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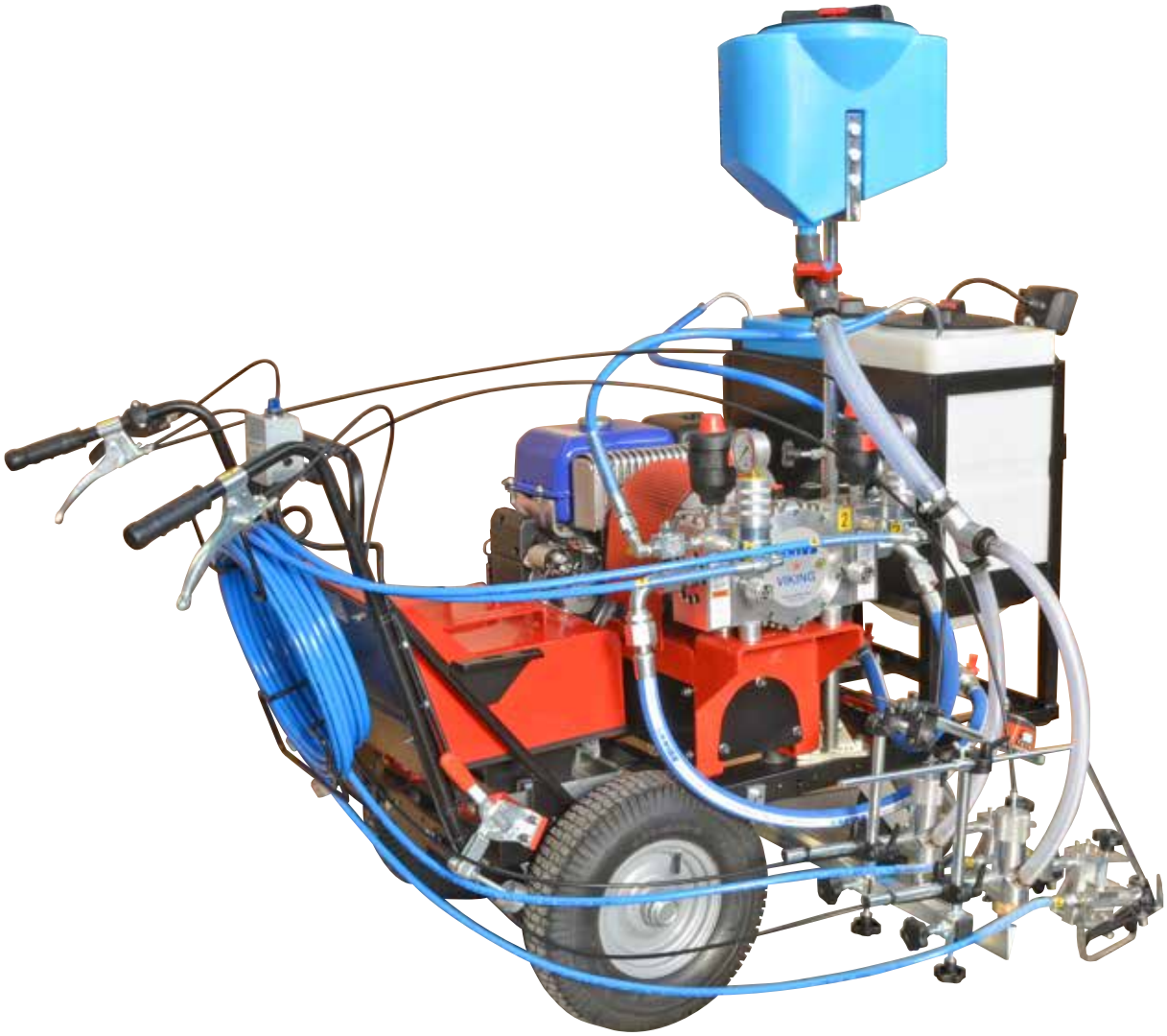
Manuale Cod. 150161

OPERATING AND MAINTENANCE MANUAL

VIKING LINER PLUS

Airless professional road marking

Bicomponent version 2k 1:1



EN

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.

VIKING LINER PLUS 2K

Professional road marking self-propelled

INDEX

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.

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.

- 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.

- It indicates an accident risk or serious damage to equipment if this warning is not followed.

FIRE AND EXPLOSION HAZARD

- Solvent and paint fumes in work area can ignite or explode.
- **To help prevent fire and explosion:**
  - 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.

- 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.

- 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.

- It indicates important recommendations about disposal and recycling process of products in accordance with the environmental regulations.

- 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:**
  - (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.

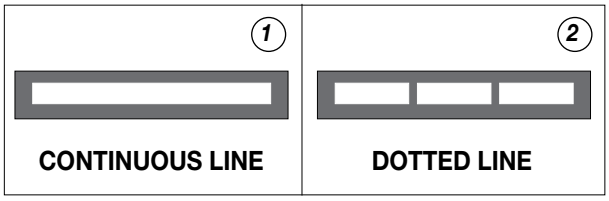
- It is obligatory to wear suitable clothing as gloves, goggles and face shield.
- Wear clothing that complies with the safety standards in force in the country in which the equipment is used.
- Do not wear bracelets, earrings, rings, chains, or anything else that may hinder the operator's work.
- Do 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.

B WORKING PRINCIPLE

The ***VIKING LINER PLUS*** is a professional bicomponent airless line marker 2K 1:1 with autotraction and automatic line sequencer and designed for performing road markings along particularly difficult tracts of uneven road where marking would otherwise be difficult to complete.
The internal combustion engine, mounted upon the undercarriage, powers the pump and the alternator which is employed for charging the battery unit, while the movement of the airless line -marker occurs by pushing.
The control zone offers the possibility of:

- Activating the two spraying guns;
- Enabling or disabling the frontal steering wheel;
- Selecting continuous or dotted line painting functionality.

This type of device is capable of marking one line at a time in a single colour.
The line can be continuous or dashed.



VIKING LINER PLUS is perfect for large-scale lining and maintenance works and uses specific bicomponent paint for airless applications.

Use water or non-refractive solvent filtered paint specifically designed for airless applications.

VIKING LINER PLUS callows the marking and maintaining of all types of lines on highways, freeways, pedestrian crossings, parking lots and squares, as well as every horizontal marking required by the highway code.
Airless marking has numerous proven benefits with respect to line-markers with pressurised tanks, which have been rendered obsolete by airless-technology line markers.

Airless line-marking guarantees:

- Reduced Environmental Impact;
- Reduced drying time.

The paint dries quickly and the line is defined in an even manner with a single coat. The airless function requires the use of filtered paint which is specifically designed for airless application. This means that the paint is homogeneous, of a smooth and even consistency and will not form crusts, nor will it become gelatinous or thick. With this airless line-marker, the paint adheres firmly to all types of pavement, with optimal visibility and resistance to wear caused both by traffic and atmospheric agents.

The refractive effect is obtained though the release of refractive spheres from an appropriate tank ***Fig. 1B***.
These spheres automatically “fall” onto the painted line and, for this reason, pre-mixed or beaded paints do not have to be used.
The proper operation of the device is granted by the exclusive use of suitable and quality paints. A high degree of safety and cleaning of the workplace is achieved thanks to the absence of pressurised tanks.

Fig. 1B

In the ***VIKING LINER PLUS*** model the paint is loaded directly into the non-stick tanks ***Fig. 2B***. In this case, cleaning, maintenance and colour change operations are easy to perform.

Fig. 2B

The line-marker is equipped with a 360° pivoting frontal wheel which even increases the agility of the larger models.
High yield, high efficiency, high versatility.

This line-marker utilises non-premixed paints. This allows it to achieve a yield of about 30% more than standard line-markers.
Every model is also an airless spray gun which can be used in the construction field together with washable products, enamels, breathable paints and flooring resins.
A vast range of accessories is available to satisfy any customer request.

WORKING PRINCIPLE

The ***VIKING LINER PLUS*** line marker uses a diaphram pump. This pump is used for high pressure painting without air *(from this process derives the term "airless")*.
The pump is controlled by a motor coupled with a rubber belt. A cam shaft and a connecting rod allow to obtain the reciprocating motion necessary to the working of the "*pumping group*" diaphram.
The diaphram movement produces a "depression".
The product is sucked, pushed towards the pump outlet and then sent to the gun through the high pressure flexible hose.
A mechanical device allows to adjust and control the pressure of the material coming out of the pump.
A safety valve avoiding overpressur and guarantees the total reliability of the equipment.

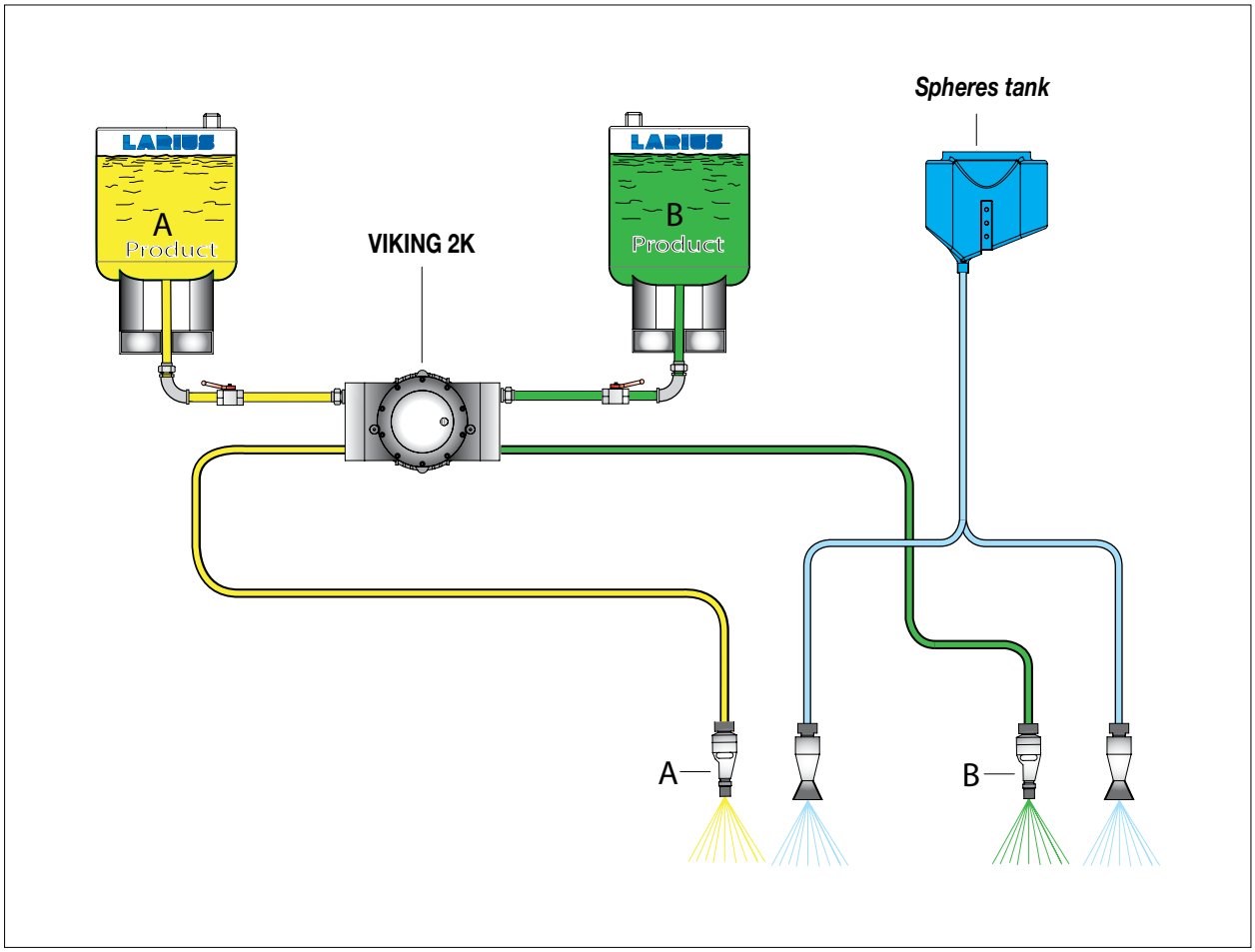


Fig. 3B

C TECHNICAL DATA

VIKING LINER PLUS 2K	
Supply	Unleaded petrol
Motor power	7 Kw
Max operating pressure	220 Bar (3190 psi)
Max delivery	3X2 l/min
Weight	350 Kg
Noise pressure level	70Db(a)
Lenght	(A) 2150 mm
Width	(B) 1150 mm
Height	(C) 1750 mm

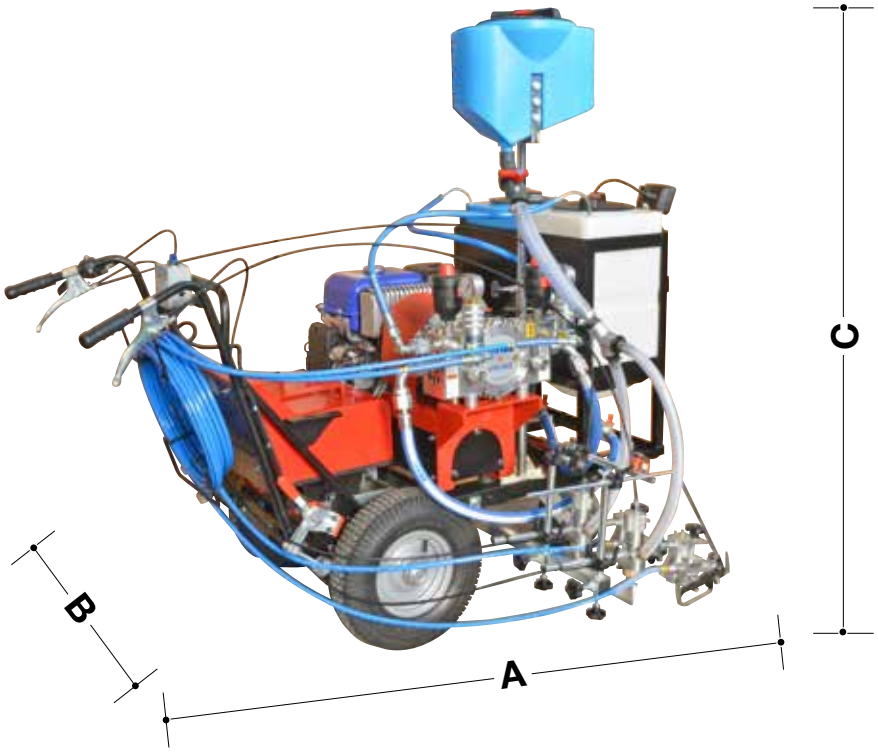


Fig. 1C

STANDARD EQUIPMENT	ACCESSORIES	MODELS
N° 2 Filters with pressure gauge	Rif. 4405/4	Rif. 4960
N° 2 Suction - recirculation systems	Pneumatic bead blasting gun	
N° 4 Super fast clean bases	Rif. 4038	
N° 2 Super fast clean nozzles 11-40	Laser pointer kit	
N° 2 Super fast clean nozzles 13-40	Rif. 4506	
N° 1 Tools pack	Working spotlight	
N° 1 Double twine 7,5 mt	Rif. 4711	
N° 1 Manual pneumatic gun Rif.11703	Operator platform	

APPLICATION FIELDS

- External or underground parking lots (schools, hotels, airports, supermarkets, train stations, subway stations, ports);
- External public areas;
- Industrial and exhibition building areas;
- Freeway service areas and service stations;
- Pedestrian median lines, intersections, bicycle tracks, reserved lanes;
- Internal and external logistic area markings;
- Playing fields.

NOZZLES POSITION TABLE

Nozzle height from ground	20° angle line width	40° angle line width	60° angle line width
10 cm	~ 3 cm	~ 5 cm	~ 10 cm
15 cm		~ 7 cm	~ 13 cm
20 cm	~ 6 cm	~ 8 cm	~ 16 cm
25 cm		~ 10 cm	~ 20 cm
30 cm	~ 10 cm	~ 12 cm	~ 23 cm
35 cm			~ 26 cm

D DESCRIPTION OF THE EQUIPMENT

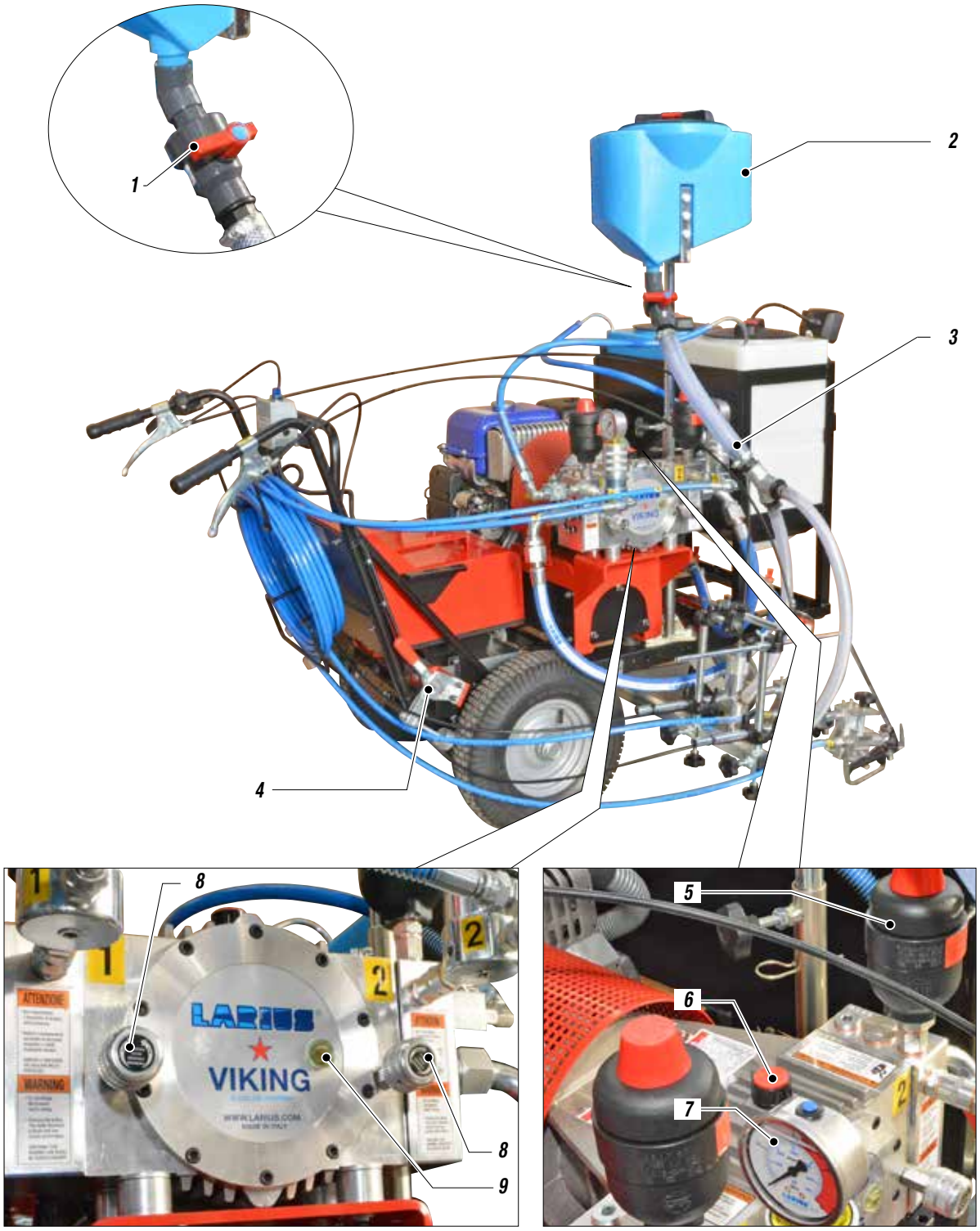


Fig. 1D

Pos.	Description
1	Manual bead descent valve
2	Bead tank
3	Pearls descent tube
4	Directional wheel lock/release manual block
5	Flow compensator

Pos.	Description
6	Viking oil plug
7	Manometer
8	Product pressure setting knob
9	Oil level check glass

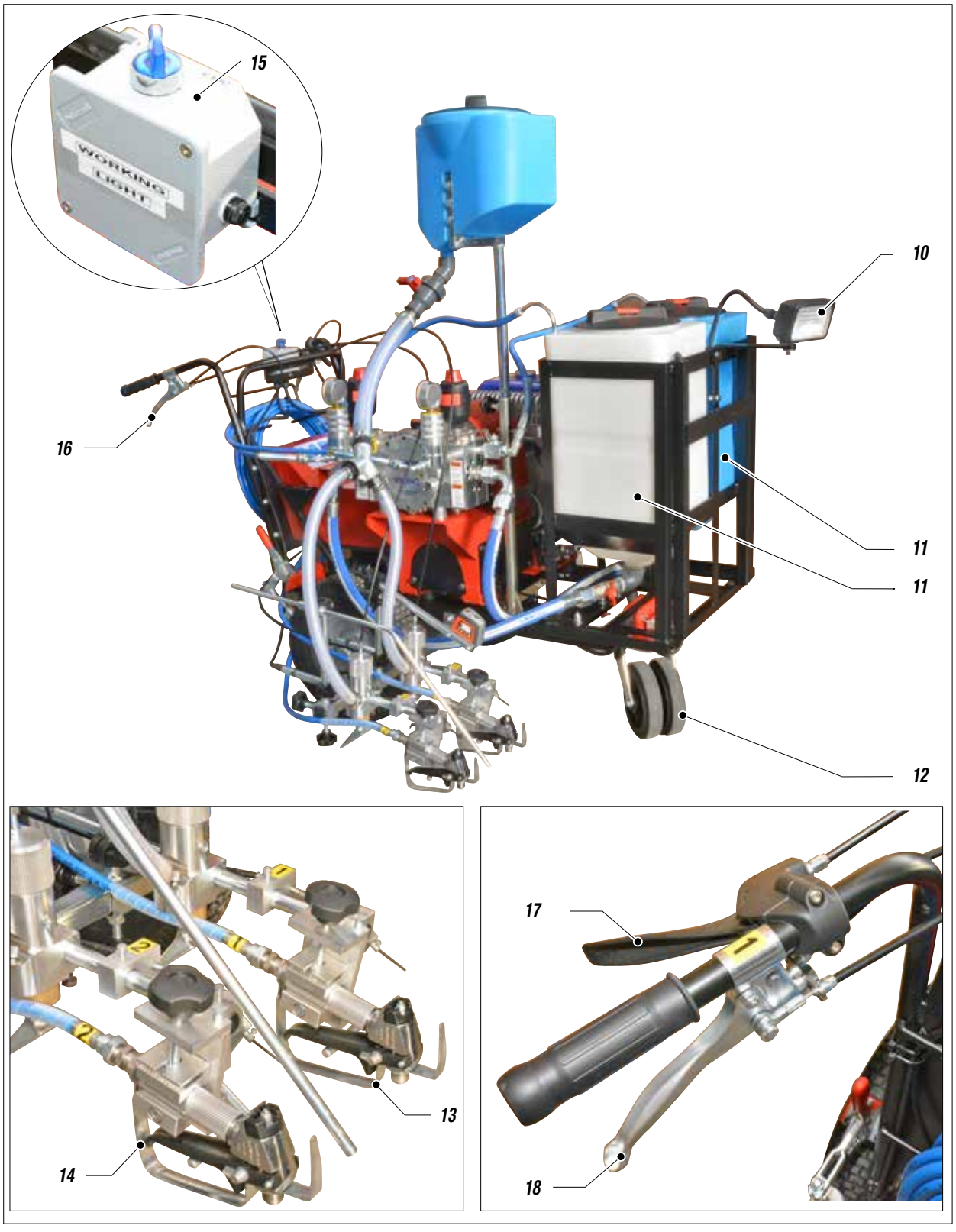


Fig. 2D

Pos.	Description
10	Spotlight
11	Product tank
12	Pivoting wheel
13	Product 1 gun
14	Product 2 gun

Pos.	Description
15	Spotlight control switch
16	Product 2 and pearls releasing lever
17	Pivoting wheel releasing lever
18	Product 1 and pearls releasing lever

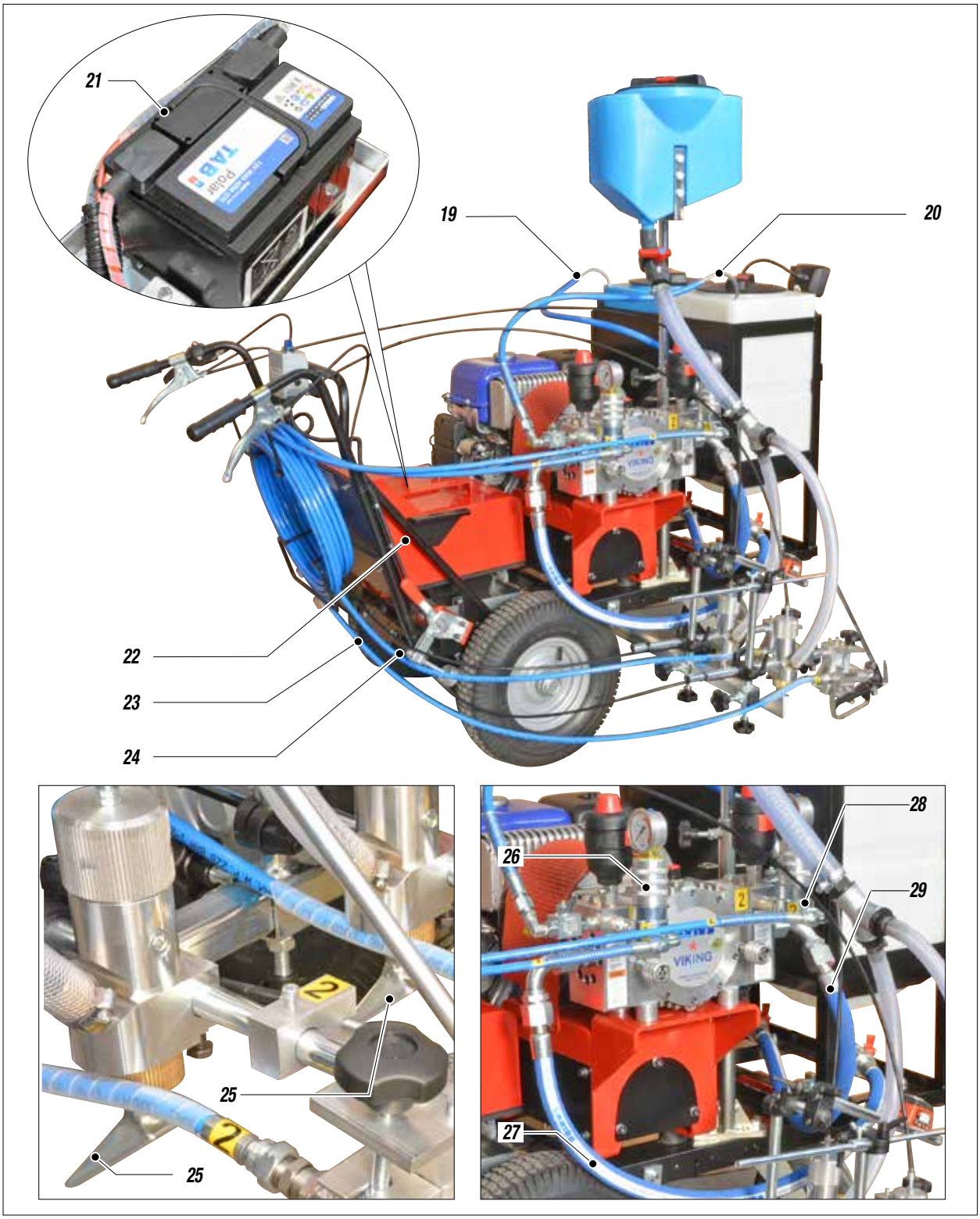


Fig. 3D

Pos.	Description
19	Product 2 recirculation tube
20	Product 1 recirculation tube
21	Spotlight battery
22	Battery housing
23	Product 2 supply tube from pump to gun
24	Product 1 supply tube from pump to gun

Pos.	Description
25	Releasing pearls guns
26	Product 1 filter
27	Product 1 tube connection from tank to pump
28	Product 1 filter
29	Product 2 tube connection from tank to pump

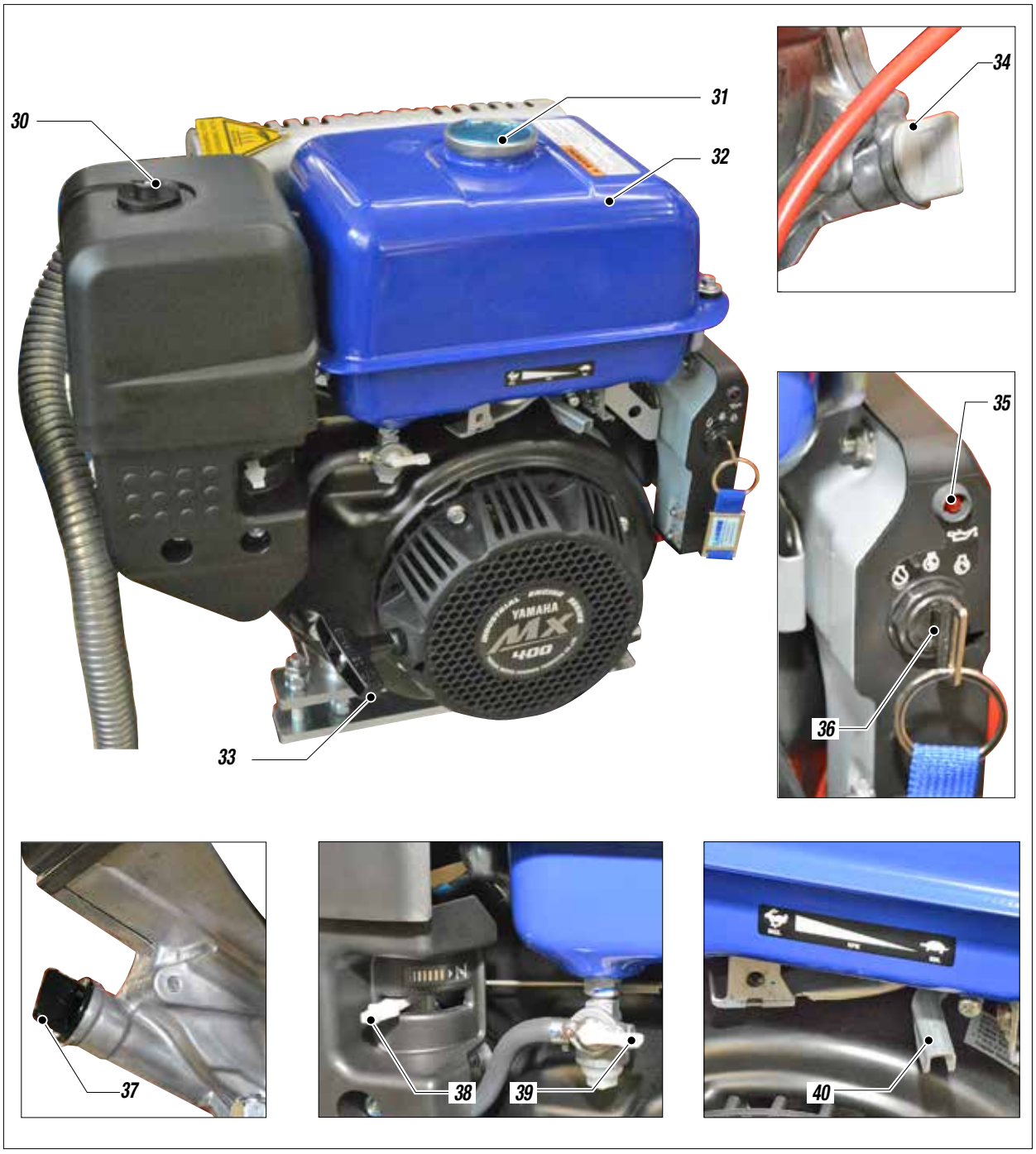


Fig. 4D

Pos.	Description
30	Air filter
31	Fuel plug
32	Fuel tank
33	Pull-start ignition rope
34	Oil tap 1
35	Oil level warning light

Pos.	Description
36	ON/OFF key and electric starting
37	Oil tap 2
38	Starting air
39	Petrol tap
40	Accelerator lever

E CONTROLS DESCRIPTION

Fig. 1E

Pos.	Description
1	**Spotlight switch:** turns on/off the front spotight
2	**Direction lever:** Pulling the lever 3 to release the linear drive lock and allow the machine to perform curved line tracts through the pivoting wheel.
3	**Gun 1 releasing lever:** pulling the lever enables the operation of gun1.
4	**Gun 2 releasing lever:** pulling the lever enables the operation of gun 2.

Pos.	Description
5	**Pull-start ignition rope:** it allows manual ignition.
6	**Power ON key:** it's necessary for starting the internal combustion engine by moving it clockwise; if in the central position it allows the engine to be started through the starter rope.
7	**Accelerator:** it allows to adjust the progressive number of revolutions of the internal combustion engine.

F 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.

G 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.

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.

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.

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.

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 TUBES CONNECTION

Flexible re-circulation tube connection from the tank to the re-circulation group

- Connect the flexible re-circulation tube of *product 1* (**I1**) to the connector (**I2**) ensuring to tighten the fittings *(the use of two wrenches is suggested)* and insert the tube in the tank (**I3**) as indicated in figure. Repeat the same operations for tubes of *product 2.*

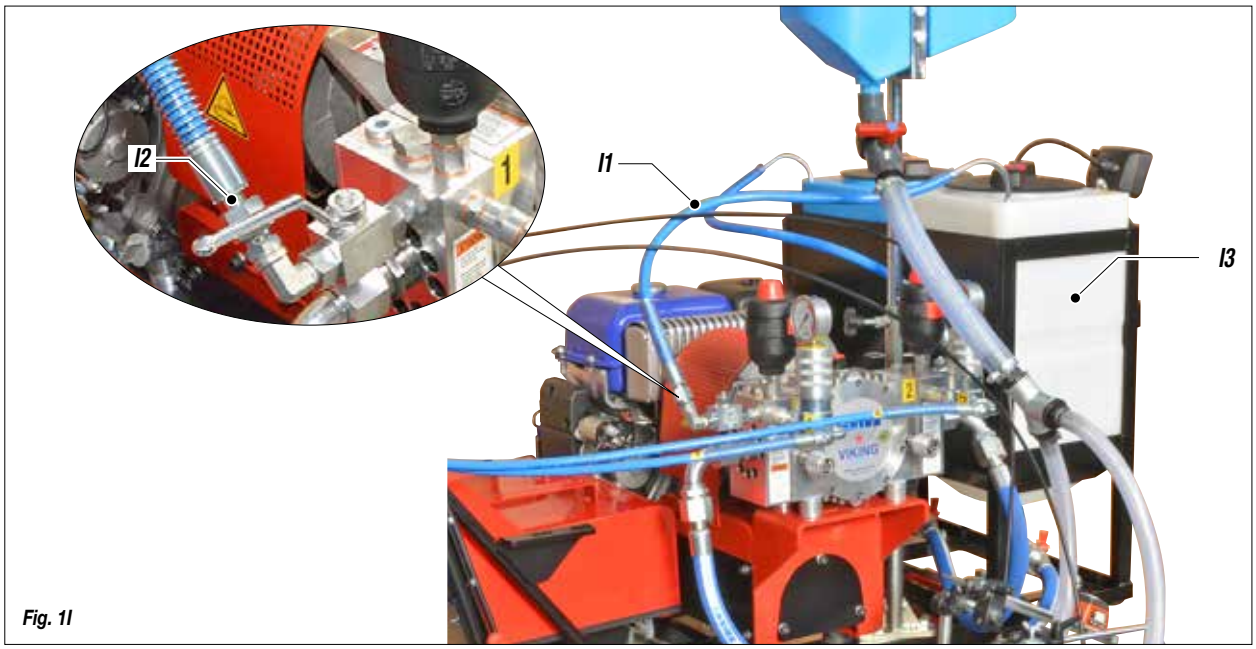


Fig. 1I

Flexible tube connection from the pump to the flow compensator

- Connect the flexible tube of *product 1* (**I4**) from pump connector (**I5**) to the tank 1 connector (**I6**) **e**nsuring to tighten the fittings *(the use of two wrenches is suggested).* Repeat the same operations for tubes of *product 2.*

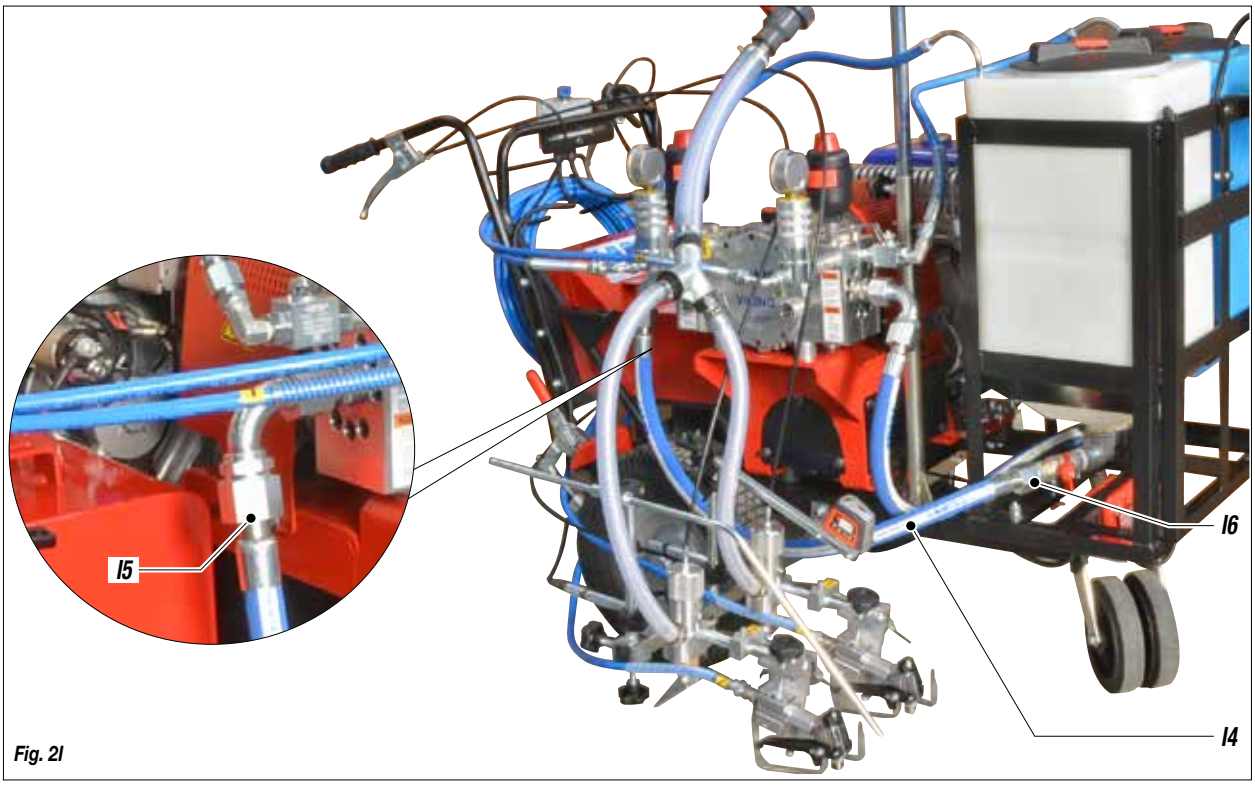


Fig. 2I

Flexible tube connection from the pump to the gun

- Connect the flexible tube of *product 1* (**I7**) from the pump connector (**I8**) to the *gun 1* gorup connector (**I9**) **e**nsuring to tighten the fittings *(the use of two wrenches is suggested).* Repeat the same operations for tubes of *product 2.*

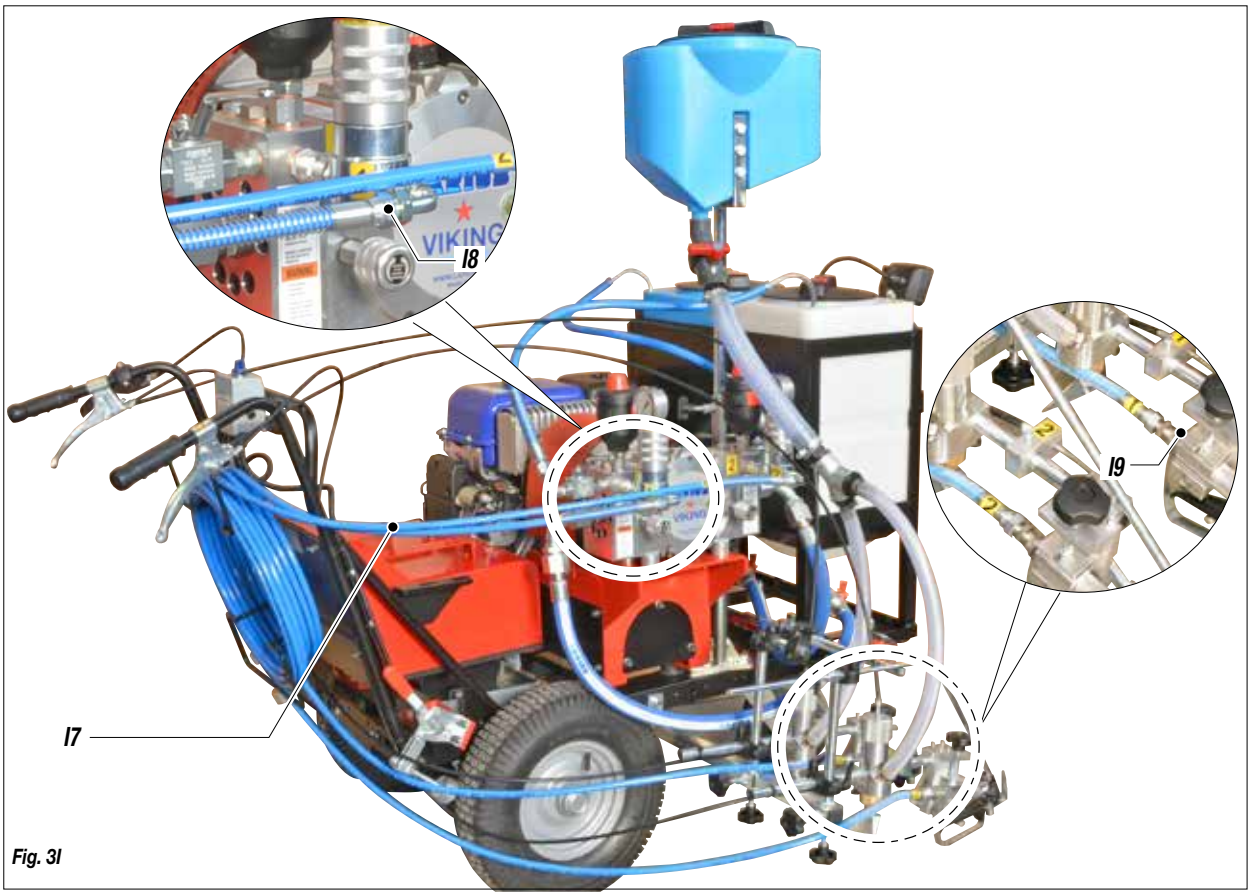


Fig. 3I

Pearls descent tube connection from pearls tank to the guns

- Connect the pearls descent tube (**I10**) from tank connection (**I11**) to the junction (**I12**) and to both *gun 1* **(I13)** and *gun 2* **(I14)** connections **e**nsuring to tighten the fittings *(the use of two wrenches is suggested).*

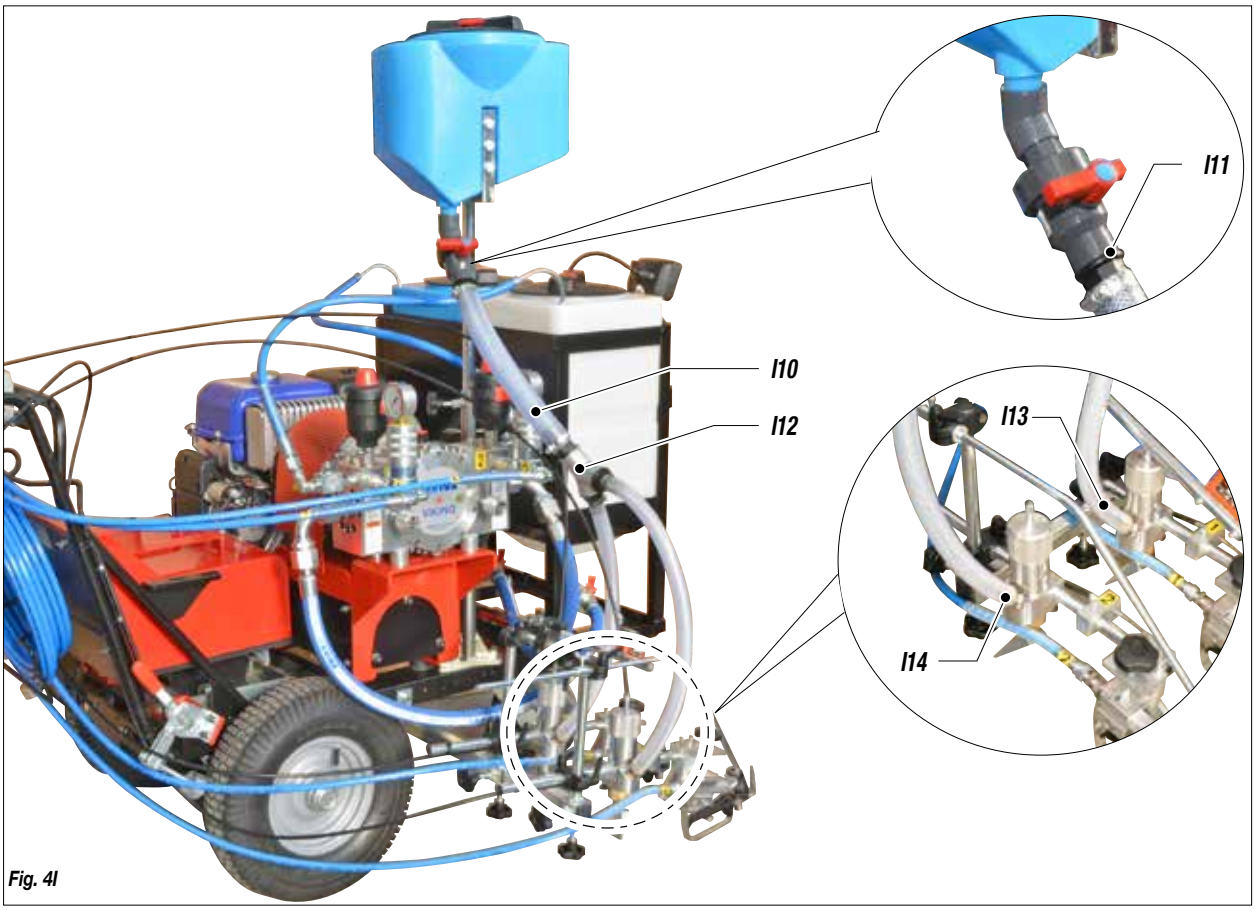


Fig. 4I

J STARTING THE COMBUSTION ENGINE

To switch the internal combustion engine proceed as follows:

- Fill the fuel tank (**J1**).
- Open the fuel tap (**J2**) and position it to **"*ON*" *(I).***

Fig. 1J

Fig. 2J

- Pull lever (**J3**) for first start-up cold *(position it to "I").*

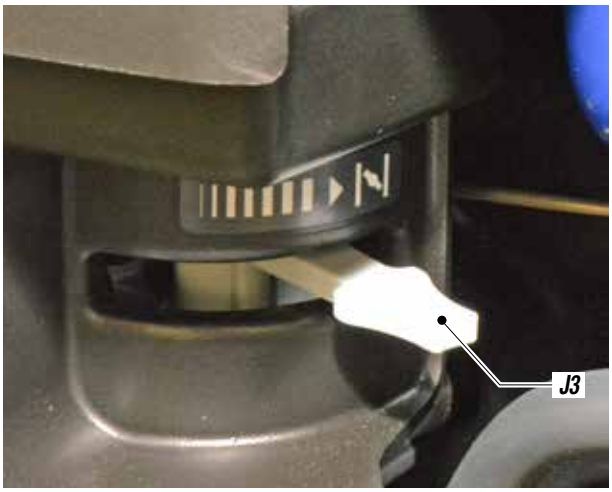


Fig. 3J

- Bring the accelerator lever (**F10**) to about 1/2 of its run.

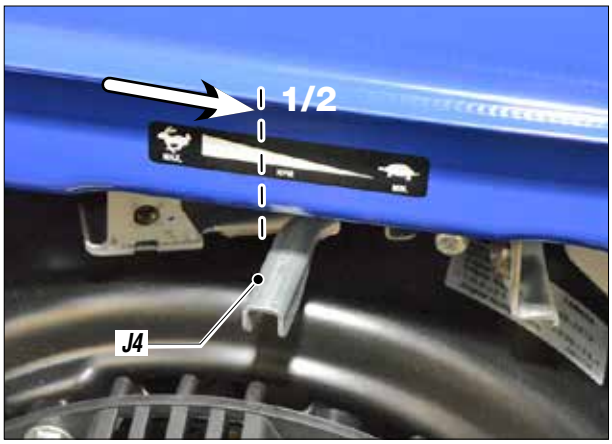


Fig. 4J

- Turn the key (**J5**) clockwise until the engine starts.

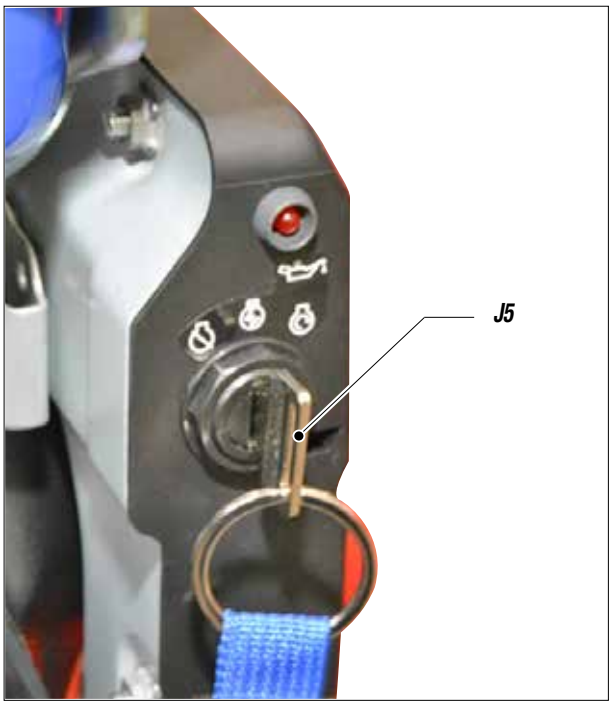


Fig. 5J

K WASHING THE NEW EQUIPMENT

- The equipment has already been adjusted at our factory with light mineral oil left inside the pumping group as protection. Therefore, wash with thinner before sucking the product.
- Fill the product tank with washing liquid.
- Ensure the guns **(K1) and (K2)** are without nozzle.

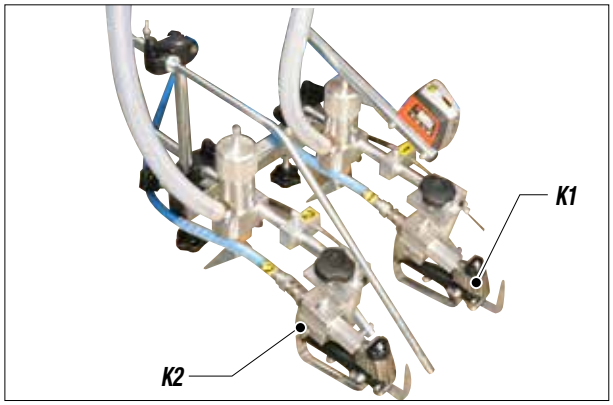


Fig. 1K

- Open the product output taps (**K3**) and (**K4**)

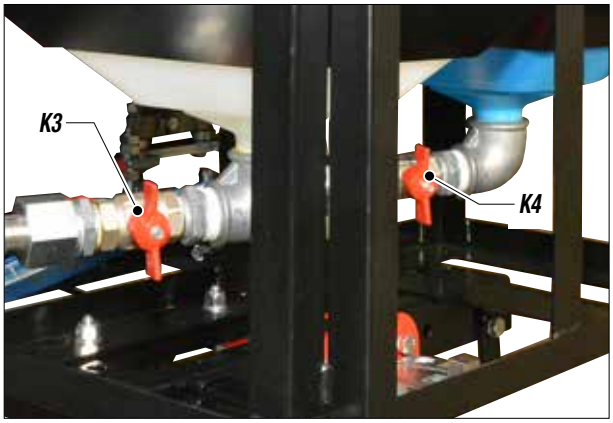


Fig. 2K

- Start the combustion engine following the indications provided in the chapter **"STARTING COMBUSTION ENGINE".**
- Slightly turn pressure regulating knob (**K5**) and (**K6**) clockwise so that the machine idles.

Fig. 3K

- Open the re-circulation valve **(K7)** and **(K8)**.

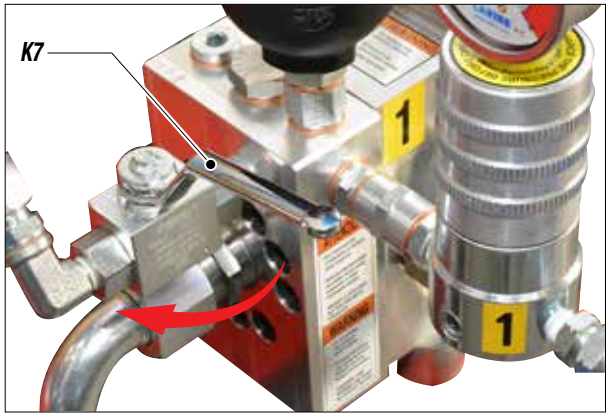


Fig. 4K

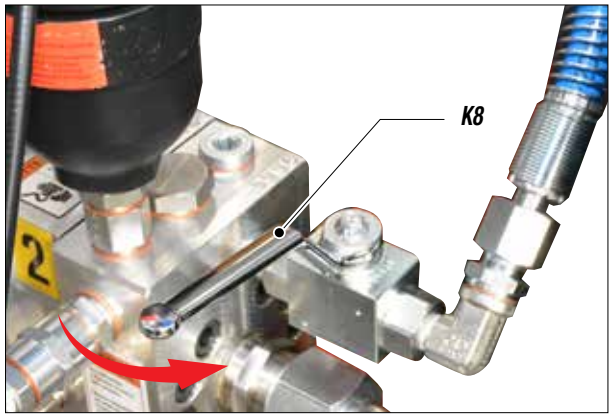


Fig. 5K

- Visually check that the washing liquid starts to re-circulate within the tank **(K9)** e **(K10)**.

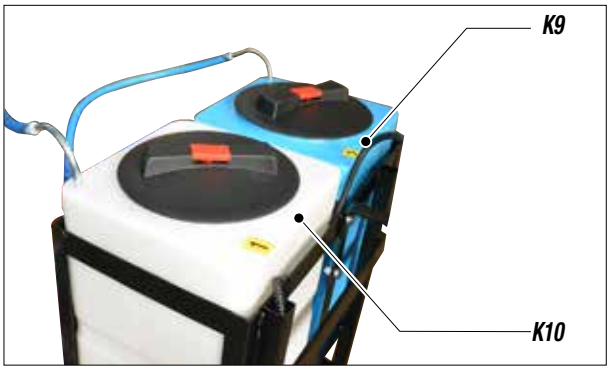


Fig. 6K

- Close the re-circulation valve (**K7**) and (**K8**).
- Remove any solvent remaining within the tubes by activating the manual and automatic guns.
- As soon as the pump begins to idle, turn the handle (**K5**) and (**K6**) to minimum to stop the system.

Absolutely avoid spraying solvents in closed environments. It is also recommended to keep the spray gun away from the pump in order to prevent vapours from coming into contact with the electrical motor.

- Stop the internal combustion engine.
- At this point the machine is ready. If water-based paints are to be used, after the washing with solvent, it is recommended to wash the tank again with soap and water, then rinse with clean water *(repeating the previously described procedures)*.
- Insert the automatic guns trigger lock and fix the nozzles.

L PREPARATION OF THE PAINT

- Make sure the product is suitable to be used with a spray gun.
- Mix and filter the product before using it. For filtration use **CLOSE-MESH** *(ref. 214)* and **LARGE-MESH** *(ref. 215)* **LARIUS METEX** braids.

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

- Fill the tank **(L1)** and **(L2)** with the paint.

Never use products containing halogen hydrocarbons *(as methylene chloride)*. If these products come into contact with aluminium parts of the equipment can provoke dangerous chemical reactions with risk of explosion.

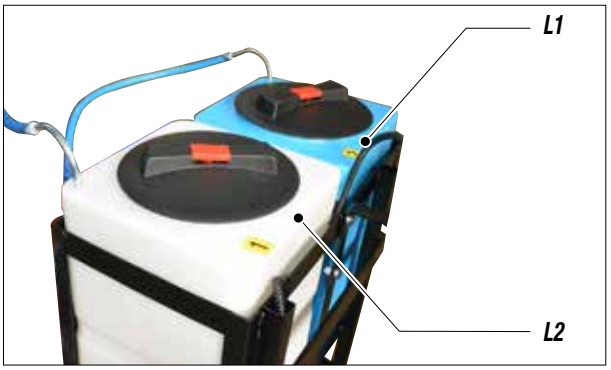
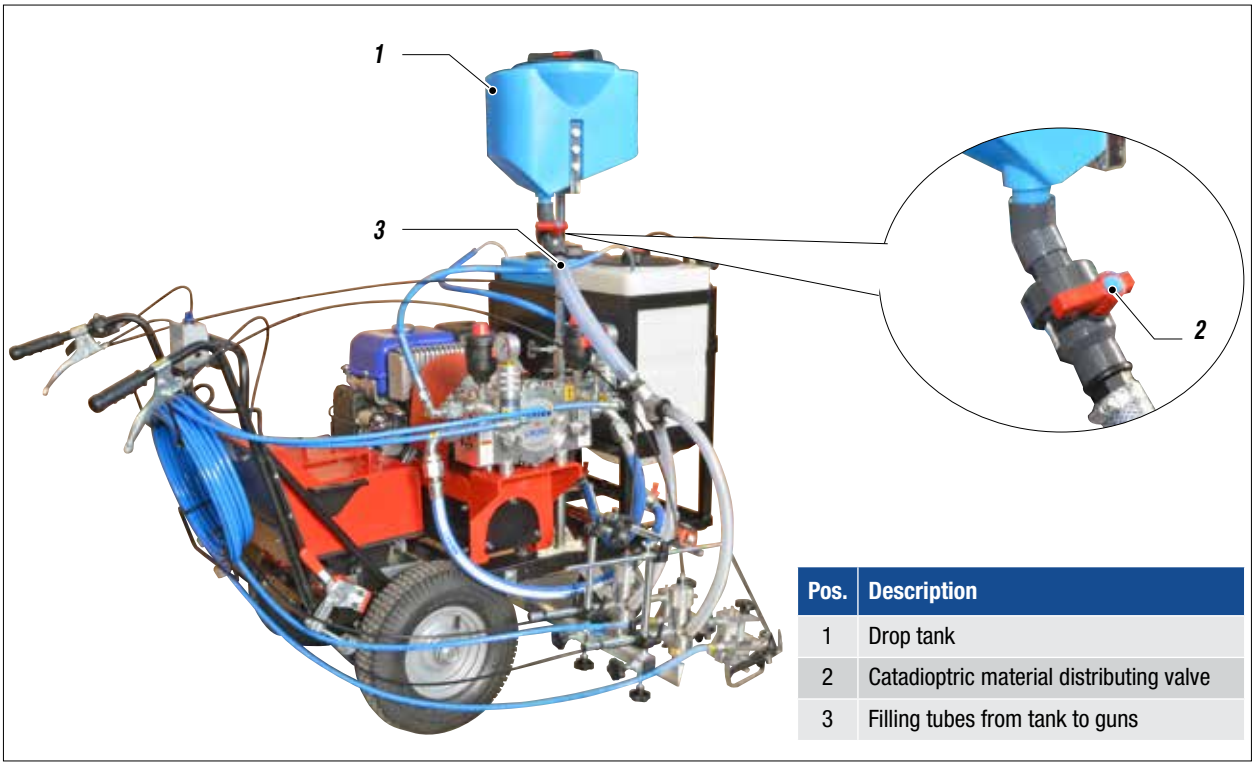


Fig. 1L

M CATADIOPTRIC PEARLS DISTRIBUTING KIT

With the new distribution system of reflecting pearls, the ***"VIKING LINER PLUS"*** unit can produce a more visible and therefore safer roadway indication, even in the worst weather conditions.
The pearlized distribution kit is composed of a drop tank with two openings, two rubber tubes that carry the reflecting pearls to the dispensers.



Pos.	Description
1	Drop tank
2	Catadioptric material distributing valve
3	Filling tubes from tank to guns

Fig. 1M

N GUN ASSEMBLING AND REGULATIONS

PRODUCT GUN ASSEMBLING

- Assemble the gun (**N1**) on the *gun holder arm 1* (**N2**) **e**nsuring to tighten the handle (**N3**). Repeat the same operations for the *gun 2*

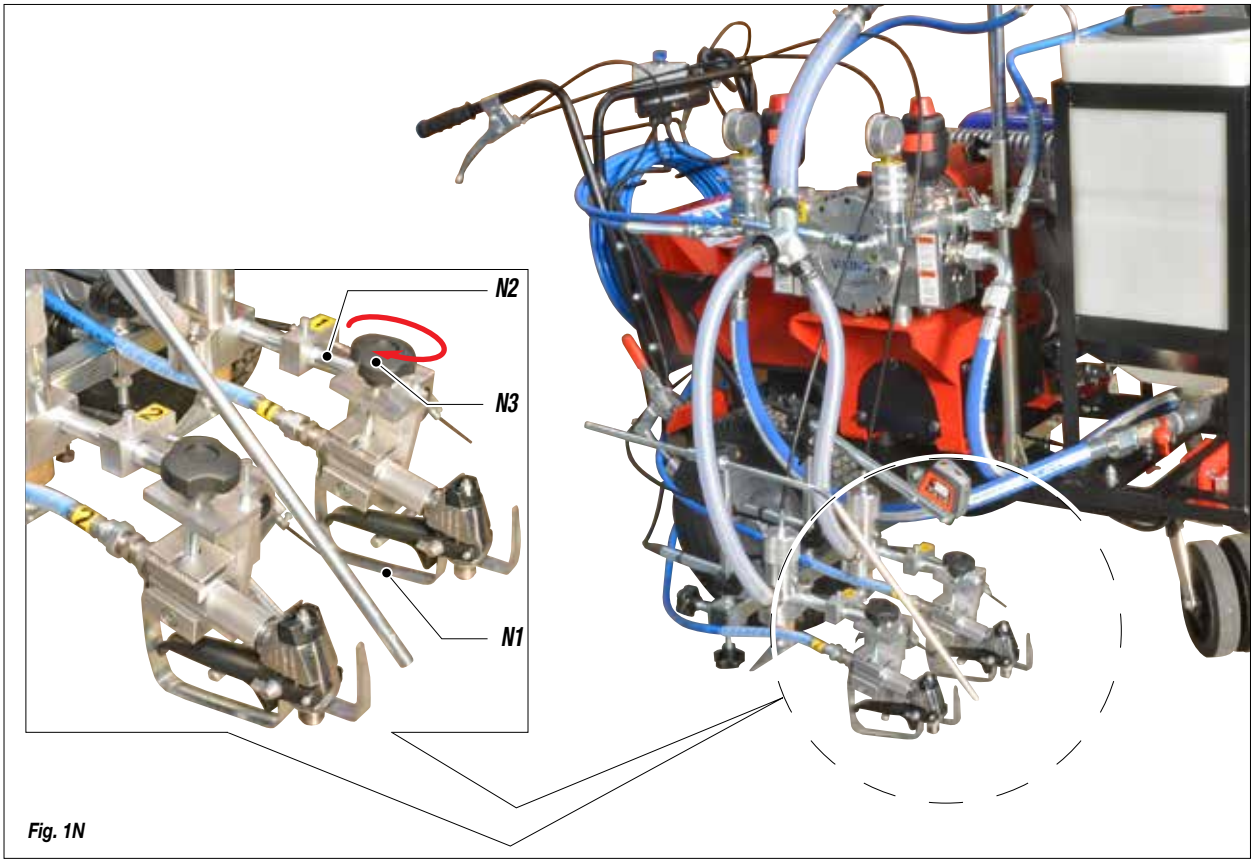


Fig. 1N

REFERENCE ROD REGULATION

- The reference rod can be moved up or down by acting on the handle (**N4**) or forward or backward through the handle (**N5**). Once placed in the desired position, the handles must be locked again.

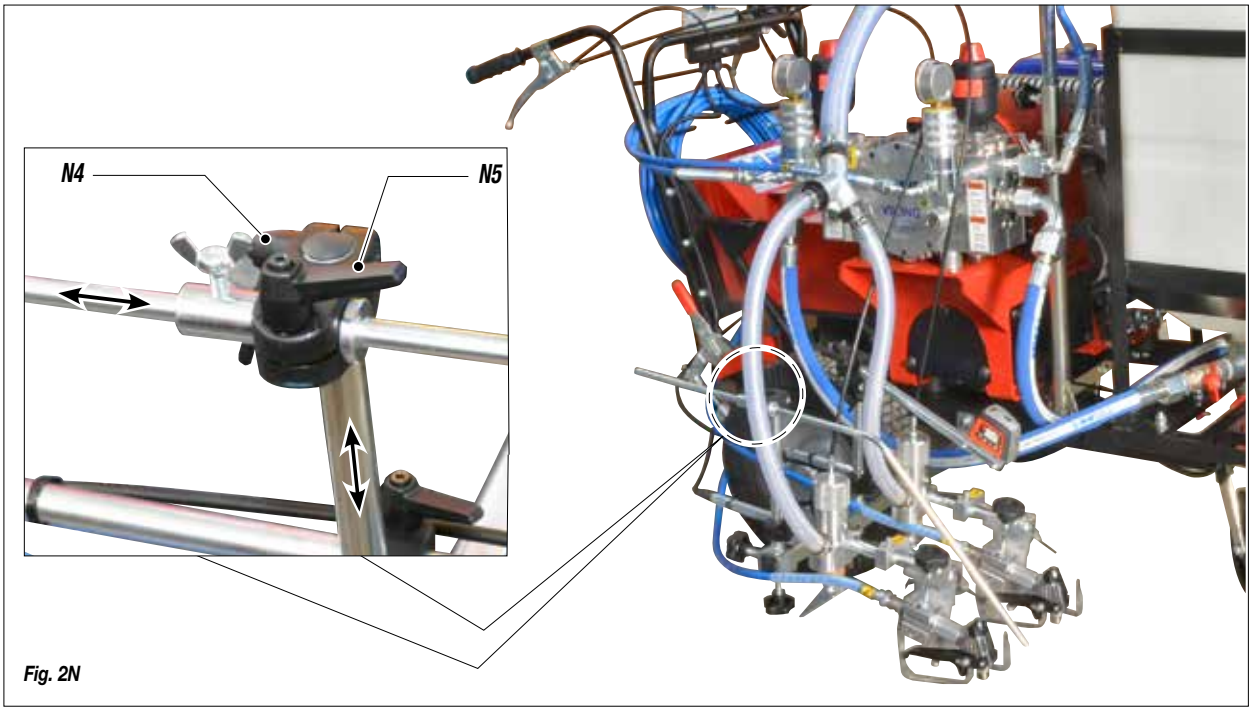


Fig. 2N

LASER POINTER ROD REGULATION

- The rod of the laser pointer can be moved up or down by acting on the handles (**N6**) and (**N7**), forward or backward through the handle (**N8**) or inwards or outwards through the handles (**N9**) and (**N10**). Once placed in the desired position, the handles must be locked again.

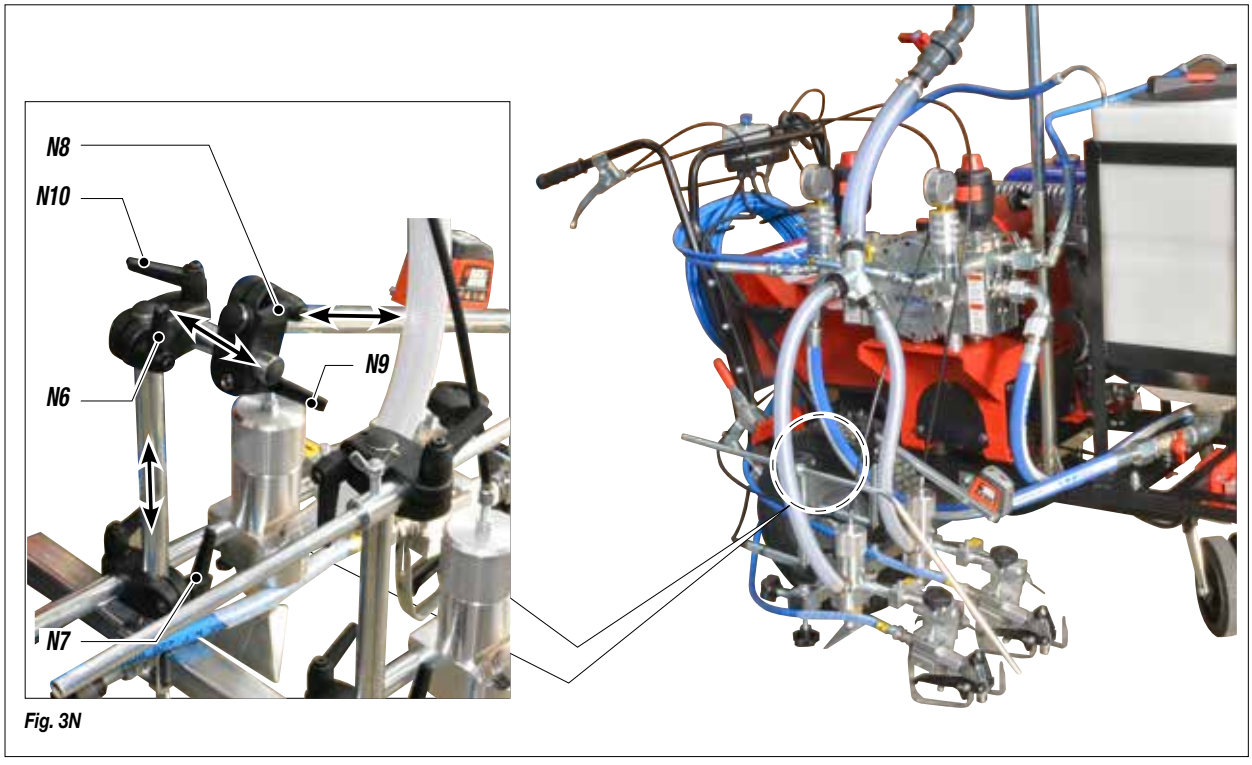


Fig. 3N

GUN HOLDER ARM REGULATION

- The *gun 2* holder arm can be moved up or down using the handle **(N11)**, forward or backward using the handle (**N12**) or inwards or outwards usign the handle (**N13**) and (**N14**). Once placed in the desired position, the handles must be locked again. The same instructions are valid aldo for *gun 1* and the corresponding handles / knobs.

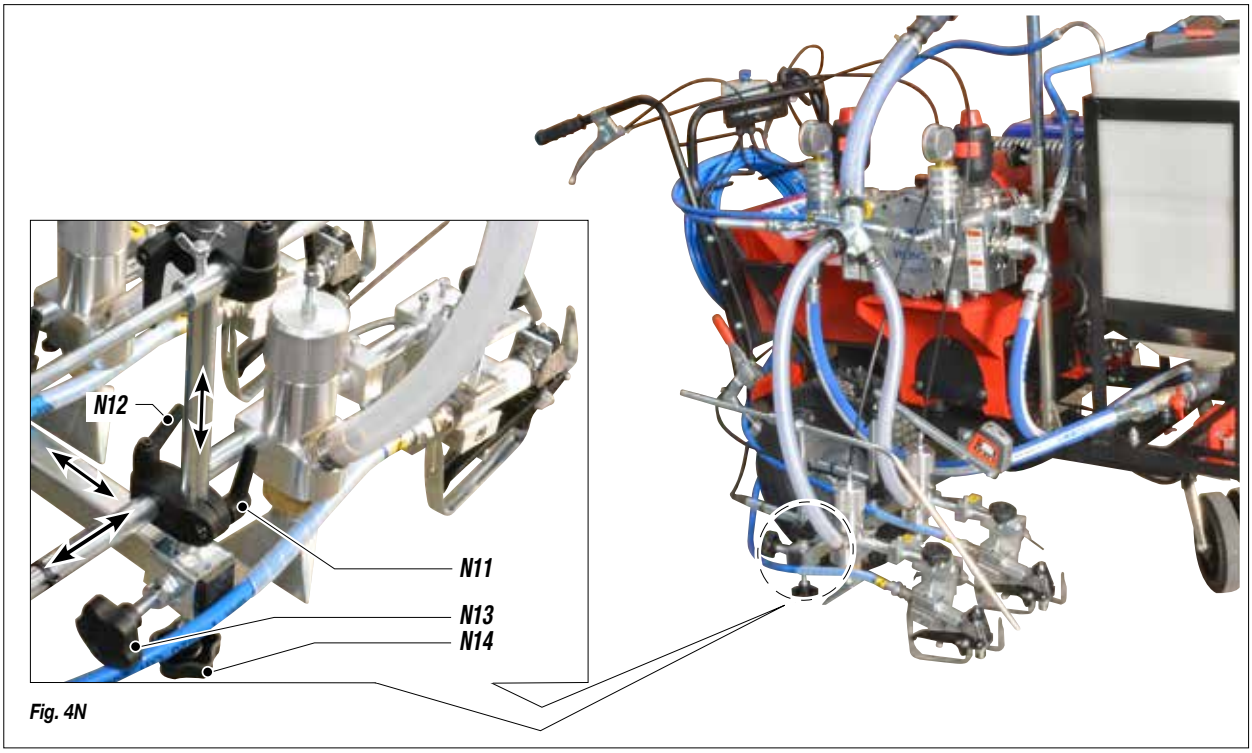


Fig. 4N

O OPERATION

PROCEDURE

- Use the equipment only after performing all the **SETTING UP** operations described in the previous pages.
- Make sure that all the levers are in the **"RELEASE"** position, that is nothing is engaged.
- Check that there is enough unleaded petrol.
  Turn fuel **(O1)** knob to **"ON"**.

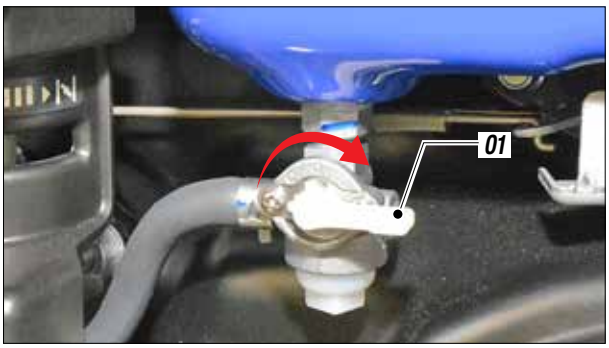


Fig. 1O

• Turn the ignition key (O2) to the start position of the equipment.

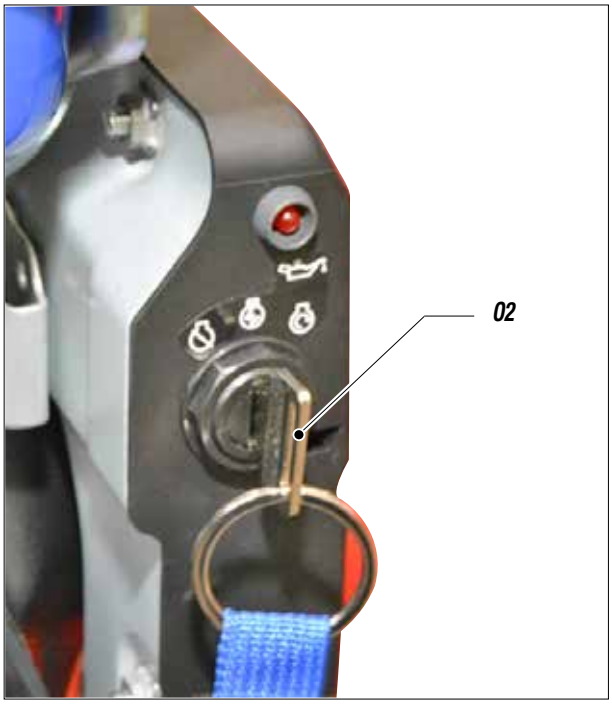


Fig. 2O

- Start the combustion engine following the indications provided in the chapter **"STARTING COMBUSTION ENGINE".**
- Open the re-circulation valve **(O3)** and **(O4).**

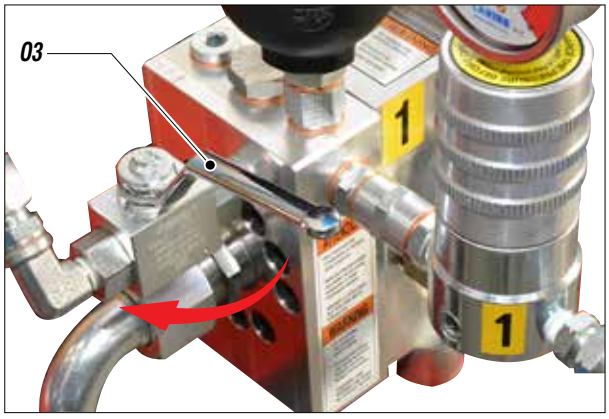


Fig. 3O

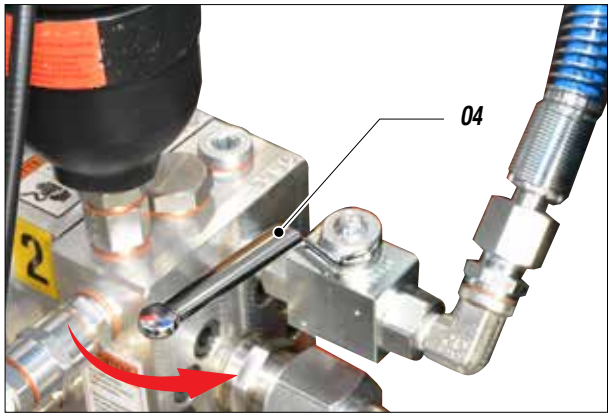


Fig. 4O

- Turn slightly pressure regulating knob **(O5)** clockwise so that the machine idles.
- Visually check that the product starts to re-circulate within the tank.
- Close the re-circulation valve **(O3)** and **(O4).**
- Turn the pressure adjustment handle **(O5)** to the suitable operation value.

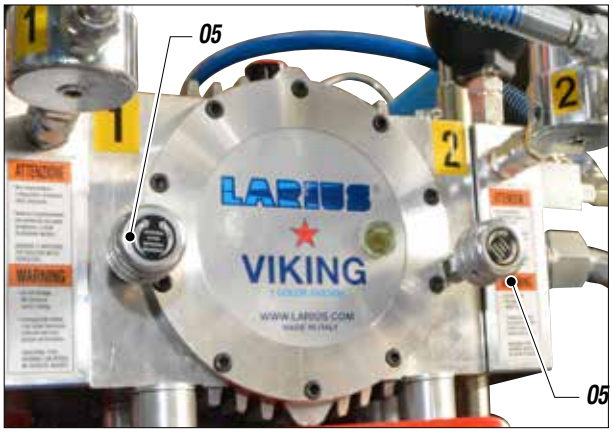


Fig. 5O

- At this point the machine will continue to suck the product till the flexible hose is full, up to the gun, and then it will stop automatically once reached the preset pressure.

ADJUSTING THE INTERNAL COMBUSTION ENGINE SPEED

- Gently move the motor acceleration lever **(O6)** to increase or decrease the speed of the pump.
  During the painting operation it is normally recommended to maintain the position of the accelerator lever **(O6)** at about 3/4 of its run.

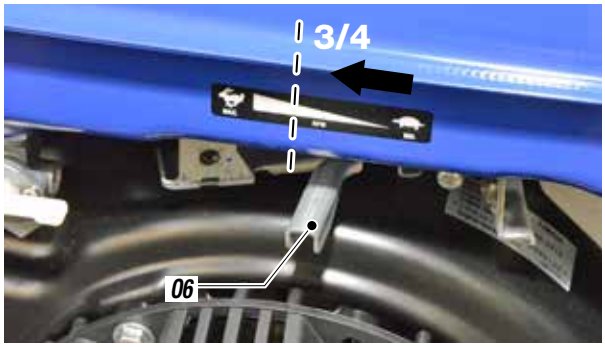


Fig. 6O

P CLEANING AT THE END OF WORK

- Reduce pressure to the minimum *[turn counterclockwise the pressure control knob (**P1**)]*.

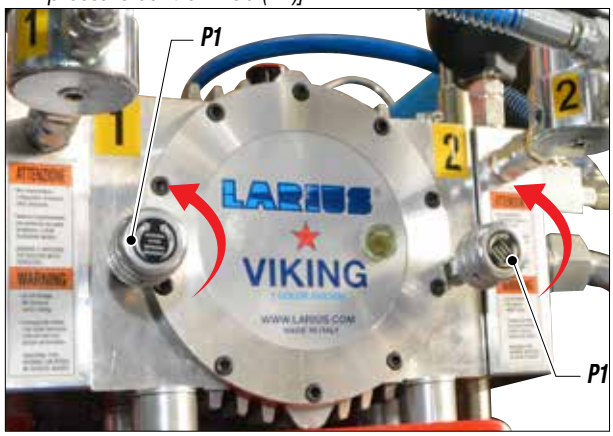


Fig. 1P

- Turn off the engine by turning the ignition key (**P2**) anticlockwise

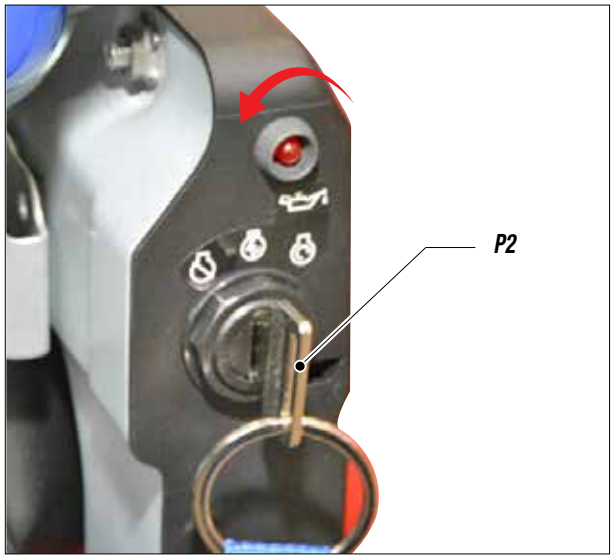


Fig. 2P

- Open the recirculation safety valve **(P3)** and **(P4)** to discharge the pressure in the circuit.

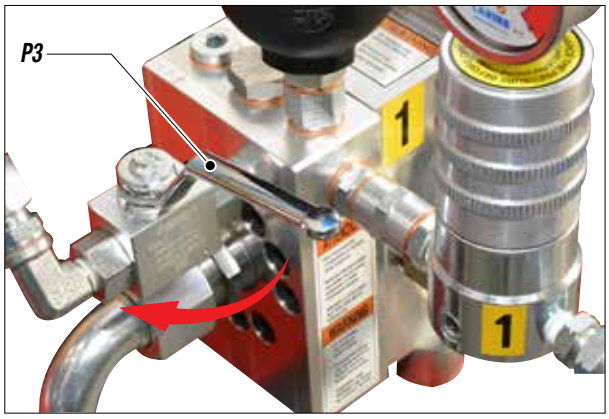


Fig. 3P

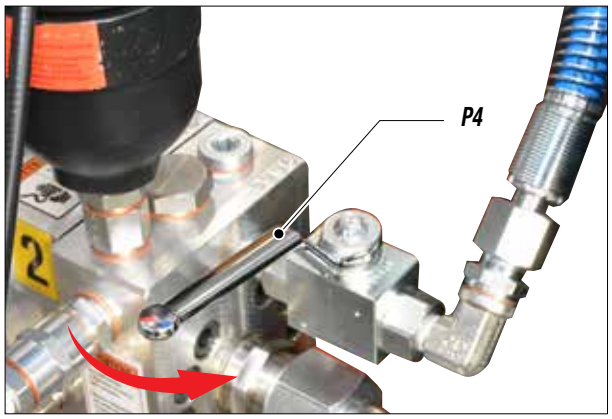


Fig. 4P

- Lift the suction pipe and replace the product tank with that of the solvent *(make sure it is compatibie with the product being used)*.
- Unscrew the gun nozzle (*do not forget to clean it with solvent or water if you used hydrosoluble paints)*.
- Turn on the pump and slightly turn the pressure control knob **(P1)** clockwise so as the machine works until the connection to the engine is trigged.

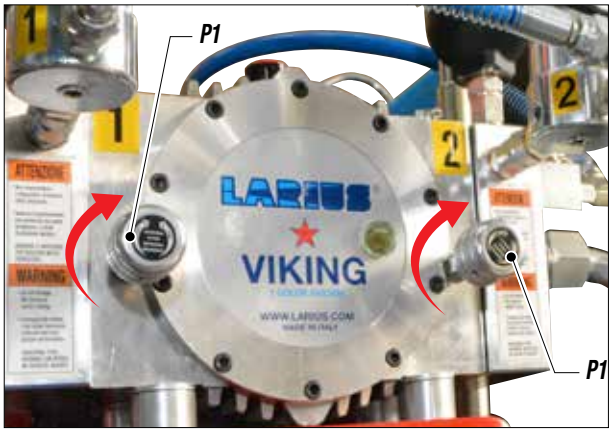


Fig. 5P

- Make sure the solvent recycles from the recirculation tube.
- Point the gun towards the product collection tank and, keeping the trigger pressed, discharge the remaining product till a clean solvent comes out. Now, release the trigger.
- Lift again the suction pipe and remove the solvent tank.
- **As the pump starts idling, reduce pressure to the minimum *(turn counterclockwise the pressure control knob* (P1)*)*, press the OFF *(0)* switch to disengage the pump from the engine and stop the engine.**
- In case of long prolonged downtime, we recommend you to suck and to leave light mineral oil inside the pumping group and the flexible hose.
- Move the control lever, drain any residual paint and wait for the cleaning liquid to come through clean.
- Remove all clearing liquid from the tank and turn the machine off.
- Turn the pressure adjustment knob **(P1)** to minimum *(pump stopped)*.

Follow the washing procedure before using the equipment again.

Q GENERAL MAINTENAINCE

Discharge the pressure in the pump unit *(open the discharge valve)* before carrying out any maintenance operation.

DAILY

- Clean the filters;
- Clean the nozzles;
- Clean all the paint circuit with a specific product;
- Check the fuel motor.

PERIODICALLY

- Clean the movable parts from the paint deposits *(clutch traction, spray guns, etc.)*;
- Check the gun cables tightening, the wheel block and the traction;
- Check that the tubes and all the fittings are correctly tightened.

R ROUTINE MAINTENAINCE

TOP UP HYDRAULIC OIL

With each start up, check the hydraulic oil level by looking through the gauge on the side of the hydraulic body. If necessary, use to top up the level:

AGIP DICREA 150 type hidraulic oil

REPLACING THE HYDRAULIC OIL

After operating for 100 hours, replace the oil in the pump;

- Discharge the waste oil through the ***hydraulic filter*** fitted at the bottom of the pump casing.
- Clean and, if necessary, replace the worn seals.
- Replace the filter in its seat by screwing it tightly.
- Fill the pump with the recommended oil until it reaches the maximum level.

AGIP DICREA 150 type hidraulic oil

- Then, replace the oil every 250 hours.

Fig. 1R

MOTOR OIL CHECK

Always check that there is oil in the motor.

Every 100 hours check the oil level through the dedicated oil plugs on the base of the engine.
Refil the oil level if necessary.

S CORRECT PROCEDURE OF DECOMPRESSION

- Press the switch **(S1)** to spray the product and discharge the residual pressure from the *gun 1*.

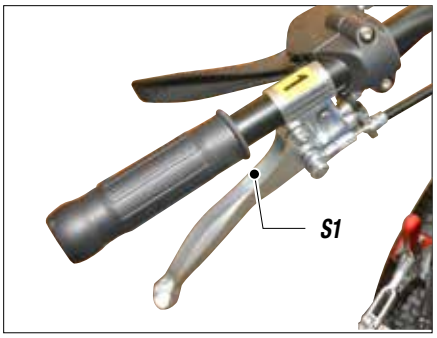


Fig. 1S

- Turn the levers **(S2)** to release residual pressure.

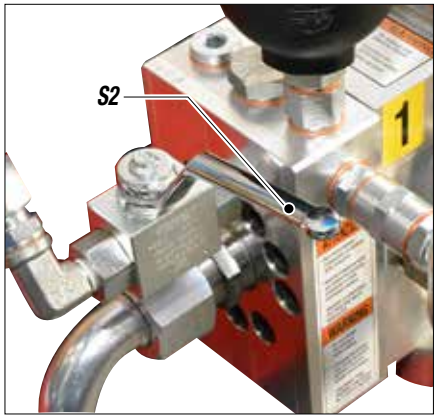


Fig. 2S

- Repeat the same procedure for *gun 2.*

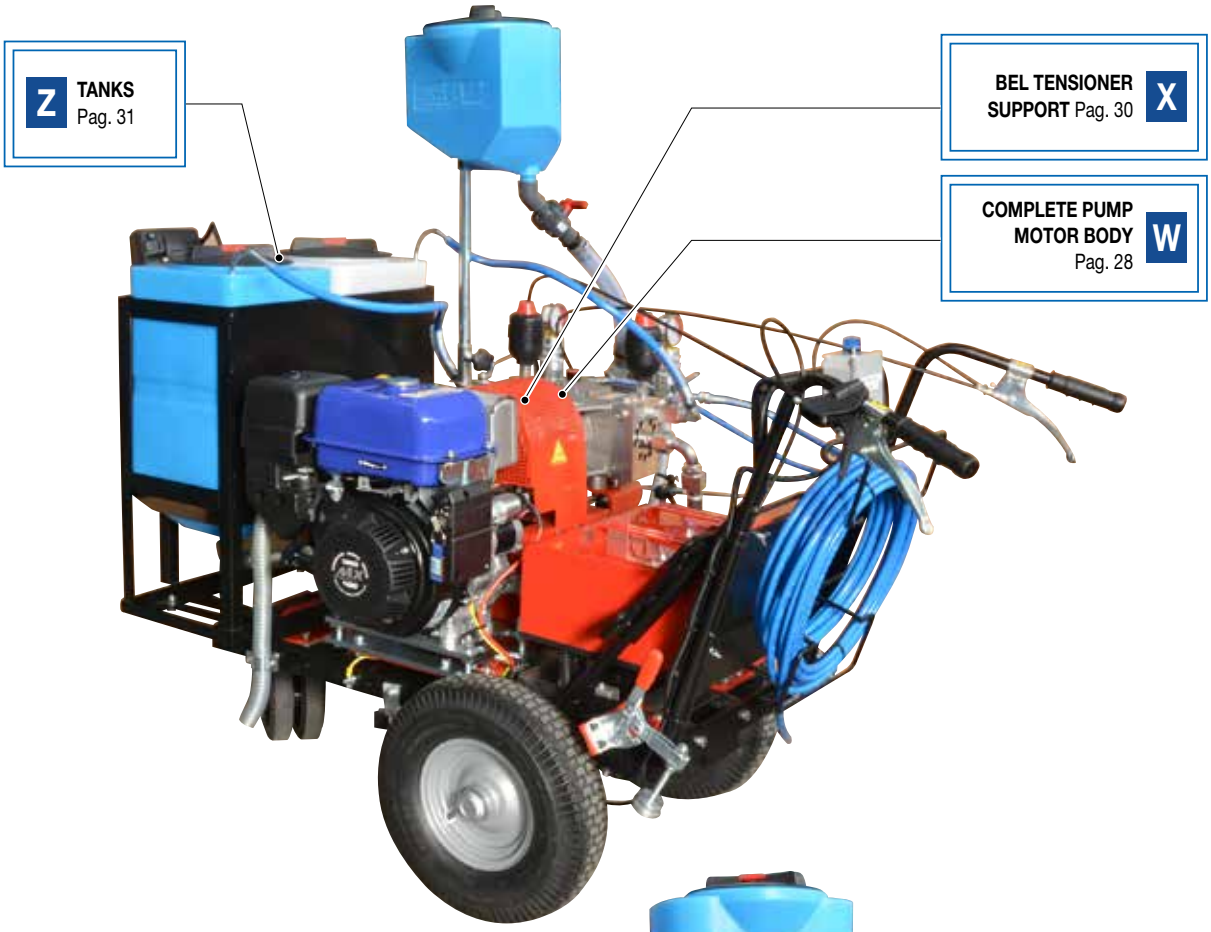
If the equipment is still under pressure after performing the operations above described because of the nozzle or the flexible hose clogged, proceed as follows:

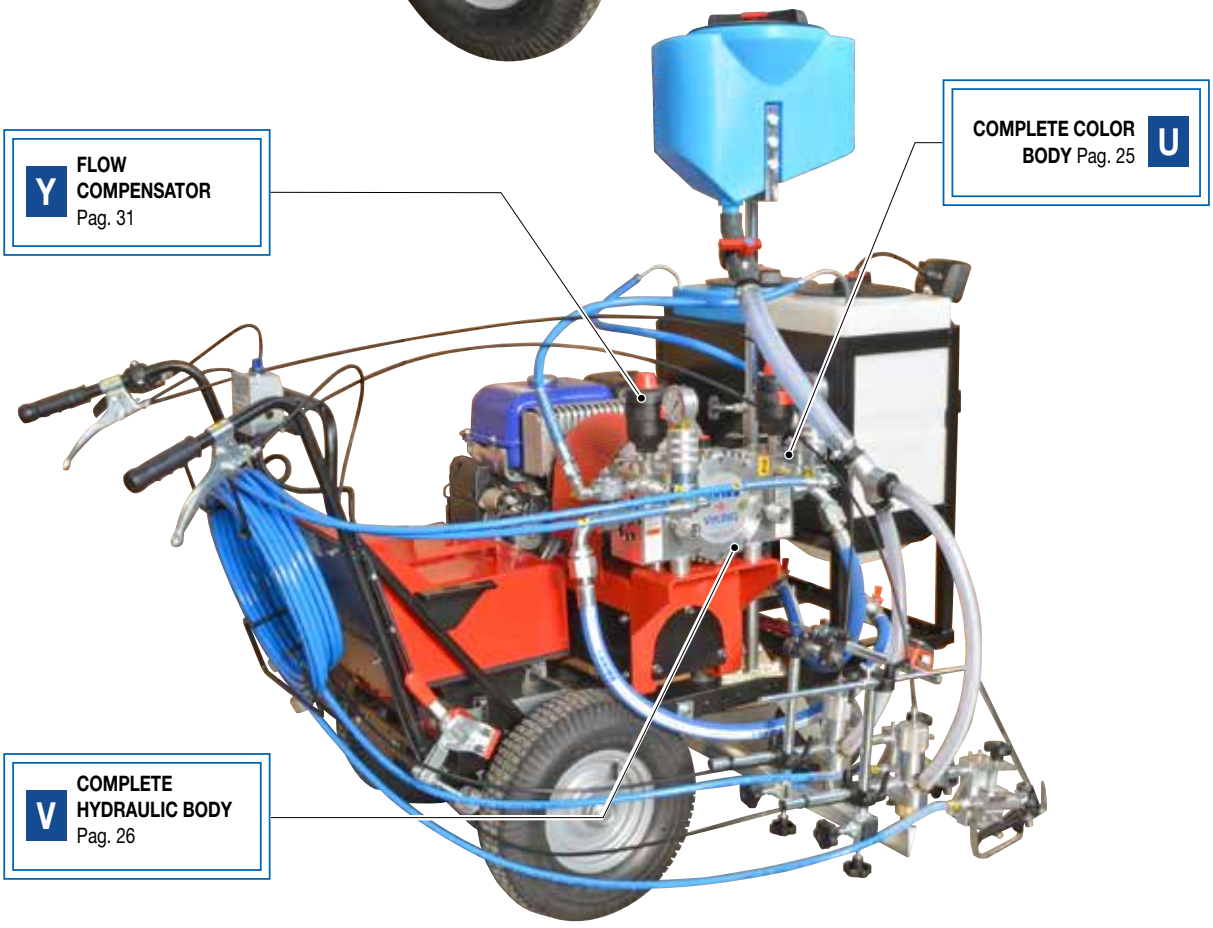
- **Loosen very slowly the gun nozzle.**
- **Release the safety clamp.**
- **Point the gun towards the collecting container of the product and press the trigger to release pressure.**
- **Loosen very slowly the connection fitting from the flexible hose to the gun.**
- **Clean or replace the flexible hose and the nozzle.**

T TROUBLESHOOTING

Inconveniente	Causa	Soluzione
Engine won't start	The fuel manifold is closed;	Switch the fuel manifold to "Open" position;
	Engine is out of gas;	Refill gas tank;
	Cold engine;	Switch the Start lever to MAX position;
	Spark plug cable is disconnected or damaged;	Connect or replace the cable;
The equipment does not start	On/Off switch disconnected;	Ensure the On/Off switch is on the “on” position and turn clockwise the pressure control knob;
	Breakdown of pressure transmitter;	Verify and replace it, if necessary;
	Breakdown of motor electric control box;	Verify and replace it, if necessary;
	The line of material coming out of the pump is already under pressure;	Open the drain valve to release pressure in the circuit;
	The product is solidified inside the pump;	Open the drain valve to release pressure in the circuit and stop the machine. Disassemble the pumping group and the pressure transmitter and clean;
The equipment does not suck the product	Suction filter clogged;	Clean or replace it;
	Suction ilter too fine;	Replace it with a larger-mesh filter (with very dense products, remove the filter);
	The equipment sucks air;	Check the suction pipe;
The equipment sucks but it does not reach the pressure desired	Lack of product;	Add the product;
	The equipment sucks air;	Check the suction pipe;
	The drain valve is open;	Close the drain valve;
	Suction or delivery valve dirty;	Disassemble the pumping group;
When pressing the trigger, the pressure lowers considerably	Nozzle too big or worn;	Replace it with a smaller one;
	The product is too dense;	Dilute the product, if possible;
	The filter of the gun-butt is too fine;	Replace it with a larger-mesh filter;
The pressure is normal but the product is not atomized	The nozzle is partially clogged;	Clean or replace it;
	The product is too dense;	Dilute the product, if possible;
	The filter of the gun-butt is too fine;	Replace it with a larger-mesh filter;
The atomization is imperfect	The nozzle is worn;	Replace it;
When releasing the trigger of the gun, the equipment does not stop	Suction or delivery valve dirty;	Disassemble the pumping group and clean;
	Drain valve defective;	Verify and replace it, if necessary;

SPARE PARTS


Z TANKS Pag. 31
BEL TENSIONER SUPPORT Pag. 30 X
COMPLETE PUMP MOTOR BODY Pag. 28 W


Y FLOW COMPENSATOR Pag. 31
COMPLETE COLOR BODY Pag. 25 U
V COMPLETE HYDRAULIC BODY Pag. 26

U COMPLETE COLOUR BODY

ATTENTION: always indicate code and quantity of each requested detail.

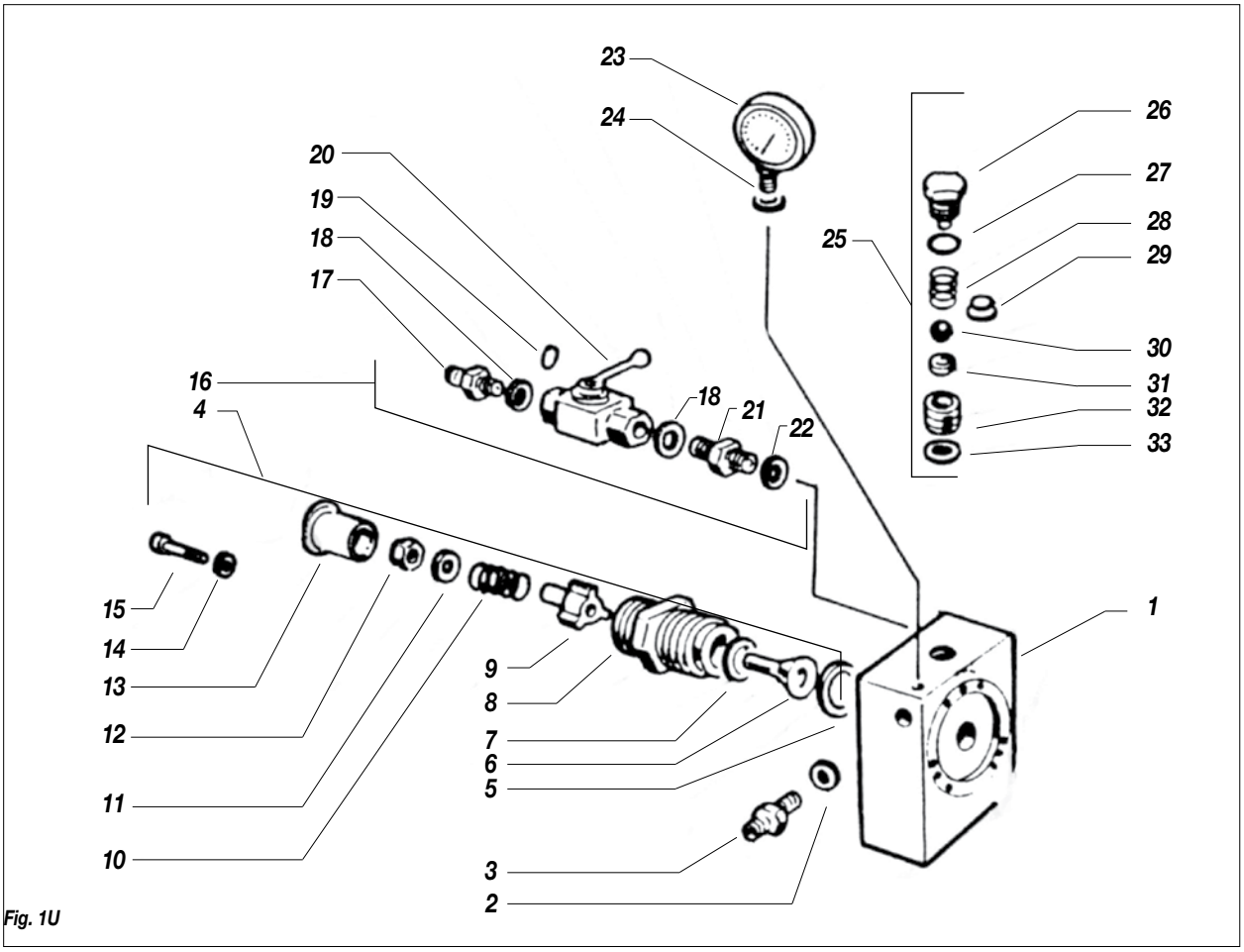


Fig. 1U

Pos.	Code	Description
	33000	Complete colour body
1	33001DX	Right colour body casting
	33001	Left colour body casting
2	33007	Ø16 copper washer
3	33006	High pressure hose fitting
4	33017	Complete suction valve
5	33018	Gasket
6	33019	Complete spear valve
7	33020/1	Spear valve seat
8	33020	Valve body
9	33021	Spear valve guide
10	33022	Spring
11	33023	Ø6,3 washer
12	33024	Self-locking nut
13	96099	Inlet liner
14	33005	Ø10 SCHNORR washer
15	33004	10x55 TCE screw
16	33016	Complete return tap

Pos.	Code	Description
17	33015	Nipple
18	33012	1/4" copper washer
19	33013/3	O ring
20	33013	Return tap
21	33011	3/8"x1/4" nipple
22	33010	3/8" copper washer
23	33008	Pressure gauge
24	33009	Pressure gauge gasket
25	33033	Complete drain valve
26	33032	Sealing plug
27	33031	Copper seal
28	53006	Spring
29	33029	Spring seat
30	33028	Ø11 ball
31	33027/2	Ball seat
32	33027/1	Ball seat fitting
33	33026	Gasket

V COMPLETE HYDRAULIC BODY

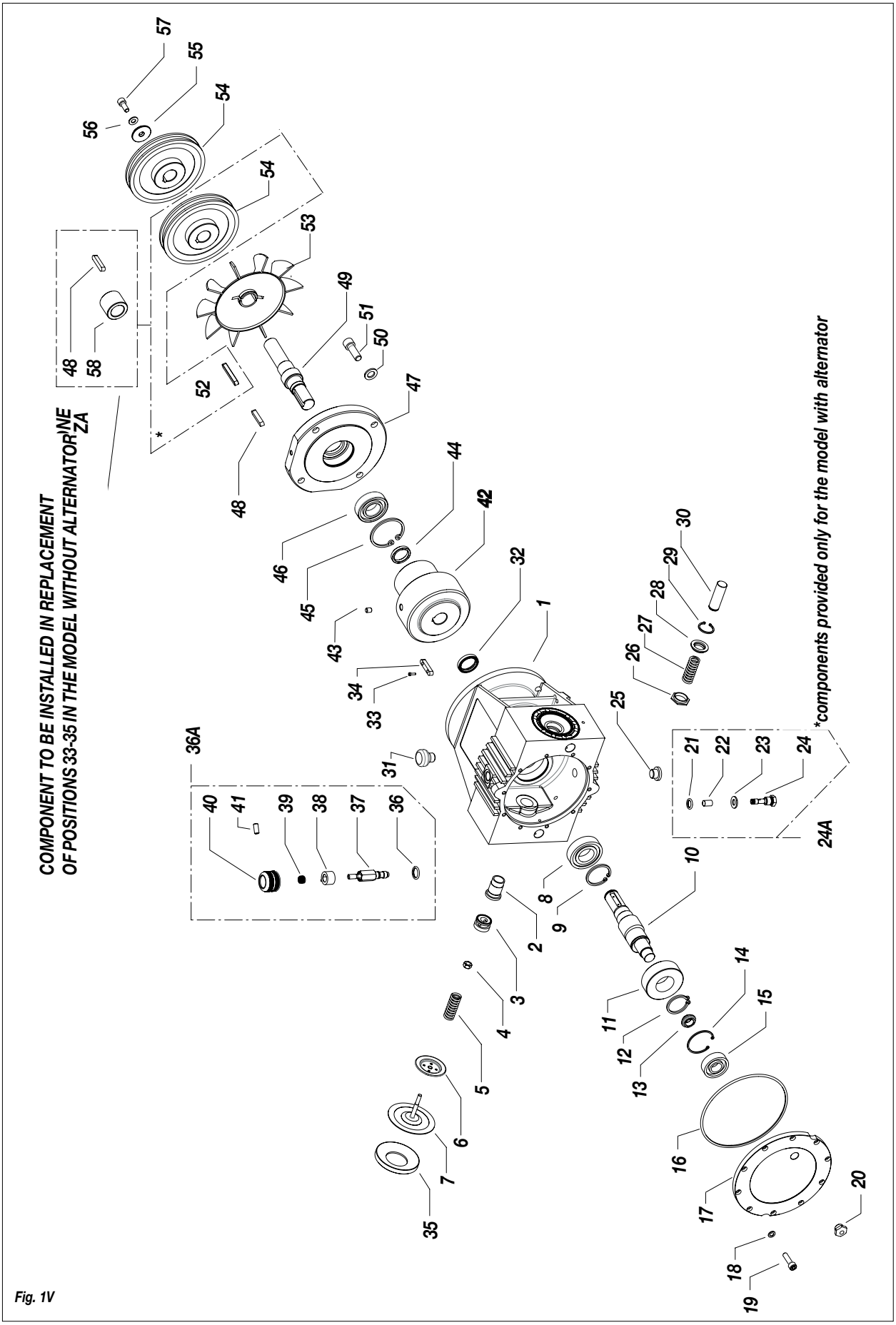


Fig. 1V

ATTENTION: always indicate code and quantity of each requested detail.

Pos.	Code	Description
1	18711	Hydraulic body
2	32018	Cylinder liner
3	32033	Piston insert
4*	3302/4	Nut
5*	33002/3	Spring
6*	33002/2	Oil distributor
7*	33002/1	Diaphragm
8	31125	Bearing
9	81020	Elastic ring
10	18712	Eccentric Shaft
11	18725	Eccentric Bearing
12	12470	Elastic ring
13	18175	Spacer
14	18727	Elastic ring
15	18728	Bearing
16	18726	OR 4625
17	18713	Cover
18	12462	Washer
19	81032	Screw M8x35
20	32007	Plug inspection
21	32012	OR 2021
22	258	Filter
23	32010	Washer 18x14,5x1,5
24	12461	body Oil filter
25	32108	Plug oil 3/8"
26	32041	Nut Cylinder liner
27	32022	Spring
28	32021	Washer
29	32020	Elastic ring
30	32019	Piston

Pos.	Code	Description
31	82005	Plug oil
32	31128	Corteco 28x38x7
33	9308	Screw M3x8 UNI 5931
34	18716	Tab
35	33003	Diaphragm insert
36A	32150	Valve assembly of pression
36	32014	OR 9.8x1.5
37	32155	Valve body
38	32016	Retainer
39	32017/2	Spring
40	32017	Knob
41	32017/1	Dowel M5x12 2K
42	18387	flywheel-Sleeve
43	18142	Dowel M8x10 TC
44	18321	Spacer
45	18341	Elastic ring
46	42255	Bearing
47	18314	Flange
48	81014	Tab
49	18328	Shaft
50	95114	Washer Ø 12
51	18171	Screw M12x25
52	31166	Tab
53	18342	Fan
54	18320	Pulley
55	95153	Washer Ø 9x36
56	34009	Washer Ø 8
57	96031	Screw M8x25
58	18384	Spacer

W COMPLETE PUMP MOTOR BODY

ATTENTION: always indicate code and quantity of each requested detail.

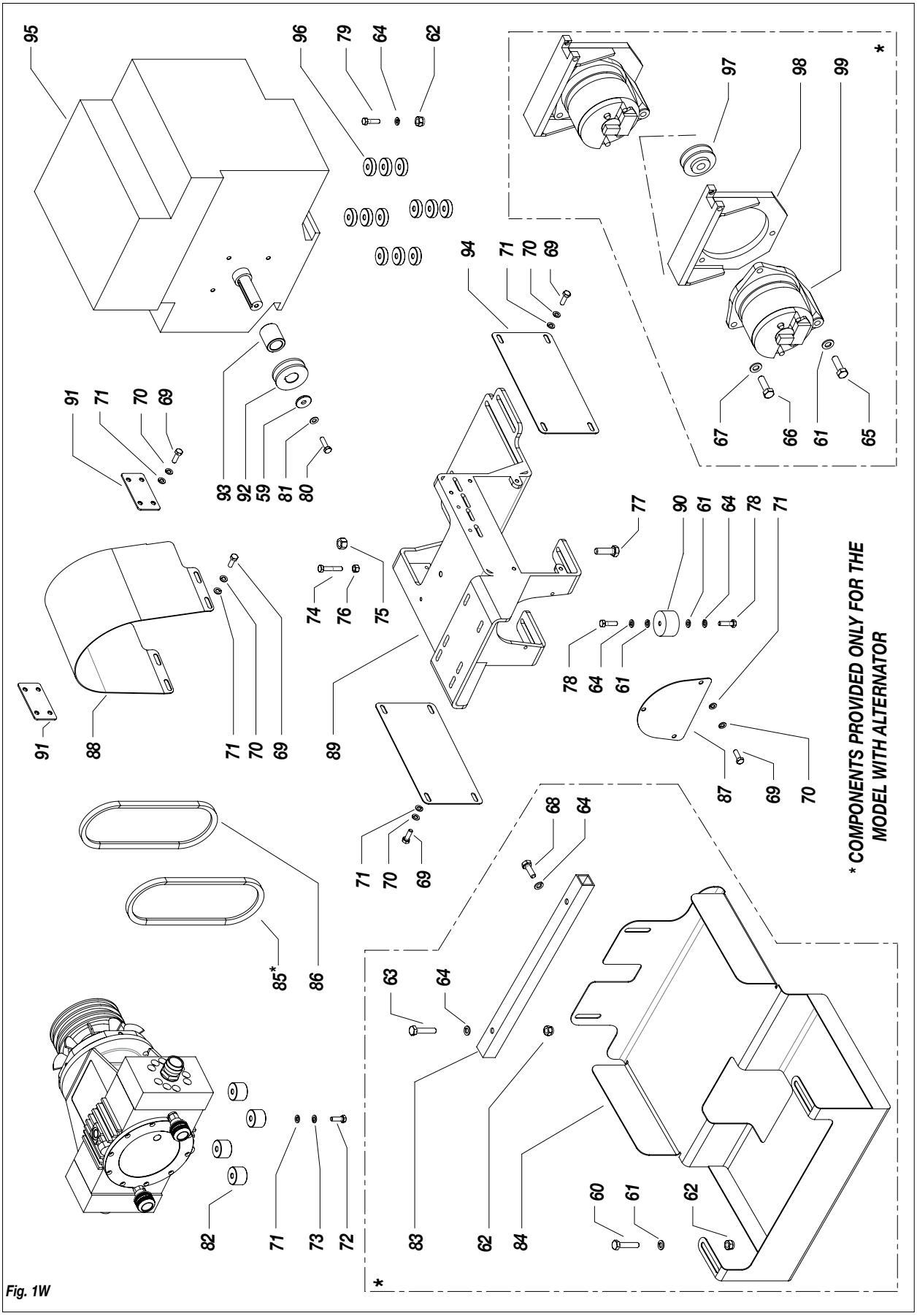


Fig. 1W

Pos.	Code	Description	Q.ty
59	95153	Washer Ø 9x36	1
60	69107	Screw M10x80	2
61	95096	Washer Ø 10	11
62	96080	Nut M10	8
63	20560	Screw M10x60	2
64	81033	Washer Ø 10	16
65	4440	Screw M20x100	1
66	95083	Screw M12x40	2
67	95066	Washer Ø 12	2
68	6130	Screw M10x20	2
69	32004	Screw M8x16	17
70	34009	Washer schnor Ø 8	17
71	32024	Washer Ø 8	21
72	96031	Screw M8x25	4
73	96030	Washer grower Ø 8	4
74	4436	Screw M8x70	1
75	96893	Nut M12	1
76	52017	Nut M18	1
77	5755	Screw M12x120	1
78	6130	Screw M10x20	8
79	20560	Screw TE UNI5737 M10x60	4

Pos.	Code	Description	Q.ty
80	18192	Screw TE 3/8-24	1
81	33005	Washer schnor Ø 10	1
82	18464	Spacers	4
83	18376	Cross	1
84	18469	Carter	1
85	18389	Alternator belt	1
86	18373	Motor belt	1
87	18332	Coverage	1
88	18334	Coverage	1
89	18331	Base	1
90	20537	Antivibrant	1
91	18388	Mounting plates	2
92	18329	Pulley	1
93	18335	Spacer	1
94	18333	Coverage	2
95	18186	Yanaha MZ300 motor	1
96	18463/1	Spacers	12
97	4778/2	Pulley	1
98	4776	Support	1
99	4758	Alternator	1

Code	Description
18412	Viking plus complete pump motor unit
18413	Viking plus complete pump motor unit without altenator

Code	Description
18391	Yamaha MZ300 exhaust engine kit

Code	Description
18365	Complete alternator

X BELT TENSIONER SUPPORT

ATTENTION: always indicate code and quantity of each requested detail.

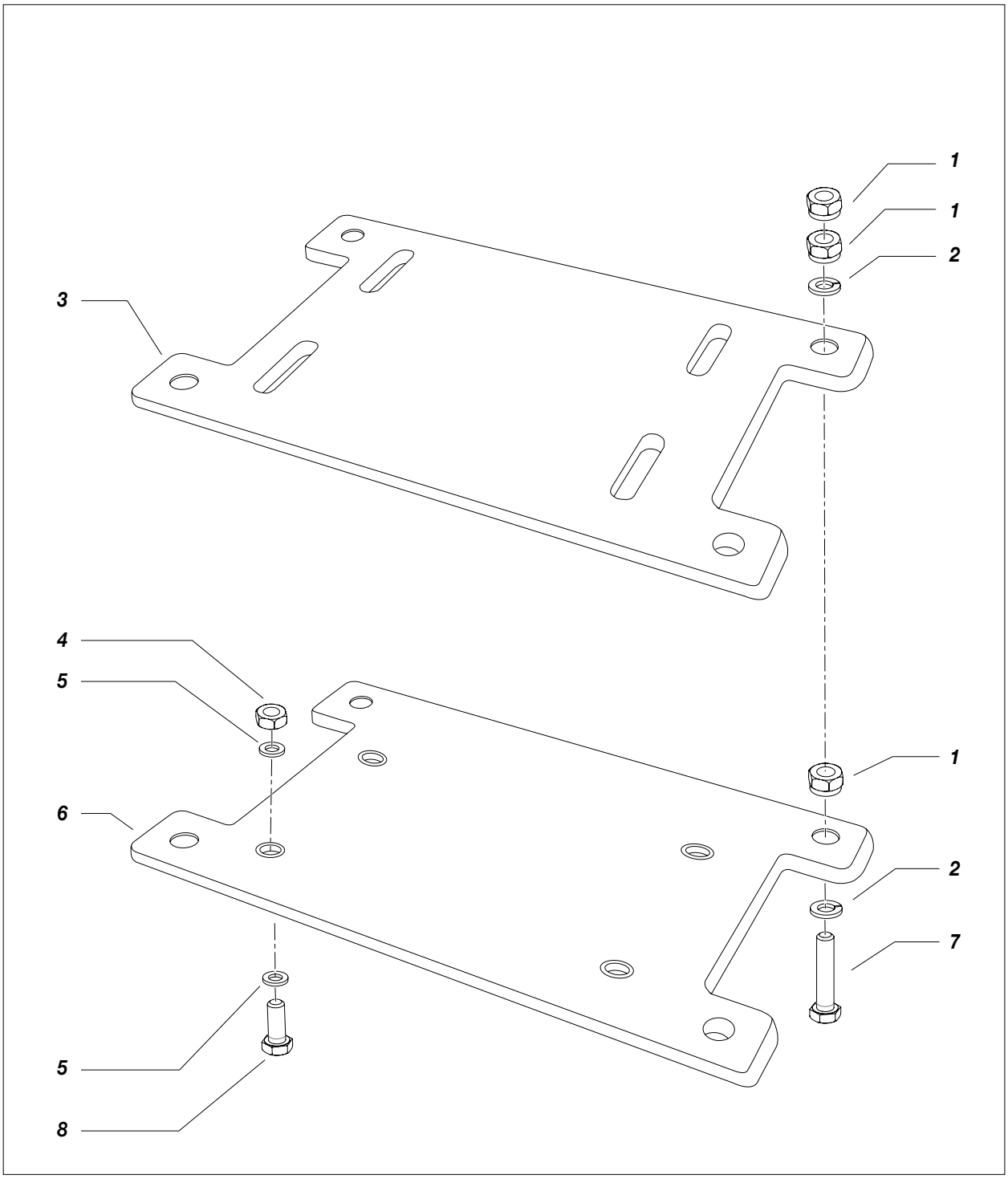


Fig. 1X

Pos.	Code	Description	Q.ty
1	81010	Nut M12	12
2	95066	Washer Grower	8
3	4088	Upper support	1
4	96080	Nut M10	4

Pos.	Code	Description	Q.ty
5	81033	Washer Ø 10	8
6	4087	Lower support	1
7	8389	Screw M12x80	4
8	4407	Screw M10x40	4

Y FLOW COMPENSATOR

ATTENTION: always indicate code and quantity of each requested detail.

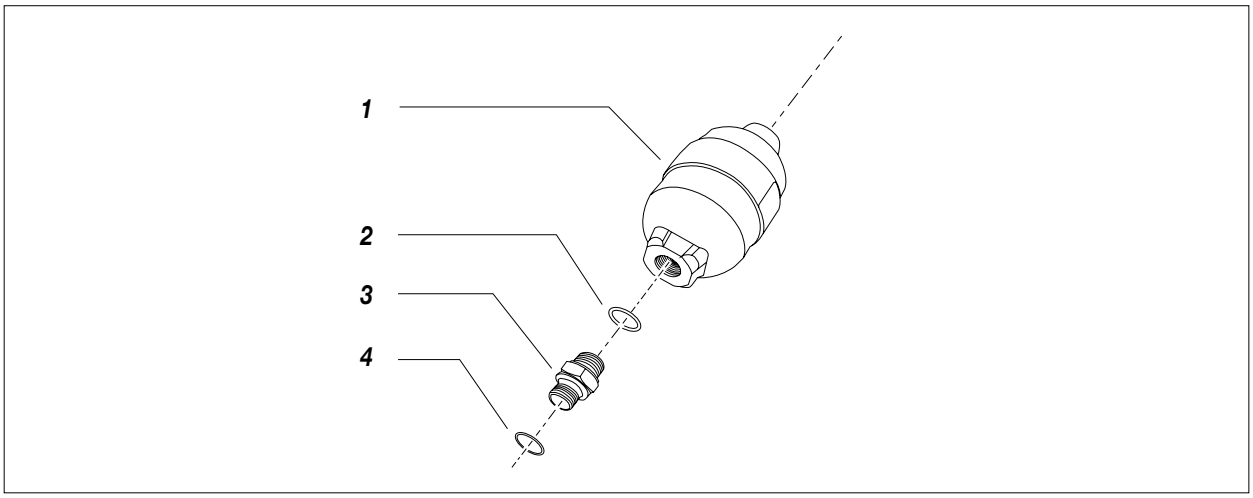


Fig. 1Y

Pos.	Code	Description	Q. ty
1	3372	Flow compensator	1
2	37180	Gasket	1
3	3283	Union	1
4	33010	Gasket	3

Z TANKS

ATTENTION: always indicate code and quantity of each requested detail.

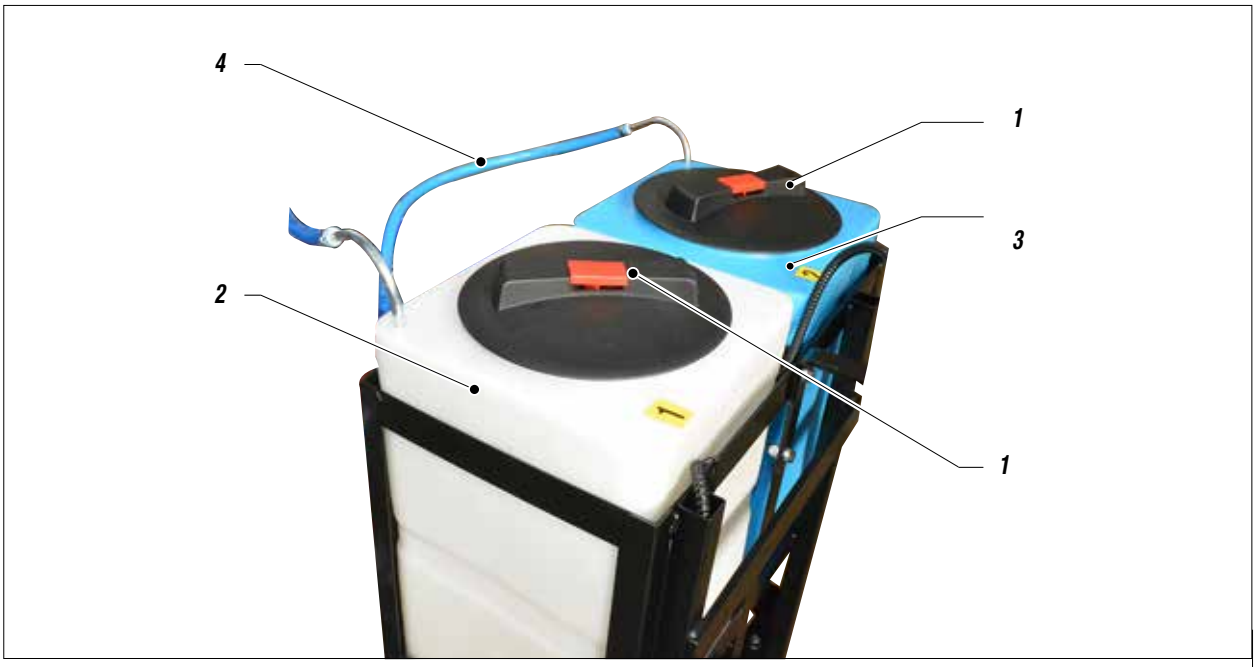


Fig. 1Z

Pos.	Code	Description
1	19510/1	Plug
2	20802	White tank

Pos.	Code	Description
3	20802/1	Light blue tank
4	16609	Recirculation tube

AA ACCESSORIES

SUPER FAST-CLEAN

SUPER FAST-CLEAN NOZZLE

Nozzles code			
SFC07-20	SFC17-40	SFC25-60	SFC33-60
SFC07-40	SFC17-60	SFC27-20	SFC33-80
SFC09-20	SFC19-20	SFC27-40	SFC39-40
SFC09-40	SFC19-40	SFC27-60	SFC39-60
SFC11-20	SFC19-60	SFC27-80	SFC39-80
SFC11-40	SFC21-20	SFC29-20	SFC43-40
SFC13-20	SFC21-40	SFC29-40	SFC43-60
SFC13-40	SFC21-60	SFC29-60	SFC43-80
SFC13-60	SFC23-20	SFC29-80	SFC51-40
SFC15-20	SFC23-40	SFC31-40	SFC51-60
SFC15-40	SFC23-60	SFC31-60	SFC51-80
SFC15-60	SFC25-20	SFC31-80	
SFC17-20	SFC25-40	SFC33-40	

Art. 18280: GASKET

Art. 18270: SUPER FAST-CLEAN base UE 11/16x16

TOP SPRAYING CLEAN

FROM SIZE 7-20 a 31-60

Nozzles code		
TSC 07-20	TSC 15-40	TSC 21-60
TSC 07-40	TSC 15-60	TSC 23-20
TSC 09-20	TSC 17-20	TSC 23-40
TSC 09-40	TSC 17-40	TSC 23-60
TSC 11-20	TSC 17-60	TSC 27-20
TSC 11-40	TSC 19-20	TSC 27-40
TSC 13-20	TSC 19-40	TSC 27-60
TSC 13-40	TSC 19-60	TSC 31-40
TSC 13-60	TSC 21-20	TSC 31-60
TSC 15-20	TSC 21-40	

Code 4405:
REFLECTING PEARLS TANK WITH DISPENSER

GUN EXTENSION	
Art.	**Description**
153	30 cm
155	60 cm
156	100 cm

COMPLETE FAST-CLEAN EXTENSION	
Art.	**Description**
170	30 cm
171	60 cm
172	100 cm

PLA 1/4'' + FAST-CLEAN WITH NOZZLE	
Art.	**Description**
K11420	130 cm
K11425	180 cm
K11430	24 cm

PLA 16X1,5 + FAST-CLEAN WITH NOZZLE	
Art.	**Description**
K11421	130 cm
K11426	180 cm
K11431	24 cm

TELESCOPIC PAINT ROLLER	
Art.	**Description**
16780	Telescopic paint roller with 220 bar gun

PLA	
Art.	**Description**
11400	130 cm
11401	180 cm
11402	240 cm

CE DECLARATION OF CONFORMITY

Company

LARIUS srl
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Fax: +39 0341 621243
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Declares under his owns resonsibility that the product:

VIKING LINER PLUS
Airless professional road marking bicomponent version 2k 1:1

complies with the directives:	**- EC Directive 2006/42 Machinery Directive**
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 exclusevely 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

Calolziocorte,
Location / Date

Pierangelo Castagna
Managing Director

LARIUS srl
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