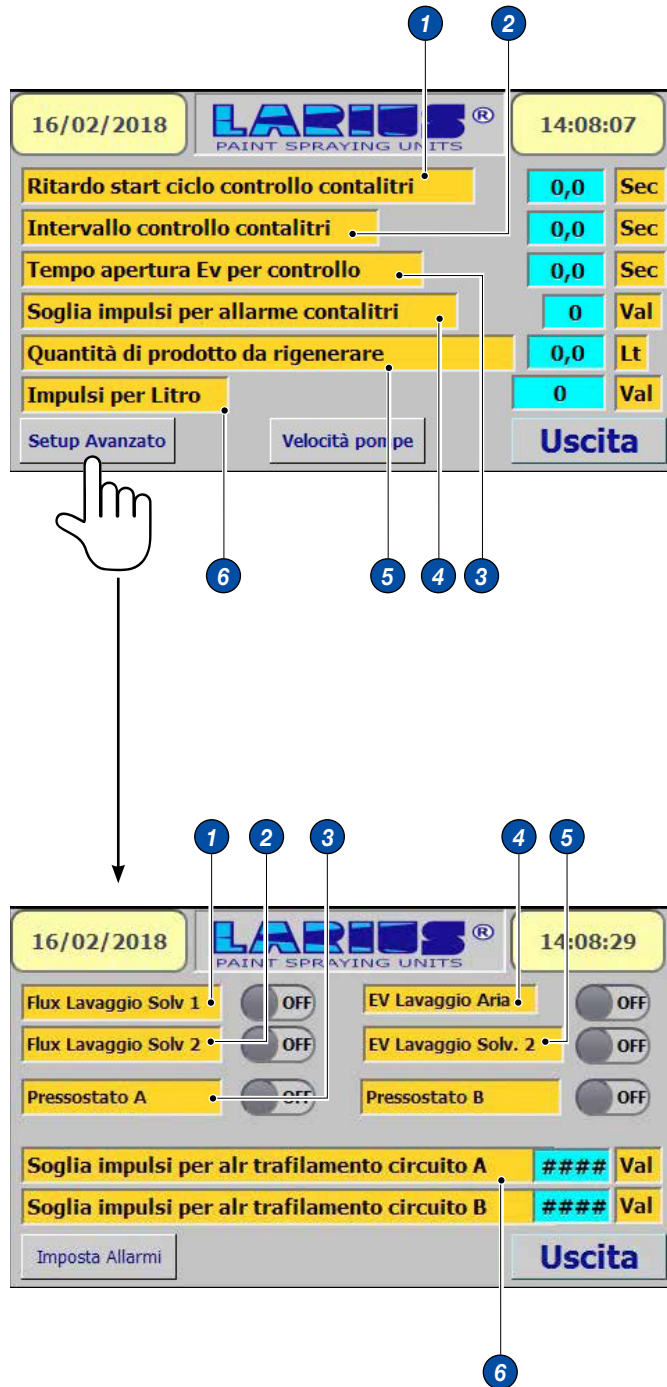
Procedure:

- Exit the page you are viewing by pressing the exit button.
- A menu with all machine functions will appear.
- Select the ALARM button.
- Press the yellow RESET button (to switch off the red lamp and acoustic alarm).
- Press the button at the bottom right to reset the message which will appear in the alarms list.
- Press the EXIT button.
- Press the SETTINGS button to view the settings in use

1. **Emergency:** Reset the push-button.
2. **Component A circuit alarm:** Dosing valve A closed, impulse counting is detected: leakage index. Check dosing valve A, the recirculation tap, pump leakage.
3. **Component B circuit alarm:** Dosing valve B closed, impulse counting is detected: leakage index. Check dosing valve B, the recirculation tap, pump leakage.
4. **Litre counter A alarm:** Breakage of encoder wire on pump A1 or A2.
5. **Litre counter B alarm:** Breakage of encoder wire on pump B1.
6. **Pump A1 A2 speed alarm:** A higher speed of movement on pump A1 or A2 has been detected compared to operating values previously stored during normal mixing operations.
7. **Pump B1 speed alarm:** A higher speed of movement on pump A1 or A2 has been detected compared to operating values previously stored during normal mixing operations.
8. **Circuit A minimum pressure alarm:** Pressure value lower than the set value on the circuit A pressure sensor.
9. **Circuit B minimum pressure alarm:** Pressure value lower than the set value on the circuit B pressure sensor.
10. **Water flow switch alarm:** No washing liquid passage detected. Gun not open or pump blocked, after having exceeded the alarm activation delay time, from washing launch or colour changing. Washing pump blocked. Washing pump empty.
11. **Solvent flow switch alarm:** No washing liquid passage detected. Gun not open or pump blocked, after having exceeded the alarm activation delay time, from washing launch or colour changing. Washing pump blocked. Washing pump empty.



CONTROL



6 Impulse threshold for leakage alarm circuit A - circuit B

It is possible to set the number of impulses to be exceeded for certain leakage alarms on the relative pump or on the leakage of the dosing valve or on the recirculation valve of circuit A or B.

HOWITWORKS: at the closing of the EvA or EvB valve, if the respective pump moves and the wire encoder exceeds the number of impulses set as the threshold, the machine recognises that the product is leaking or there is a loss of retention that can be searched for in:

- Loss of retention of the dosing valve ball/sleeve
- Pump with worn gasket seals or sealing balls
- Recirculation tap with leaks

On this page, enter the values controlling the action thresholds relative to counting system faults on the linear encoders.

- 1 Delay start cycle control counter:** Waiting time before the linear encoder conditions check cycle starts.
- 2 Pause control counters:** Repeat time of the control described above.
- 3 EV opening time for control:** Maintained valve opening time for counting impulses for the control described above.
- 4 Pulse level for counters alarm:** Number of impulses to be exceeded during valve opening.
- 5 Quantity of material to be regenerated:** Amount of product to be counted for bleeding after pot life operation or for loading paint. This relates to the amount contained in the flexible hose that connects the spray gun to the static mixer. This amount depends on the length of the hose and on its internal diameter.
- 6 Pulses per litre:** Value which is used to transform impulses counted in litres, displayed on the consumptions page.

On this page, you can enable the machine control systems and the mode and type of washing depending on how the machine is configured and built.

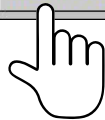
CONTROL ADVANCED SETUP

- 1 Flux Washing Solv 1**
ON ENABLED - OFF DISABLED
Enabling of flow meter control on SOLV 1 circuit.
- 2 Flux Washing Solv 2**
ON ENABLED - OFF DISABLED
Enabling of flow meter control on SOLV 2 circuit
- 3 Pressure switch A:** Enabling the minimum product pressure control on circuit A
- 4 EV Air Washing:** Enabling blowing air after SOLV 1 cycle
- 5 EV Solv. Washing 2:** Enabling SOLV 2 washing



PUMPS CALIBRATION

16/02/2018	LARIUS PAINT SPRAYING UNITS	14:08:07
Ritardo start ciclo controllo contaltri	0,0	Sec
Intervallo controllo contaltri	0,0	Sec
Tempo apertura Ev per controllo	0,0	Sec
Soglia impulsi per allarme contaltri	0	Val
Quantità di prodotto da rigenerare	0,0	Lt
Impulsi per Litro	0	Val
Setup Avanzato	Velocità pompe	Uscita



31/12/2000	LARIUS PAINT SPRAYING UNITS	10:59:39	
Registra	A	B	Registra
Valore attuale	00000	00000	Val
Intervallo controllo	000	000	s
Val. riferimento	00000	00000	Val
Tolleranza	00000	00000	Val
Controllo abilitato	OFF	OFF	Uscita

- 1 Current value:** The value displayed when the machine is in automatic mixing conditions.
- 2 Control interval:** Time, in seconds, between repeated reading of the current value.
- 3 Reference value:** Press this button to record the field value (current value). The current value will be recorded in the Reference val. box. The value can also be entered directly onto the virtual keypad.
- 4 Tolerance:** Value of the tolerance that the machine considers more with respect to the reference value which determines the pump speed alarm.
For example, reference value: 1000; tolerance value: 220, maximum value: 1220. If the current value is higher than 1220, the machine alarm is ON after the time set on the next page.
Check enable: Control enabled; the control is enabled by moving the cursor to the right and the message ON appears.
- 5 Procedure for storing values:**
 - set the control "pause control" (i.e. 5 seconds).
 - With the machine in automatic mode and while the operator is carrying out normal piece painting operations, make sure that "check enable" is set to the "OFF" position
 - press the "Record A" button. The value read in "Setpoint value" will be transferred to the "Current Value" box.

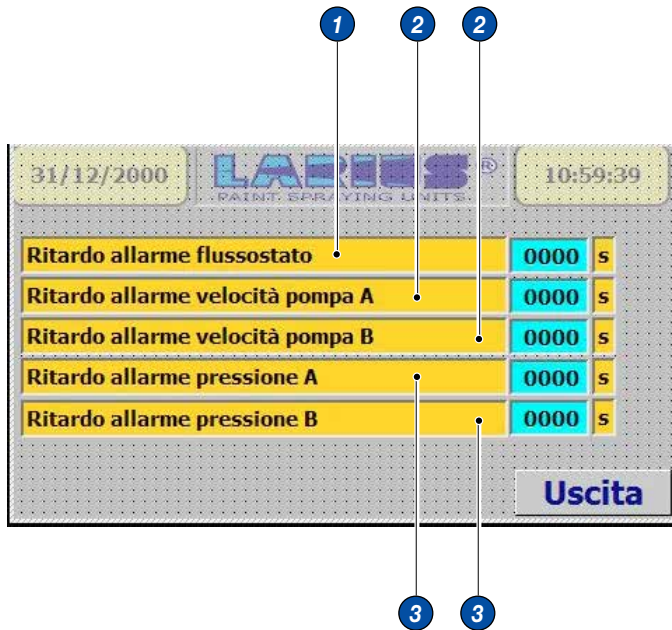
It allows you to record the pumping speed, in working condition after having set all the parameters relating to the type of ratio A:B forecasts of work type of nozzle used, in order to determine the increase in speed, index of malfunction of the system product suction.

Example: no product or suction filters clogged.
In these conditions, the pump cavitates, increasing the speed.

Fix a tolerance value (i.e. 50).
Repeat this operation for pump B.
Enable the controls using the cursors, setting them to **ON**.



ADVANCED CONTROLS



- 1 Flow meter alarm delay:** Refers to the flow switch which controls the passage of the washing liquid during the washing cycle phase. Delay time in seconds, after which the machine signals a flow switch alarm. The operator must press the gun to allow the washing liquid to come out. Then reset the alarm on the relative page.
- 2 Pump A/B speed alarm delay:** Delay time after which the machine goes into alarm conditions, blocking operation, after having detected a pump speed that is lower or higher than the previously stored speed. The alarm is activated when the mixing machine is configured with an external counting system (linear encoder).
- 3 Pressure A/B speed alarm delay:** Delay time after which the machine goes into alarm conditions, after having found a pressure lower than that set in the pressure sensor instrument (APLUG 3)

The second screen shows the parameters used to store the pumping flow speed during normal equipment operation during the mixing phase. This function is used to identify malfunctions on the pump in the event that it sucks or partially sucks the relative liquid (paint or catalyser). In these conditions, pump speed normally increases with respect to normal operation. This page is used only if the mixing machine is equipped with an external counting system (linear encoders).



MANUALE COMMAND

On the MANUAL page, it is possible to activate or deactivate all functions on the system:

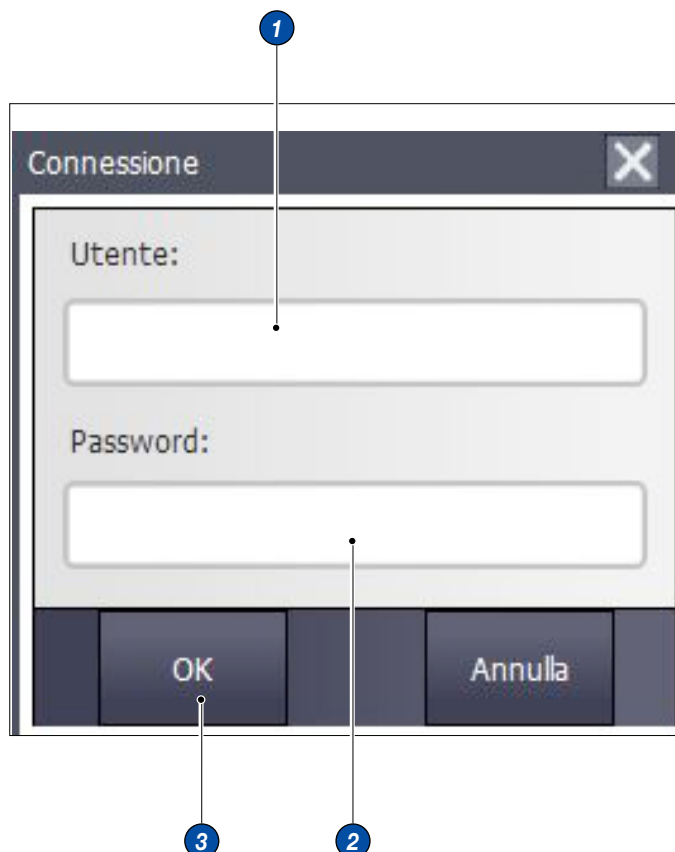


MATERIALS VALVE

- 1 **EV A:** Dispensing valve A base circuit on the mixe
- 2 **EV B:** Dispensing valve B catalyser circuit on the mixer.
- 3 **EV Solv. 1**

Page relative to the machine with washing with Solvent 1 only.
Air and Solvent 2 have been disabled from the ADVANCED CONTROL/SETUP page.

This page is password protected as only authorised personnel can access it.



- 1 Enter the username via the virtual keyboard.
Press the Enter key.
- 2 Click on the field, enter the password via the virtual keyboard.
- 3 Press OK



0 PROBLEMS AND SOLUTION

Problem	Cause	Solution
The pump does not start	Feed air not sufficient;	Check the air supply line. Increase the feed hose diameter;
	Outlet product line clogged;	Clean. Detach the product outfeed hose Power the pump at minimum pressure and check if the pump starts without the outfeed hose;
	Clogged product intake line;	Check the hose and the intake filter. Clean;
	The membrane has ruptured;	Replace the membrane;
	The drive valve has locked;	Press the reset buttons located at the sides of the valve;
The pump operates at accelerated speed and does not aspirate the product	There is no product;	Add the product;
	The pump sucks air;	Check the suction pipe;
	The "balls" do not close perfectly;	Remove and clean and/or replace the balls and ball seats;
The pump keeps on stalling	The feed air is insufficient.	Check the air supply line. Increase the feed hose diameter;
		Check that the parts of the air feed circuit guarantee a sufficient flow rate (the quick-couplings cause pressure drops).



Always close the compressed air supply and release the pressure in the system before checking or replacing the pump parts.

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CE DECLARATION OF CONFORMITY



Company



LARIUS srl
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Tel: +39 0341 621152
Fax: +39 0341 621243
E-mail: larius@larius.com

Declares under his owns responsibility that the product:

LARIUS GHIBLI MIX 2K **Double components mixing machine**

complies with the directives:

- EC Directive 2006/42 Machinery Directive
- EU Directive 2014/30 Electromagnetic Compatibility (EMC)
- EU Directive 2014/35 Low Voltage (LVD)

furthermore to the
harmonized standards:

- UNI EN ISO 12100-1/-2
Machinery safety, basic concepts, general principles of design. Basic terminology, methodology. Technical principles.

This declaration relates exclusively to the product in the state in which it was placed on the market, and excludes components or modifications which are added or carried out subsequently by end user.

Signature

Pierangelo Castagna
Managing Director

Calolziocorte, 13/01/2021
Location / Date



LARIUS srl

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