



# AIRLESS DIAPHRAGM GIOTTO LINER PLUS

Line striper with  
diaphragm pump



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# The ideal choice for achieving professional performance.

## WELL PROVEN TECHNICAL QUALITY FOR ANY ON-GROUND MARKING APPLICATION

The airless line markers successfully join product performance with operator requirements and allow the marking and the maintenance of any kind of pavement lines on roads, motorways, airports, pedestrian crossings, cycle paths, yards and wherever is required by the Highway Code with regards to horizontal road signs, guaranteeing perfect lines on different surfaces.

The airless technology provides the high pressure spraying of the paint through a nozzle having centesimal dimensions as compared to the traditional low pressure spraying in which the paint flow is atomized through the air contribution.



## Advantages of use

### Net and clear lines on any kind of pavement with one coat only.

With a single coat the line is defined evenly: the line made by airless spraying is linear, clean-cut and marked thanks to the flat cut nozzle and without the jagged due to the turbulences caused by air.

### Reduction of Over spray.

The airless operated marking guarantees the absence of the classic "Overspray", that is the dispersion of paint particles which is typical in the traditional air painting.

This translates, further than in a saving of paint, in a better protection for health of the operator and for environment.

### Saving of paint up to 30%.

Thanks to the absence of Overspray almost all of the used product is applied on the surface without any waste.

### Reduction of the vibrations.

The reduction of the vibrations ensures the best in industry quality of lines.

### The paint dries quickly.

The airless operation requires that filtered paint specifically formulated for airless application is used, this means, by itself, even paint, smooth and uniform texture which will not return any crust nor will become neither jelly-like nor thick.

The paint holds tightly on any kind of pavement, with an excellent visibility and resistance to wear caused both by traffic and weather elements.

High quality paints guarantee a faster application speed, a better durability of the visibility of the line and a pleasant aesthetic result.

### Reflective bead application.

Reflective beads can be applied using a gravity dispenser operated by the same command which operates

the paint gun. The spheres automatically fall onto the freshly marked line. No paints with pre-mixed beads can be used.

### 50 litre non-stick hopper.

Thanks to the big capacity of the hopper marking times are extended thanks to the absence of frequent interruptions to perform colour changes.

### Template works and curved marking.

The gun can be released from its support in just a few seconds and, thanks to the 10 meters pipe it is connected to, it allows any template work, on walls as well.

The front wheel helps to mark lines close to the kerb and to mark arches and curves.

### Intuitive use by the operator.

The operator commands are located right on the handlebar to adjust the operation of the line marker in the most handy way.

### Optional equipment.

Airless line markers can be equipped basing on the different needs of the operator for offering a dedicated solution for any marking need.

### Easy cleaning and maintenance.

Cleaning airless line markers is quick thanks to the absence of pressurized tanks to be cleaned and thus colour change times are extremely short both if using the can or the non stick paint tank. The high pressure of the airless line marker clears the spraying area from dirt and so it does not require that the ground is previously cleaned.

A regular cleaning at the end of the work is sufficient to keep the machine in perfect efficiency, even after prolonged standing periods.

The Super Fast Clean airless nozzles allow that the nozzle is cleaned with a simple rotating movement, without any need to detach it.

**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.

# GIOTTO LINER PLUS

Airless diaphragm road marking machines

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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 **SAMOA** 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.

## 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.

	<p>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 <b>ONLY</b> original spare parts.  Keep children and animals away from work area.  Comply with all safety standards.</p>
	<p>It indicates an accident risk or serious damage to equipment if this warning is not followed.</p>
	<p>It indicates a fire or explosion risk if this warning is not followed.  Eliminate all ignition sources such as pilot lights, cigarettes, portable electric lamps and plastic drop cloths.  Keep work area free of debris.  <b>ONLY</b> use this equipment in a well ventilated area.  <b>EARTH ALL THE EQUIPMENT LOCATED IN THE WORK AREA.</b>  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.</p>
	<p>It indicates wound and finger squashing risk due to movable parts in the equipment.  Tenersi lontano dalle parti in movimento.  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.</p>
 	<p>Report any risk of chemical reaction or explosion if this warning has not been given.  There is a risk of injury or serious lesion related to contact with the jet from the spray gun. If this should occur, <b>IMMEDIATELY</b> contact a doctor, indicating the type of product injected.  Do not spray before the guard has been placed over the nozzle and the trigger on the spray gun.  Do not put your fingers in the spray gun nozzle.  Once work has been completed, before carrying out any maintenance, complete the decompression procedure explained in this manual.</p>
	<p>It indicates important recommendations about disposal and recycling process of products in accordance with the environmental regulations.</p>
	<p>Report any danger of electric shock if the warning and presence of live electrical parts has not been indicated.  Store in a dry place and do not expose to the rain.  Check that the cables are in good condition.  Switch off the equipment and discharge any electricity before cleaning or maintaining the equipment.</p>
	<p>Mark any clamps attached to earth cables.  Use <b>ONLY</b> 3-wire extension cords and grounded electrical outlets.  Before starting work make sure that the electrical system is earthed and that it complies with safety standards.</p>
   	<p>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.</p>

## A WORKING PRINCIPLE

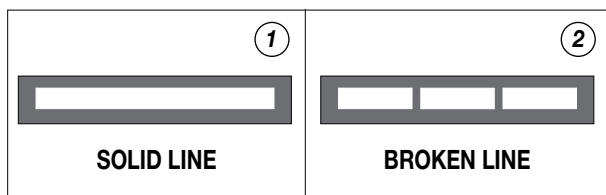
The **GIOTTO LINER PLUS** is a self-propelled device which was conceived and designed for performing road markings along particularly difficult tracts of uneven road where marking would otherwise be difficult to complete.

The internal combustion engine, mounted upon the undercarriage, powers the diaphragm pump and the alternator which is utilised for charging the battery unit. The internal combustion engine is coupled with a cam shaft which acts on the hydraulic piston. The piston pumps oil from the hydraulic case and sends the suction diaphragm into fibrillation. When the diaphragm moves, it creates a vacuum. The product is sucked up, pushed towards the pump outlet and sent to the guns through the flexible hose. A hydraulic valve on the hydraulic case head allows setting and checking the pressure of the paint product at the pump outlet. A second hydraulic safety valve to avoid over-pressure, ensures total equipment reliability. The wheels are powered by an electric motor which allows for easy operator movement, even on medium-grade inclines. The control zone allows for the possibility of:

- Activating the dispensing spray gun;
- Enabling or disabling the frontal steering wheel;
- Increasing the motor's Rpm's;
- Enabling / disabling wheel traction;
- Gradually increasing the advancement speed of the self-propelled undercarriage;
- Selecting solid or broken-line painting functionality.

This type of equipment is capable of painting one line at a time in a single color.

The line may be solid or broken.



**GIOTTO LINER PLUS** is ideal for medium marking and maintenance jobs.



**GIOTTO LINER PLUS** allows for the marking and maintaining of all types 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:

- Decreased Environmental Impact;
- Decreased drying time.

The paint dries quickly and the line is defined in a uniform 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 uniform 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 is resistance to wear caused both by traffic as well as atmospheric agents.



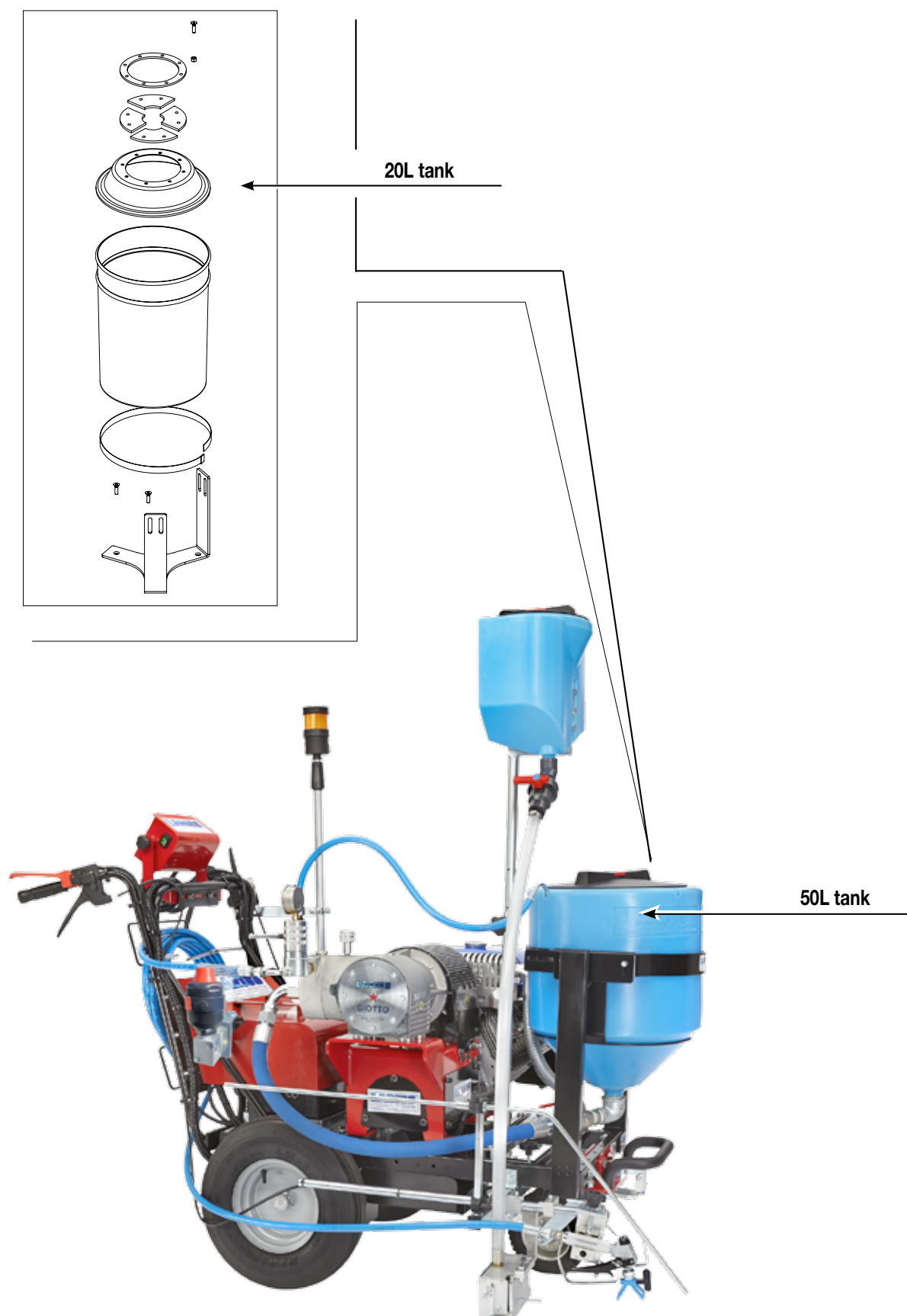
In these models, the paint canister can be loaded directly upon the undercarriage or else poured into the non-stick, 50 L tank. In every case, cleaning, maintenance and colour change operations are facilitated.



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 about 30% more yield with respect to standard line-markers. Every model is also an airless spray gun which can be used in the construction/decoration sector together with washable products, enamels, breathable paints and flooring resins. A vast assortment of accessories is available to satisfy every customer demand.







## B TECHNICAL DATA

GIOTTO LINER PLUS	
Max. pressure	210 bar
Max. flow rate	8 - l/m
Motor power	12,8 Hp
Airless paint capacity	50 lt
Dimensions	1.430 x 1.930 x 1.560
Weight	300 kg

### SECTORS OF USE

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



Fig. 1C

### SFC SPRAY TIPS/NOZZLES TABLE - TSC

Ø nozzle (inch)	Spray angle (°)	Line Width		Flow rate (gpm)	Flow rate (lpm)
		inch	mm		
.013	13 - 20	2 - 4	51 - 102	.18	.69
.015	15 - 20	2 - 4	51 - 102	.24	.91
	15 - 30	4 - 6	102 - 152		
.017	17 - 20	2 - 4	51 - 102	.31	1.17
	17 - 30	4 - 6	102 - 152		
	17 - 40	4 - 8	102 - 204		
.019	19 - 20	2 - 4	51 - 102	.38	1.47
	19 - 30	4 - 6	102 - 152		
	19 - 40	4 - 8	102 - 204		
.021	21 - 30	4 - 6	102 - 152	.47	1.79
	21 - 40	4 - 8	102 - 204		
	21 - 60	8 - 12	204 - 305		
.023	23 - 30	4 - 6	102 - 152	.57	2.15
	23 - 40	4 - 8	102 - 204		
	23 - 60	8 - 12	204 - 305		
.025	25 - 30	4 - 6	102 - 152	.67	2.54
	25 - 40	4 - 8	102 - 204		
	25 - 60	8 - 12	204 - 305		
.027	27 - 30	4 - 6	102 - 152	.77	2.96
	27 - 40	4 - 8	102 - 204		
	27 - 60	8 - 12	204 - 305		

Ø nozzle (inch)	Spray angle (°)	Line Width		Flow rate (gpm)	Flow rate (lpm)
		inch	mm		
.029	29 - 30	4 - 6	102 - 152	.90	3.42
	29 - 40	4 - 8	102 - 204		
	29 - 60	8 - 12	204 - 305		
.031	31 - 30	4 - 6	102 - 152	1.03	3.90
	31 - 40	4 - 8	102 - 204		
	31 - 60	8 - 12	204 - 305		
.033	33 - 30	4 - 6	102 - 152	1.17	4.42
.035	35 - 30	4 - 6	102 - 152	1.31	4.98
	35 - 40	4 - 8	102 - 204		
	35 - 60	8 - 12	204 - 305		
.039	39 - 30	4 - 6	102 - 152	1.63	6.18
	39 - 40	4 - 8	102 - 204		
	39 - 60	8 - 12	204 - 305		
.043	43 - 30	4 - 6	102 - 152	1.98	7.51
	43 - 40	4 - 8	102 - 204		
	43 - 60	8 - 12	204 - 305		

Code	Self propelled	Automatic marking	50 lt gravity tank	Airless hose	AT250 Airless manual gun	LA96 Airless automatic gun	Airless nozzles holder	Super Fast Clean airless nozzles
4081	•	—	•	N°1 Cod. 35015 Ø 1/4"-M16x1,5-10m	N°1 Cod. 11210 M16x1,5 Inlet swivel	—	N°1 Cod. 18270	N°1 SFC 11-40 N°1 SFC 13-40 N°1 SFC 17-40
4080	•	—	•	N°1 Cod. 35015 Ø 1/4"-M16x1,5-10m	N°1 Cod. 11210 M16x1,5 Inlet swivel	—	N°2 Cod. 18270	N°1 SFC 11-40 N°1 SFC 13-40 N°1 SFC 17-40
4080/1	•	•	•	N°1 Cod. 35015 Ø 1/4"-M16x1,5-10m	N°2 Cod. 11210 M16x1,5 Inlet swivel	N°2 Cod. 11708 M16x1,5 fitting	N°3 Cod. 18270	N°1SFC 11-40 N°1SFC 13-40 N°1 SFC 17-40 N°1 SFC 19-40

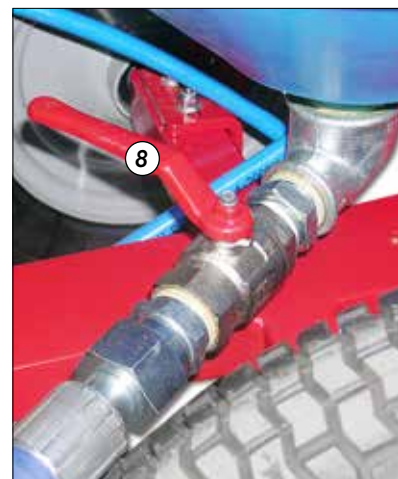
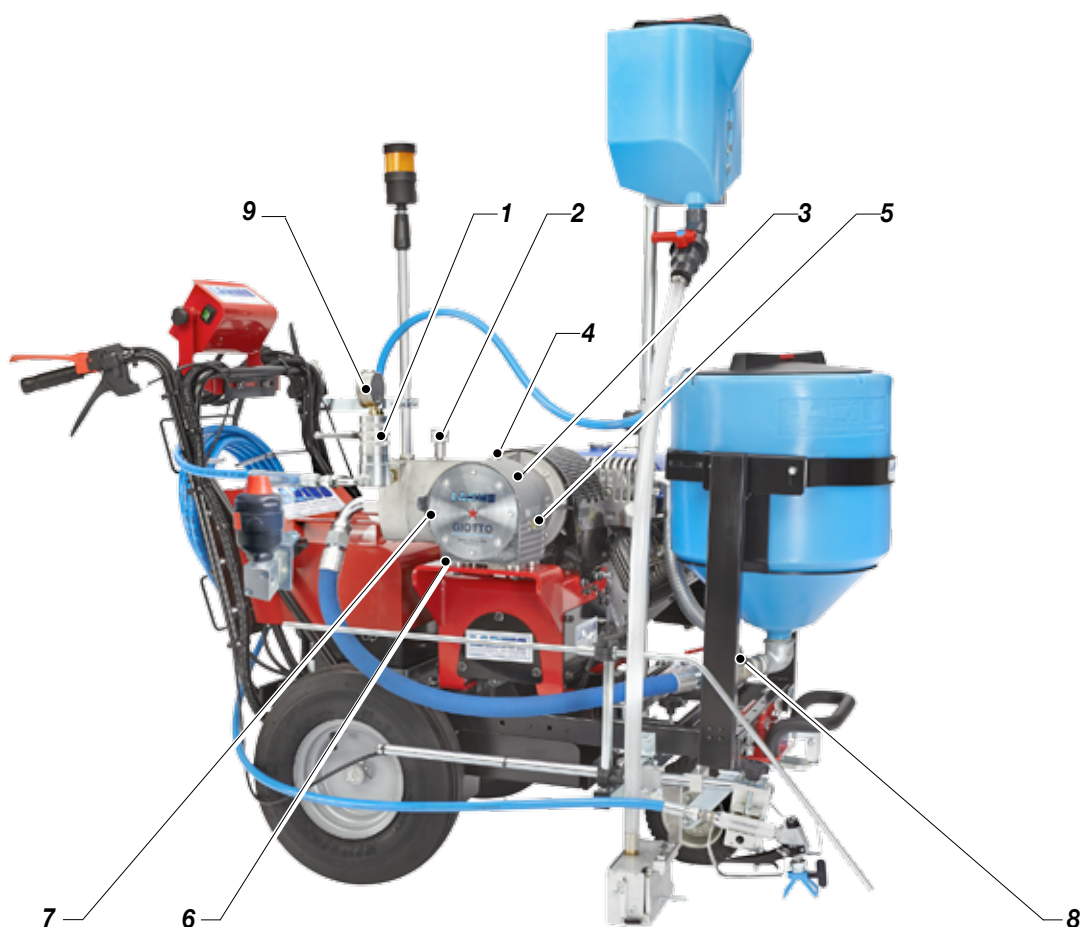
CONFIGURATIONS				
Part No.	4081	4080	4080/1	
Petrol engine power	12,8 HP	12,8 HP	12,8 HP	
Max. Flow rate	8 - l/m	8 - l/m	8 - l/m	
Max. Pressure	220 bar	220 bar	220 bar	
Manual push	—	—	—	
Self propelled	•	•	•	
Head control system	•	•	•	
Automatic marking lines kit	—	—	•	
Glass beads kit	—	—	—	
Flashing telescopic Rod	•	•	•	
23 L Paint can	—	—	—	
50 L Gravity tank	•	•	•	
Airless hose Ø 1/4" - M16 x 1,5 - 10M	•	•	•	

CONFIGURATIONS				
Part No.	4081	4080	4080/1	
Recirculation Hose	•	•	•	
Filter with pressure gauge	•	•	•	
1 AT250 Airless manual spray gun	•	•	•	
2 AT250 Airless manual spray guns	—	•	—	
2 LA96 Airless manual spray guns	—	—	•	
Airless nozzle holder	•	•	•	
Super fast clean airless spraying nozzles	•	•	•	
1 colour	•	•	•	
1 single line: continuous - dashed	—	—	—	
2 double line: continuous - dashed -mixed	•	•	•	
Tools kit	•	•	•	

ACCESSORIES	
Part No.	Description
35015	Airless hose Ø 1/4" - M16 x 1,5 - 10 m
11200	AT250 manual airless spray gun - M16x1,5 inlet swivel+ Nozzle holder
11210	AT250 manual airless spray gun - M16x1,5 inlet swivel
18270	Airless nozzle holder
SFC	Super Fast Clean airless nozzle. Size from 11-20 to 51-80
TSC	Super Fast Clean airless nozzle. Size from 7-20 to 31-60
18240	50 l Gravity tank
18245	50 l Gravity tank + Cover
18241	50 l Gravity tank + Cover + Basket
4500	11 l Gravity tank + Glass beads diffuser hose
26000	Operator footbaord
4720	Seat kit

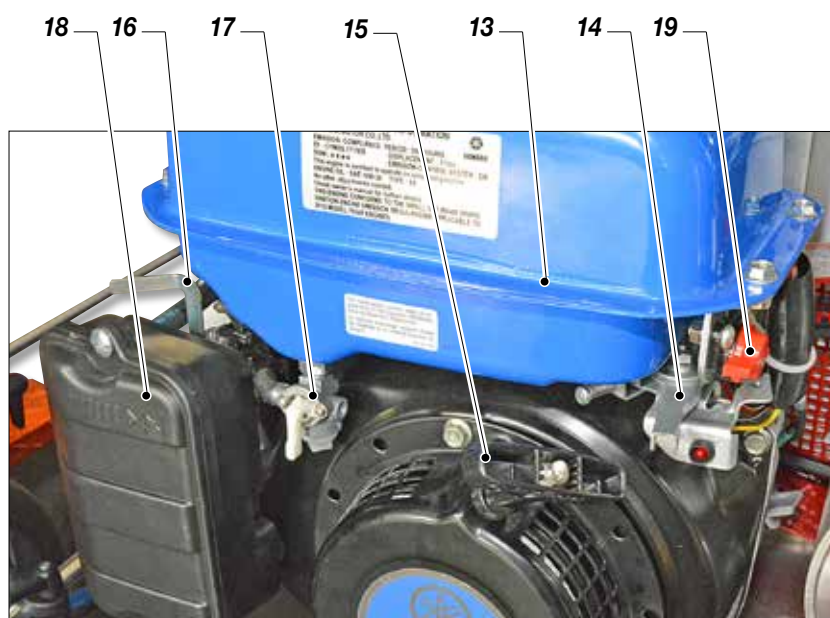
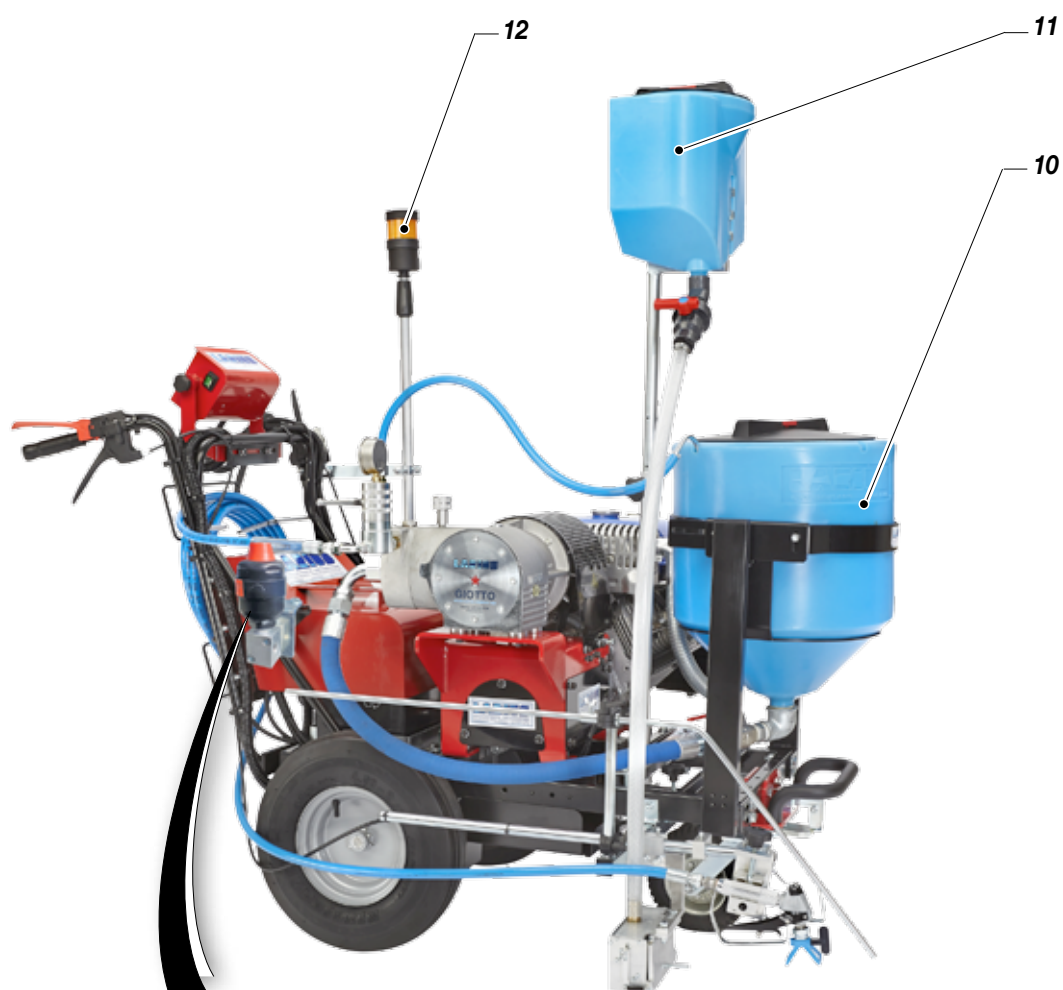
KIT	
Part No.	Description
18359	11 l Gravity tank + 1 Diffuser hose + 1 Glass beads manual spray gun kit
18354	11 l Gravity tank + 1 Diffuser hose + 2 Glass beads manual spray guns kit
4405/3	11 l Gravity tank + 1 Diffuser hose + 2 Glass beads automatic spray guns kit

## C DESCRIPTION OF THE EQUIPMENT



POS.	Description
1	Product filter
2	Regulation pressure valve
3	Pumping group
4	Oil charge plug
5	Oil level plug

POS.	Description
6	Oil discharge plug
7	oil filter
8	Open/close valve
9	Pressure control manometer



POS.	Description
10	LT. 50 tank
11	Refractive sphere tank
12	Flashing light
13	Fuel tank
14	Accelerator

POS.	Description
15	Start-up cord
16	Cold start-up lever
17	Fuel tap
18	Air filter
19	On / off switch






POS.	Description
20	Recirculation tube
21	Product feeding tube
22	Color unit
23	Recirculation valve

POS.	Description
24	AT 250 gun
25	Spraying gun feeding tube
26	Castor wheel
27	Refractive sphere distributor unit

## D 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 **the manufacturer** 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 **the manufacturer**.




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.

## E SAFETY RULES


- 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.



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.

- 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.
- **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.
- 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 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 EQUIPMENT IN POTENTIALLY EXPLOSIVE ENVIRONMENTS.

Always check 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.**

## CONDITIONS OF GUARANTEE



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

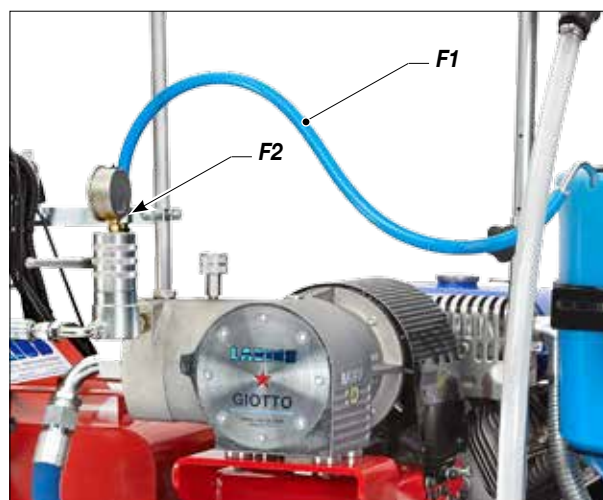
- improper washing and cleaning of components causing malfunction, wear or damage to the equipment or any of its parts;
- improper use of the equipment;
- use that does not conform with applicable national legislation;
- incorrect or faulty installation;
- modifications, interventions and maintenance 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.

## F SETTING-UP

### TUBE CONNECTIONS

#### Flexible re-circulation tube connection

- Connect the flexible re-circulation tube (**F1**) to the connector (**F2**) ensuring to tighten the fittings (*the use of two wrenches is suggested*).



#### Pump unit flexible tube connection

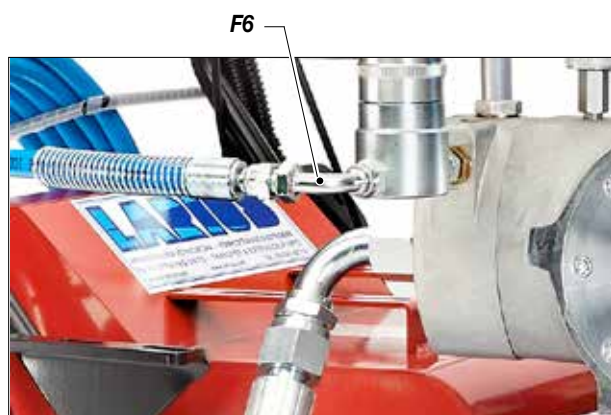
- Connect the product suction flexible tube (**F3**) to the connector (**F4**) ensuring to tighten the fittings (*the use of two wrenches is suggested*).





### Flexible tube and spray gun connection

- Connect the flexible tube (F5) to the connector (F6) ensuring to tighten the fittings (*the use of two wrenches is suggested*).

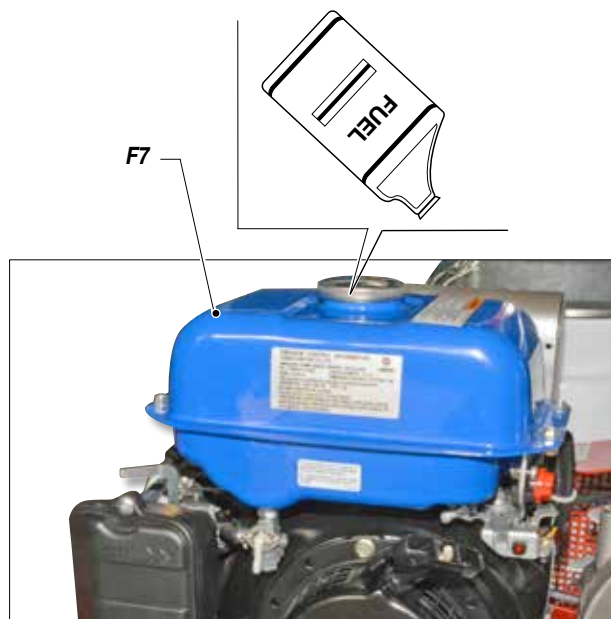


- It is recommended to use the hose provided with the standard kit.  
**NEVER** use a damaged or a repaired flexible hose.  
**NEVER** use sealants on fittings' threads.

### STARTING THE MOTOR

In order to start the motor, proceed as follows:

- Fill the fuel tank (F7).



- Open the fuel tap (F8) and position it to "ON" (I).



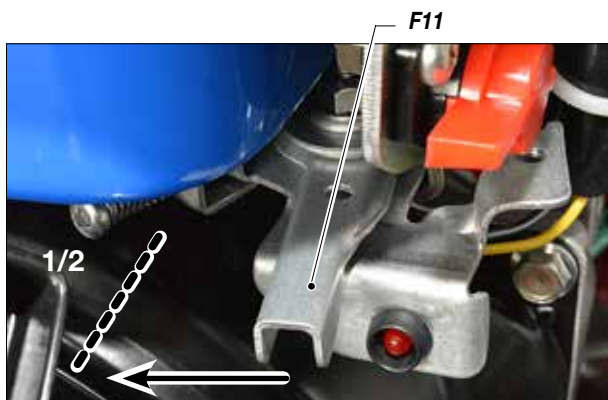
- Pull lever (F9) for first start-up (*only when cold*).



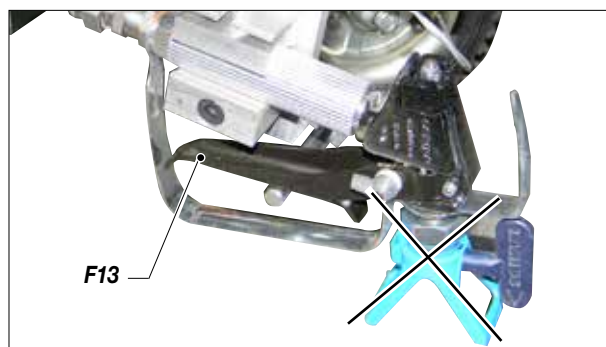
- Turn the equipment's switch (F10) to ON (I)



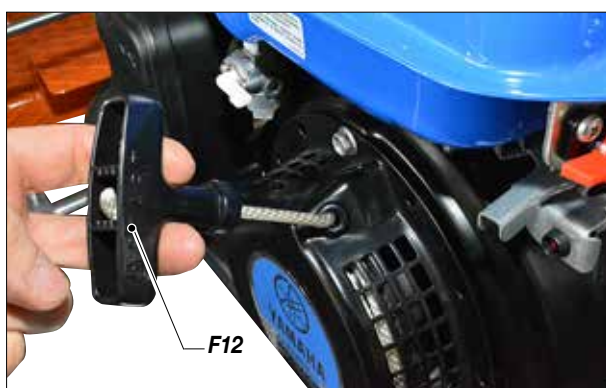
- Bring the accelerator lever (**F11**) to about 1/2 of its run.



- Ensure the gun (**F13**) is without nozzle.



- Pull the lever (**F12**) for the first cold start up.

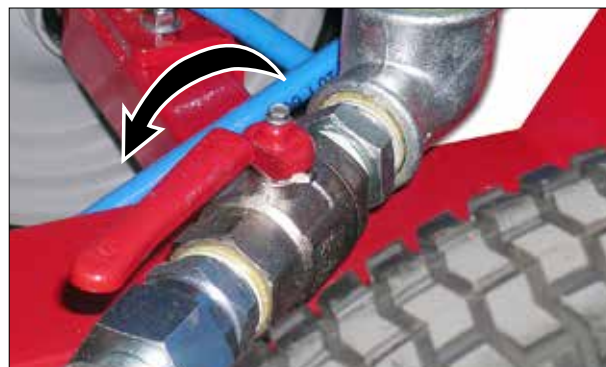


- Open the product output tap (**F14**).

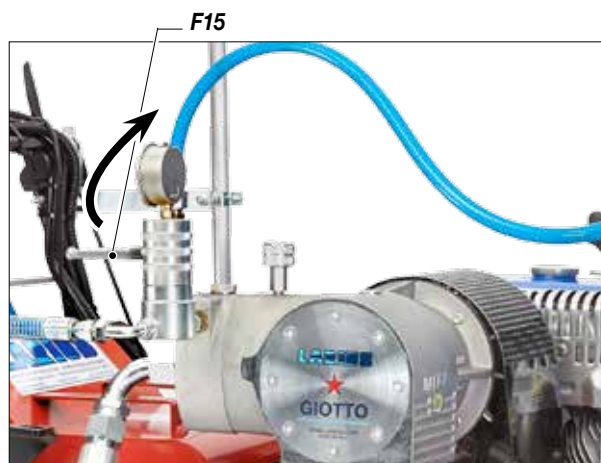


#### WASHING OF THE NEW EQUIPMENT

- The equipment has already been adjusted at our factory with light mineral oil left inside the pumping group as protection. Therefore, wash with diluent before sucking the product.
- Fill the product tank with wash fluid.
- Clean the inside of the tank with a brush.

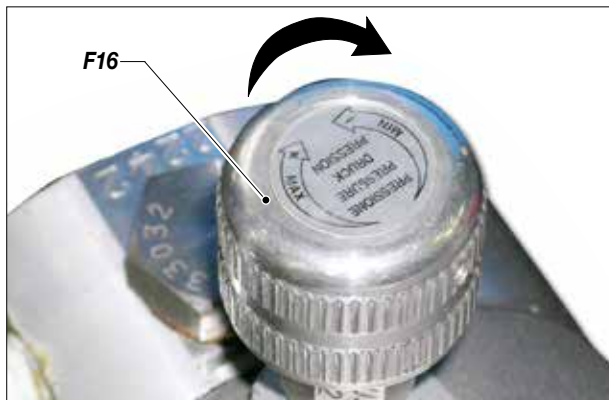


- Open the recirculating-safety valve (**F15**).





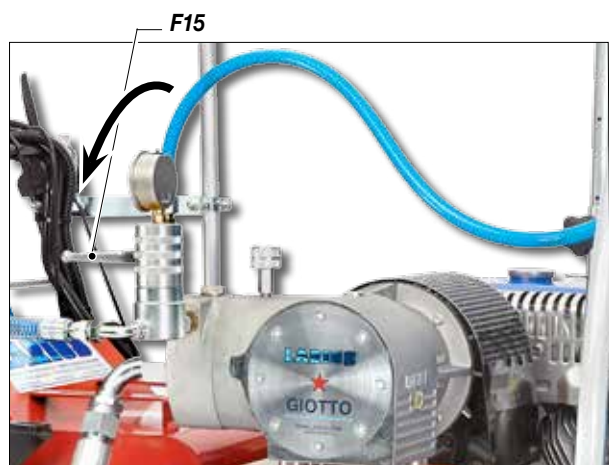
- Start the motor following the indications provided in the chapter **“STARTING THE MOTOR”**.
- Rotate the pressure setting knob (F16) slightly clockwise so that the machine operates at minimum power.



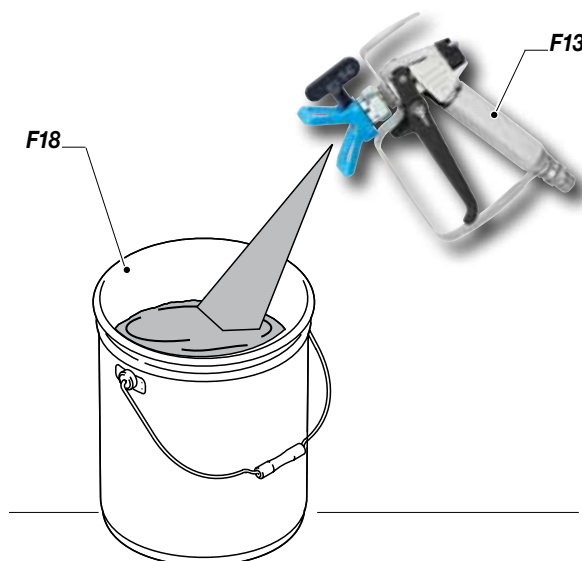
- Visually check that the wash fluid starts to re-circulate within the tank (F17).



- Once the wash fluid has circulating enough, close the recirculating-safety valve (F15).



- Remove the gun (F13) from its support and point it into a container (F18). Hold the trigger down (*to perform the cleaning*) until clean solvent comes out, or else until all of the wash fluid has been expelled from the tank.



**Repeat the same operations with clean solvent if necessary.**

- After having completed the wash operations, bring the handle to its MIN position (F17) and point the gun (F13) into a collection container (F18) and press the trigger to release the residual pressure. Release the trigger when finished.



**NEVER spray solvents indoors. In addition, it is recommended to keep away from the pump in order to avoid the contact between the solvent fumes and the motor.**

- When the pump idles stop the combustion engine.
- At this point the machine is ready. If water-based paints are to be used, after the wash with solvent wash the tank again with soap and water (*repeating the previously described procedures*).
- Insert the manual gun trigger lock and assemble the nozzle.

#### PRODUCT PREPARATION



**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** (rif. 214) and **LARGE-MESH** (rif. 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*). Because of that, please contact the supplier of the product.**

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.

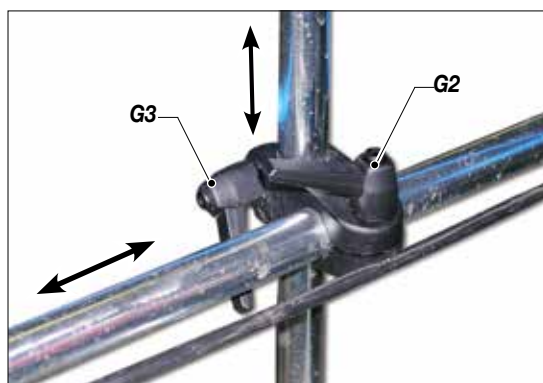
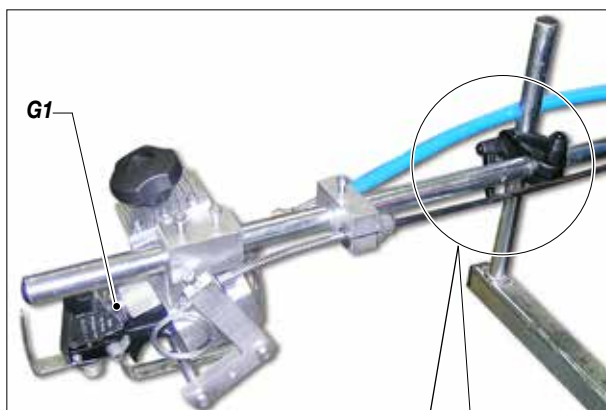
- Fill the tank (F19) with the paint.



## G REGULATIONS

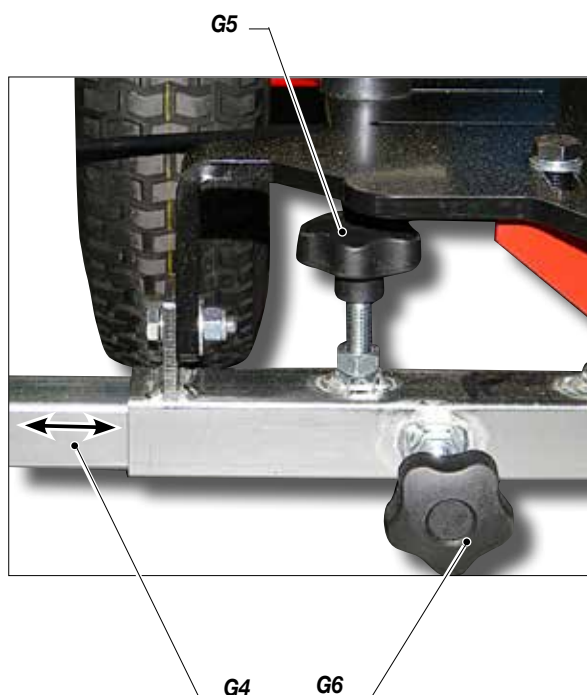
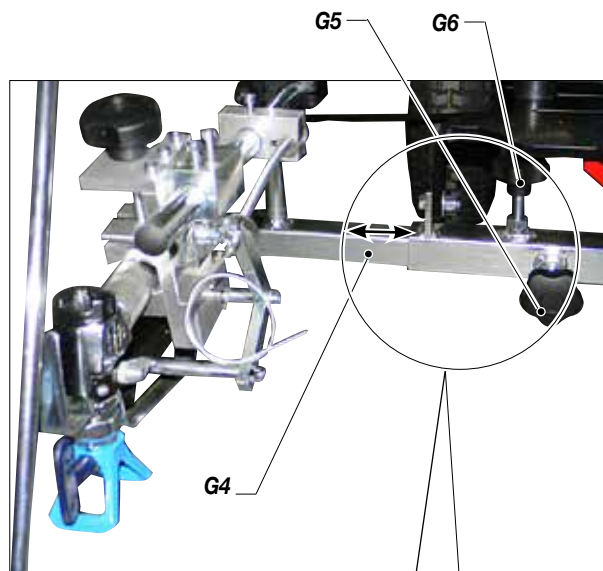
### ADJUSTING THE GUN POSITION

In order to adjust the position of the spray gun (G1) use the knobs (G2-G3).



### ADJUSTING THE GUN SUPPORT ARM

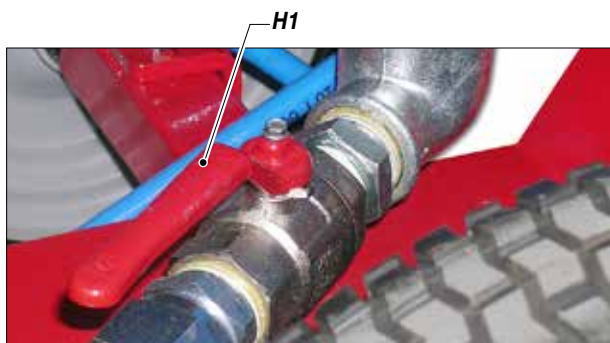
In order to adjust the position of the spray gun (G4) use the knobs (G5-G6).



## H OPERATION

### SETUP PROCEDURE

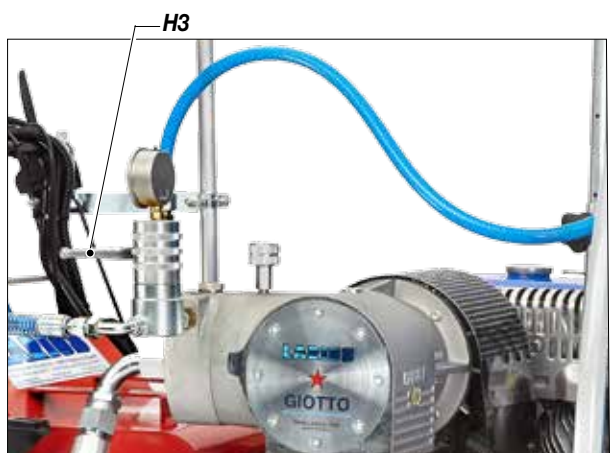
- Use the tooling after performing all the **SETTING UP** operations above described.
- Check that there is enough unleaded petrol.
- Open the product output tap (**H1**).



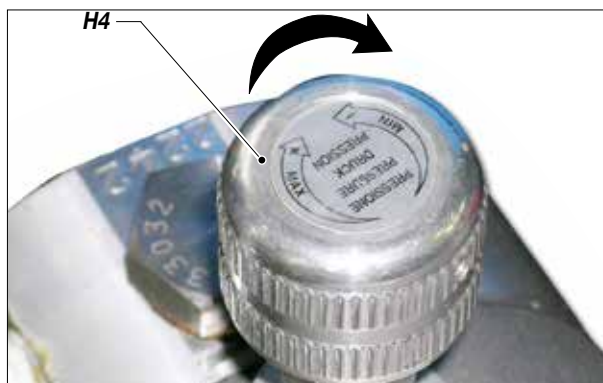
- Turn the equipment knob (**H2**) on **ON (I)**.



- Start the motor following the indications provided in the chapter "**STARTING THE MOTOR**".
- Make sure that the re-circulation/safety valve (**H3**) is closed (*spray enabled*).



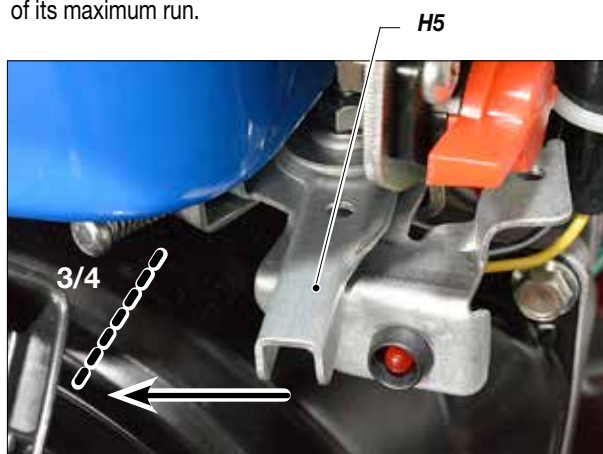
- Turn the pressure adjustment handle clockwise until the desired setting has been reached.



### ADJUSTING PUMP UNIT SPEED

- Move the motor acceleration lever (**H5**) gently to increase or decrease the speed of the pump.

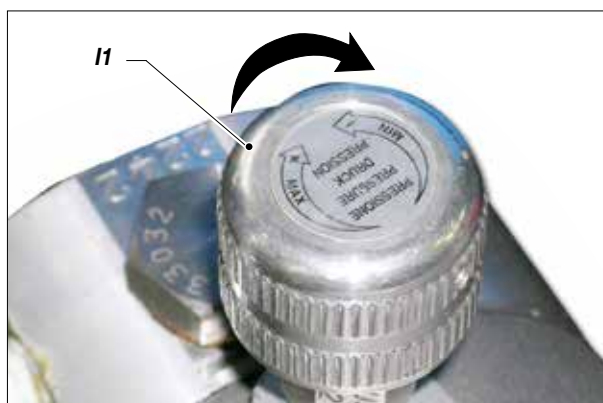
During the painting operation it is normally recommended to maintain the position of the accelerator lever (**H5**) at about 3/4 of its maximum run.



## I PAINTING OPERATIONS

After having performed all of the operations in the "**OPERATION**" chapter, work may be started using the following controls:

- Turn the pressure adjustment handle (**I1**) clockwise to allow the line-painting gun to dispense paint when the appropriate lever is activated.

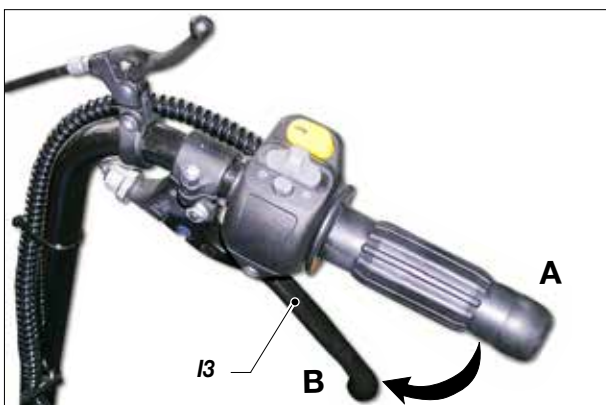




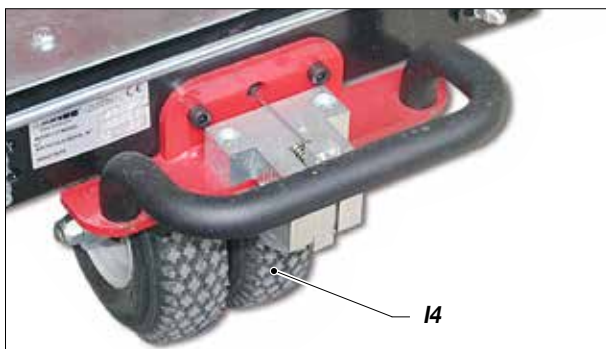
- Press the button (12) located on the control panel.



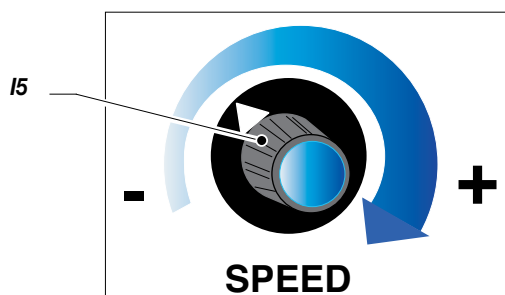
- If operation is required upon a long rectilinear section, the lever (13) must be placed in its "B" position. A spring-action mechanical stopper will automatically block the front wheel (14) in its straight position, thereby ensuring a straight trajectory for the operator.



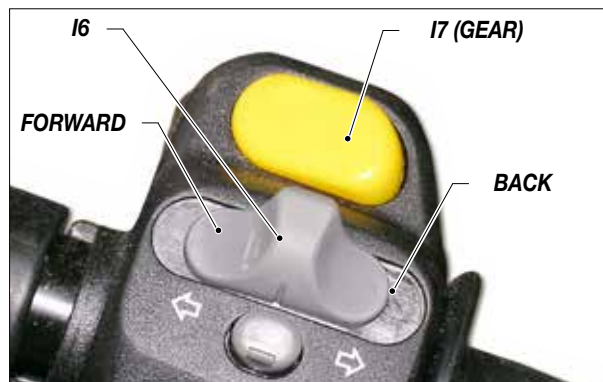
A = Connected block  
B = Disconnected block



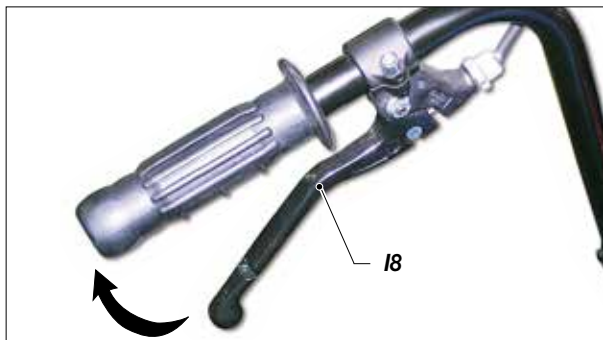
- Use the appropriate handle (15) on the control panel to adjust the machine's advancement speed.



- Use the appropriate switch (16) to select the direction (**FORWARD/REVERSE**). Press the "GEAR" button (17) to initiate the movement of the machine.



- Hold down the lever (18) on the left side of the control panel while the machine is in motion.



#### SPRAY ADJUSTMENT

- Slowly turn clockwise the pressure control knob to reach the pressure value in order to ensure a good atomization of the product.
- An irregular and marked spray on the sides indicates a low working pressure. On the contrary, a too high pressure causes a high fog ("overspray") and waste of product.
- In order to avoid overthickness of paint, let the gun advance sideways when spraying.
- Always paint with regular parallel bands coats (*manual gun*).
- Keep a safety and constant distance between the gun and the support to be painted and also keep yourselves perpendicular to it.



**NEVER** point the spray gun at yourselves or at other people.



The contact with the casting can use serious injuries. In case of injuries caused by the gun casting, seek immediate medical advice specifying the type of the product injected.



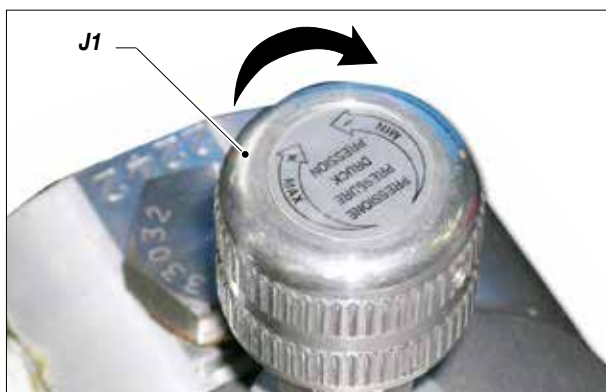
When finished using the equipment, follow the decompression and cleaning procedures indicated in the manual and return the levers to their original positions.



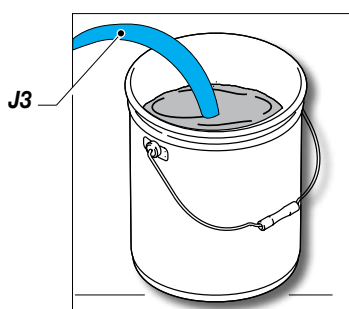
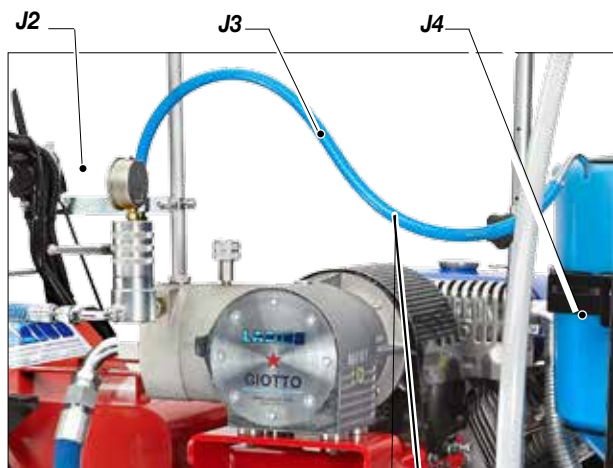
**Recirculating-safety valve:** when working at the maximum pressure available, releasing the gun trigger sudden increases of pressure can occur. In this case, the recirculating-safety valve opens automatically eliminating part of the product from the recirculating tube. Then it closes so as to go back to the first working conditions.

## J CLEANING AT THE END OF WORK

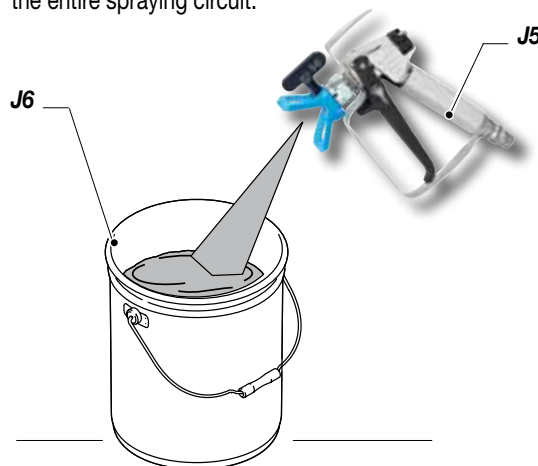
- Reduce pressure to the minimum (turn counterclockwise the pressure control knob (J1)).



- Release the residual pressure by holding down the trigger of the gun and pointing it into a container.
- Eliminate the paint remaining within the tank (J2) by placing the re-circulation tube (J3) into a container.
- Open the recirculating-safety valve (J4).



- Turn the pressure adjustment (J1) handle slightly clockwise to make the machine function at minimum pressure (*pump activated*), until the tank has been completely emptied then shut off the pump by bringing the handle (J1) to its minimum position.
- Fill the tank (J2) with wash fluid.
- Clean the walls of the tank with a brush.
- Turn the pressure adjustment (J1) handle slightly clockwise to make the machine function at minimum pressure (*pump activated*).
- Make sure the re-circulation tube (J3) is inserted into a container and wait for clean wash fluid to come out of it.
- Turn the pressure adjustment handle (J1) to minimum (*pump stopped*).
- Place the re-circulation tube back into the tank.
- Keep the gun's trigger pressed to release any residual pressure.
- Remove the nozzle from the gun and wash it separately.
- Closed the recirculating-safety valve
- Turn the pressure adjustment handle (J1) slightly clockwise to make the machine function at minimum pressure (*pump activated*).
- Point the manual gun (J5) into a container (J6), drain the residual paint and wait for the wash fluid to come out clean the entire spraying circuit.



- Empty all of the wash fluid from the tank and turn off the equipment.
- Turn the pressure adjustment handle (J1) to minimum (*pump stopped*).
- Shut off the motor.
- In case of long storage, we recommend you to suck and to leave light mineral oil inside the pumping group and the flexible hose.



**Follow the washing procedure before using again the equipment.**



## K GENERAL MAINTENANCE



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 varnish circuit with a specific product;
- Check the fuel motor (*see the maintenance table*).

### PERIODICALLY

- Check the pumping gaskets draft (*if the product draws, replace gaskets*);
- Clean the mobile parts from the varnish deposits (*spray guns, etc.*);
- Check the gun cables tightening, the wheel block;
- Check that the tubes and all the fittings are correctly locked.

## L CHARGING THE BATTERY

The **GIOTTO LINER PLUS** is provided with an internal combustion engine, mounted on the trolley that drives the diaphragm pump and the alternator used to charge the battery pack.



Handle the **GIOTTO LINER PLUS** line marking equipment without the internal combustion engine running only for short distances and for short periods.



If the equipment is handled for long distances without the internal combustion engine running, the battery pack drops below the minimum threshold level and the equipment locks up.

Start the internal combustion engine to reset and recharge the battery pack.



If the machine is not used for long periods, it is necessary to start the internal combustion engine at least once a month.

Therefore, leave the engine running for a certain period of time to allow optimal recharging of the battery pack.

If the batteries are worn out, replace them (*see the page on Battery pack spare parts*)

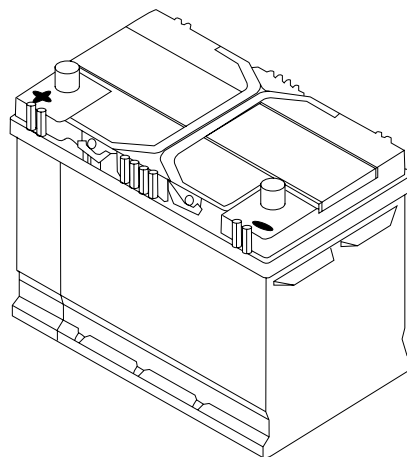


Fig. 1L

## M ROUTINE MAINTENANCE

### CONTROL THE OIL LEVEL IN THE MOTOR



Always check that there is oil in the motor.

Check the motor oil every 100 working hours via the relevant measuring caps positioned on the bottom of the petrol motor. Top up if necessary.



## TOP UP HYDRAULIC OIL

With each start up, check the hydraulic oil level by looking through the gauge (M1) on the side of the hydraulic body; If necessary, use this type of oil to top up the level.

**AGIP DICREA 150 type hydraulic oil**



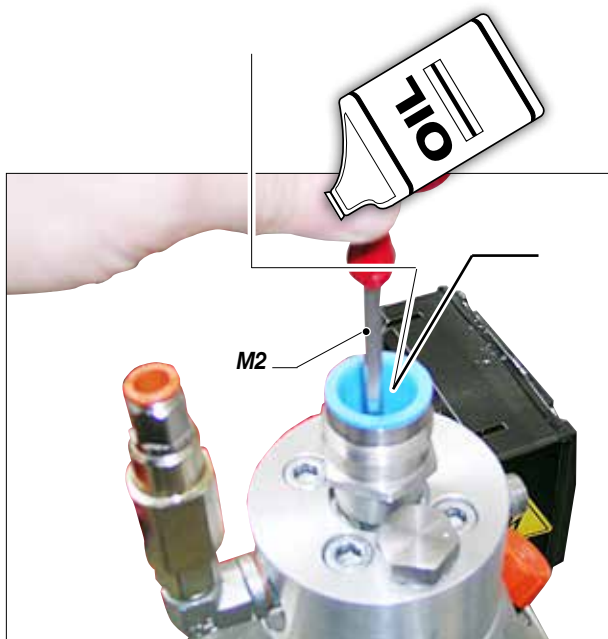
## RELEASE THE SUCTION VALVE

If the pump malfunctions, release the suction valve fitted on the head of the pump in the following way:

- Remove the suction hose fitting or the suction tank and release the valve by inserting a rigid rod (M2) with a diameter of no more than 15 mm.



Add a few drops of oil to make operation easier.



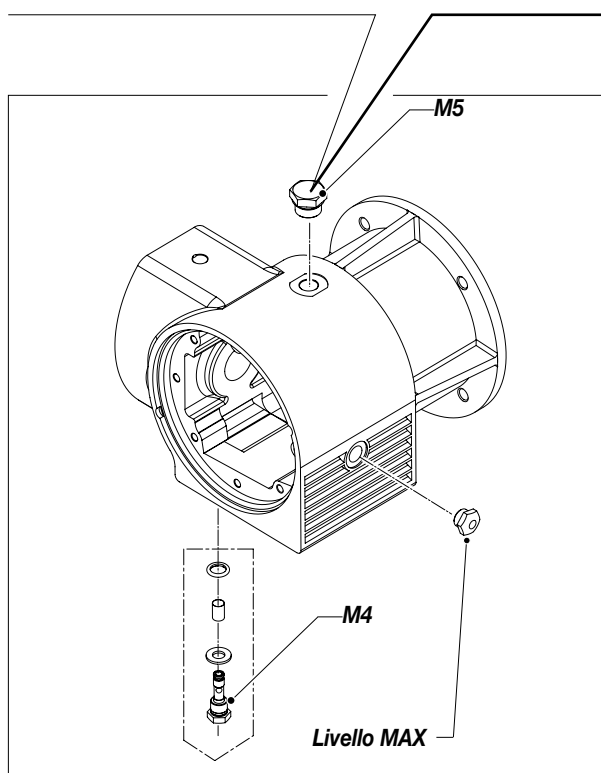
## REPLACING HYDRAULIC OIL

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

- Discharge the waste oil through the plug (M4) fitted at the bottom of the pump casing.
- Clean the seals on the cap and replace it if worn.
- Clean the filter (M4).
- Clean and, if necessary, replace the worn seals (M4).
- Fill the pump with the recommended oil until it reaches the maximum level the plug (M4).

**AGIP DICREA 150 type hydraulic oil  
0.5 LT**

- Then, substitute the oil every 250 hours.



## **N** DESCRIPTION OF THE CONTROLS

### **N1) Directional lever**

Pull on the lever to release the linear drive lock and allow the machine to perform curved line tracts.

### **N2) Indicator light**

When on, indicates that the machine is ready for operation.

### **N3) Spray control lever**

### **N4) Speed regulation handle**

Allows the user to gradually regulate the machine's advancement speed.

### **N5) Indicator**

Indicates the charge in the electrical battery.

### **N6) Alternator**

When the red indicator is on, it indicates a malfunction in the alternator required for charging the batteries.

### **N7) Direction selector**

Allows the user to select the machine's advancement direction; stops the machine's movement if pressed.

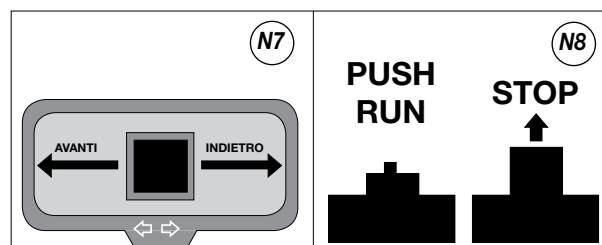
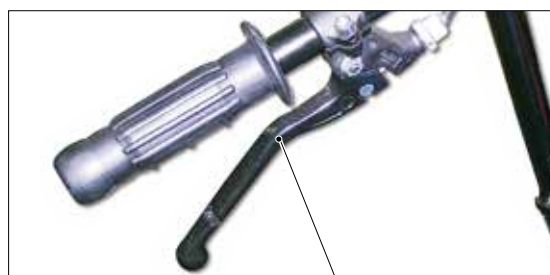
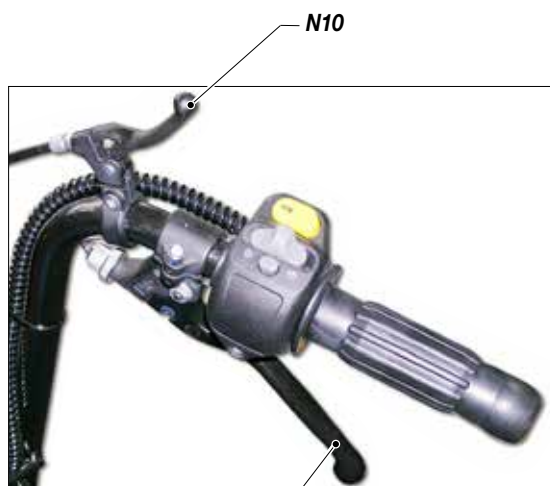
### **N8) Speed**

### **N9) Light switch**

Activates/deactivates the frontal spotlight (if installed).

### **N10) Electric brake release**

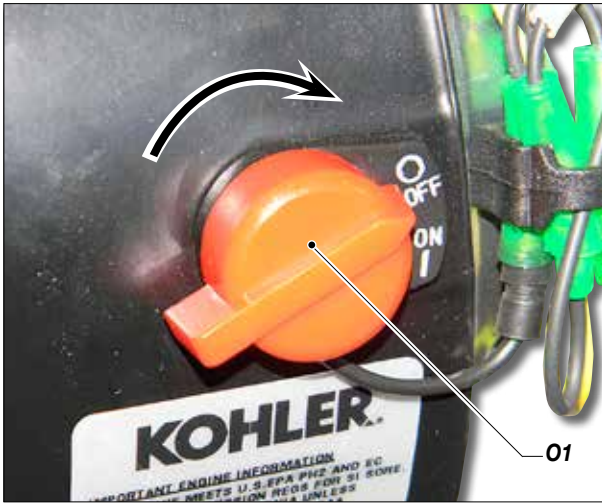
When pressed, allows for the machine to be pushed in the event of electrical malfunction of blockage.



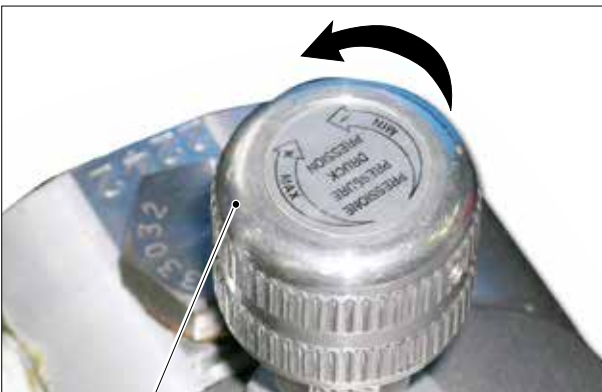


## 0 CORRECT PROCEDURE OF DECOMPRESSION

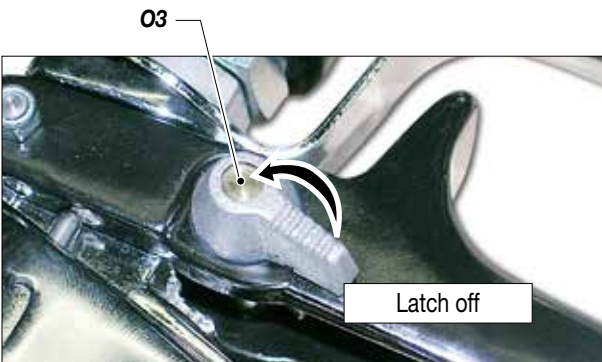
- Press the switch (01) to the **OFF** position (0) to stop the equipment.



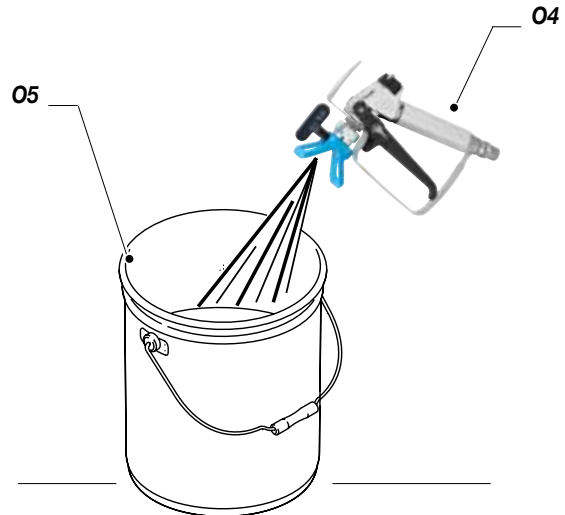
- Minimize pressure level (turning the pressure adjusting knob (02) clockwise).



- Unlock the safety clamp (03).



- Point the gun (04) at the receptacle (05) used to collect the product and press the trigger to release the pressure. When completed, activate the safety catch again.



- Open the recirculating-safety valve (06) to release the remaining pressure.



### WARNING:

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



## **P** PROBLEMS AND SOLUTIONS

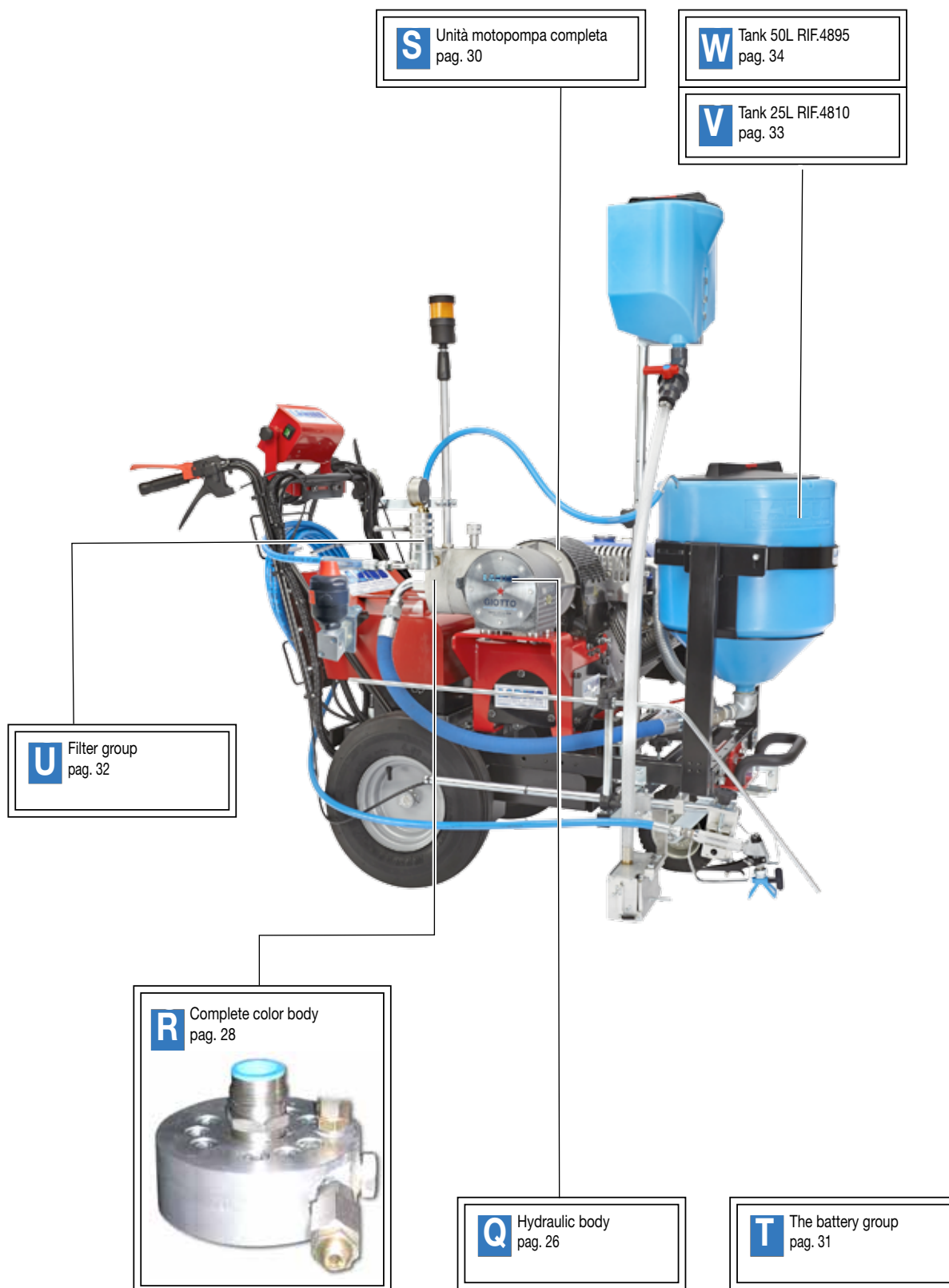
Problem	Cause	Solution
<ul style="list-style-type: none"> <li><b>The equipment does not start</b></li> </ul>	<ul style="list-style-type: none"> <li>The petrol manifold is closed;</li> <li>Engine is out of gas;</li> <li>Cold engine;</li> <li>Setting valve faulty pressure;</li> <li>The product is solidified inside the pump;</li> <li>Spark plug cable is disconnected or damaged;</li> </ul>	<ul style="list-style-type: none"> <li>Open the petrol manifold;</li> <li>Refill gas tank;</li> <li>Use choke;</li> <li>Verify and replace it, if necessary;</li> <li>Open the drain valve to release pressure in the circuit and stop the machine. Disassemble the pumping group and the pressure transmitter and clean;</li> <li>Connect spark plug cable or replace spark plug;</li> </ul>
<ul style="list-style-type: none"> <li><b>The equipment does not suck the product</b></li> </ul>	<ul style="list-style-type: none"> <li>The line of material coming out of the pump is already under pressure;</li> <li>The product is solidified inside the pump;</li> <li>The equipment sucks air;</li> <li>The tank suction filter is clogged;</li> </ul>	<ul style="list-style-type: none"> <li>Open the drain valve to release pressure in the circuit;</li> <li>Open the drain valve to release pressure in the circuit and stop the machine. Disassemble the pumping group and clean;</li> <li>Check the suction pipe;</li> <li>Check and clean;</li> </ul>
<ul style="list-style-type: none"> <li><b>The equipment sucks but does not reach the pressure desired</b></li> </ul>	<ul style="list-style-type: none"> <li>Lack of product;</li> <li>The equipment sucks air;</li> <li>The drain valve is open;</li> <li>Suction or delivery valve dirty;</li> </ul>	<ul style="list-style-type: none"> <li>Add the product;</li> <li>Check the suction pipe;</li> <li>Close the drain valve;</li> <li>Disassemble the colour group;</li> </ul>
<ul style="list-style-type: none"> <li><b>When pressing the trigger, the pressure lowers considerably</b></li> </ul>	<ul style="list-style-type: none"> <li>Nozzle too big or worn;</li> <li>The product is too dense;</li> <li>The filter of the gun-butt is too fine;</li> </ul>	<ul style="list-style-type: none"> <li>Replace it with a smaller one;</li> <li>Dilute the product, if possible;</li> <li>Replace it with a larger-mesh filter;</li> </ul>
<ul style="list-style-type: none"> <li><b>The pressure is normal but the product is not atomized.</b></li> </ul>	<ul style="list-style-type: none"> <li>The nozzle is partially clogged;</li> <li>The product is too dense;</li> <li>The filter of the gun-butt is too fine;</li> </ul>	<ul style="list-style-type: none"> <li>Clean or replace it;</li> <li>Dilute the product, if possible;</li> <li>Replace it with a larger-mesh filter;</li> </ul>
<ul style="list-style-type: none"> <li><b>The atomization is imperfect</b></li> </ul>	<ul style="list-style-type: none"> <li>The nozzle is worn;</li> </ul>	<ul style="list-style-type: none"> <li>Replace it;</li> </ul>



**Always release the air compressed supply and unload the plant pressure before performing any check or replacement of pump parts (see “correct procedure of decompression”).**

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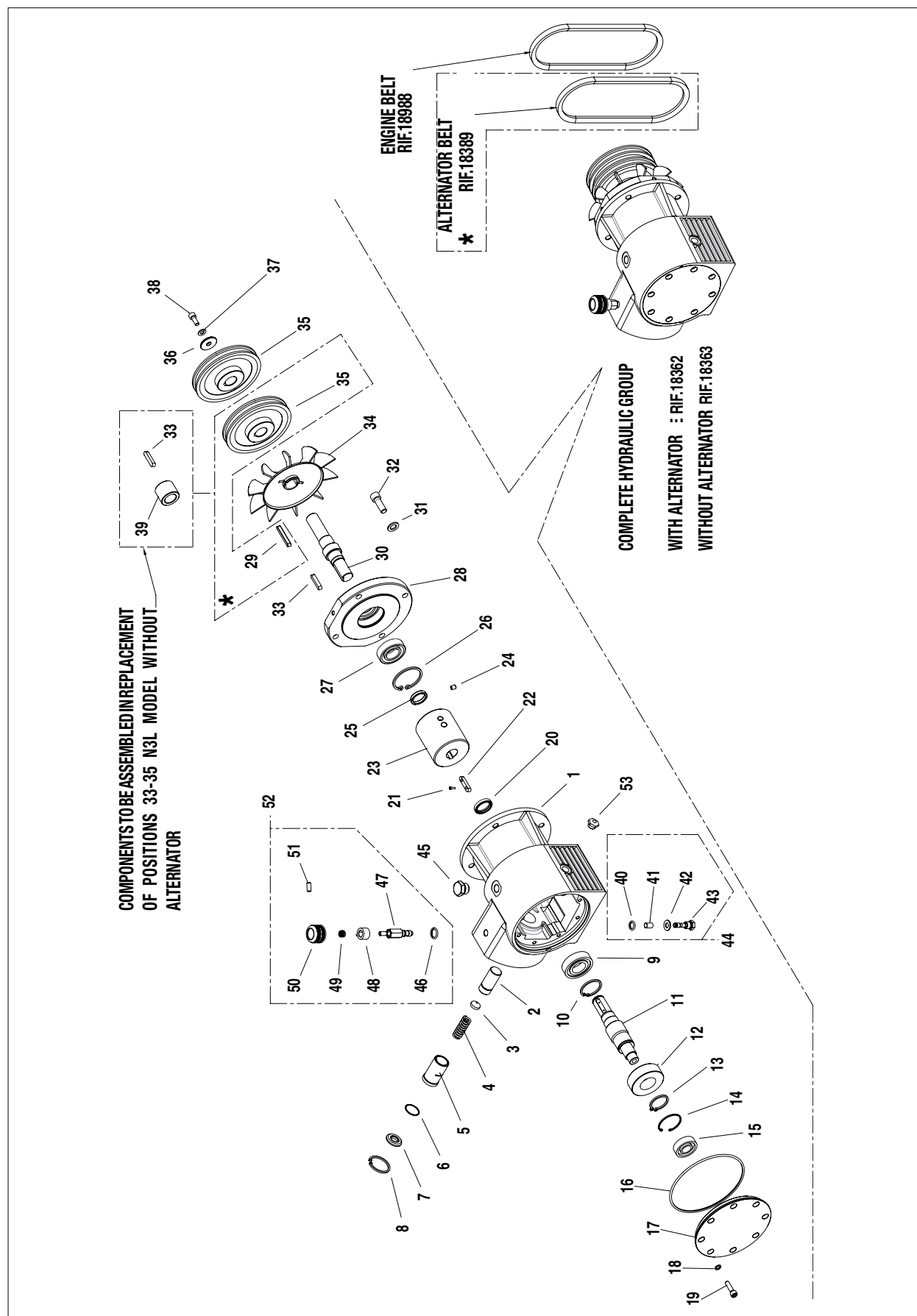
## SPARE PARTS





## Q HYDRAULIC BODY

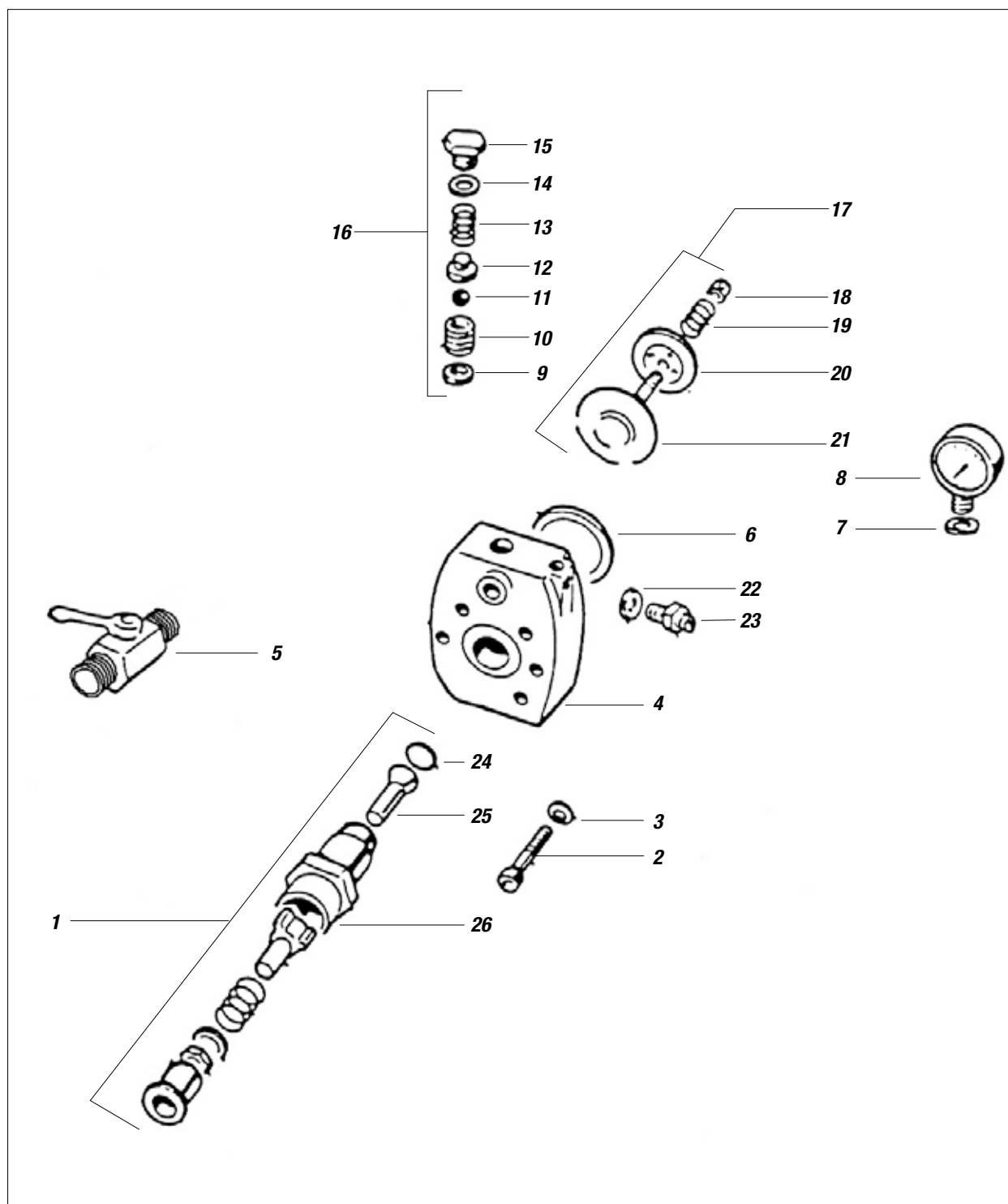
**WARNING:** Always indicate code and quantity for each part required.



Pos.	Code	Description	Pos.	Code	Description
1	12455	Hydraulic body	28	18314	Flange
2	12456	Hydraulic piston	29	31166	Tab
3	82019G	Backstop for spring	30	18328	Shaft
4	82021	Spring	31	95114	Washer ø 12
5	82017	Cylinder liner	32	18171	Screw M 12x25
6	82022	OR 2118	33	81014	Tab
7	82023	Spring seat	34	18342	Impeller
8	82024	Elastic ring	35	18320	Pulley
9	31125	Bearing	36	95153	Washer ø 9x36
10	81020	Elastic ring	37	34009	Washer ø8
11	18197	Shaft	38	96031	Screw M 8x25
12	12457	Bearing	39	18384	Spacer
13	12467	Elastic ring	40	32012	OR 2021
14	12466	Elastic ring	41	258	Filter
15	12465	Bearing	42	32010	Washer 18x14.4x1.5
16	12464	OR 3625	43	12461	Oil filter body
17	12459	Cover	44	12475	Screw oil filter
18	12462	Washer	45	82005	Oil cap
19	81032	Vite m8x35	46	32014	OR 9.8x1.5
20	31128	Corteco	47	32155	Valve body
21	9308	Screw m3x8 uni 5931	48	32016	Safety stop
22	18919	Spline uni 6604-a	49	32017/2	Spring
23	18327	Handwheel	50	32017/1	Handle
24	18142	Dowel M 8x10 tc	51	32017/1C	Dowel M 5x12
25	18321	Spacer	52	32150	Pressure valve
26	18341	Elastic ring	53	95214	Level oil cap
27	42255	Bearing			

## R COMPLETE COLOUR BODY

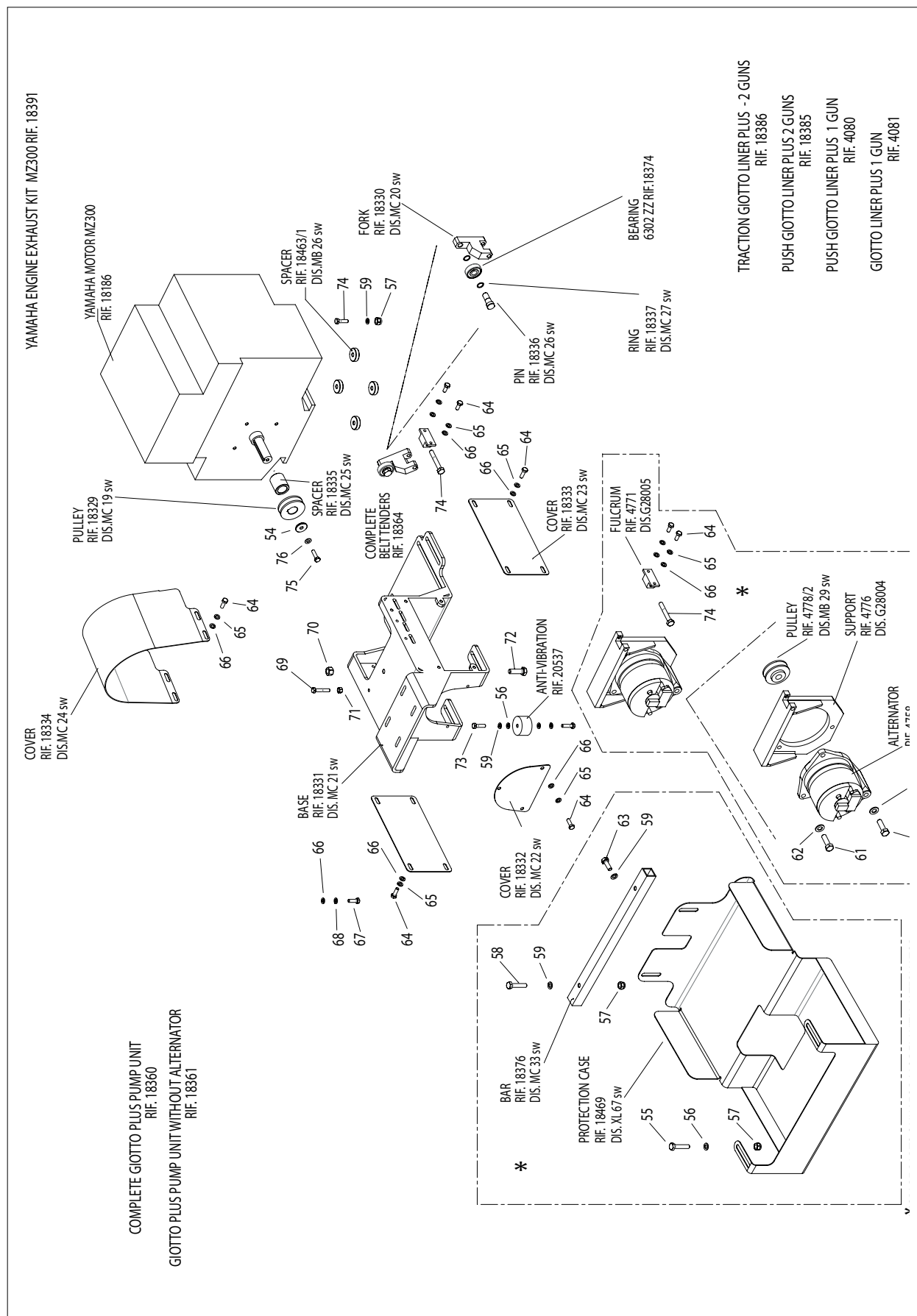
**WARNING:** Always indicate code and quantity for each part required.



	Pos.	Code	Description
83000 Complete colour body	1	33017	Complete suction valve
	2	83004	Screw
	3	33005	Easher
	4	83001	Giotto pump body
	5	33013/2	Ball valve
	6	83003	Diaphragm insert
	7	33009	Copper washer
	8	33008	Manometer
	9	33026	Ball valve seat gasket
	10	33027	Complete ball valve seat
	11	33028	Ball
	12	33029	Spring support ring
	13	53006/1	Exhaust valve spring
	14	33031	Copper washer
	15	33032	Plug
	16	83033	Complete exhaust valve
	17	83002	Complete diaphragm
	18	83002/4	Sealing block
	19	83002/3	Spring
	20	83002/2	Oil distributor
	21	83002/1	Diaphragm
	22	33007	Washer
	23	33006	Feed tube union
	24	33018	PTFE Gasket
	25	33019	Conical shutter
	26	33020	Suction valve body
	27	33021	Shutter guide
	28	33022	Spring
	29	33023	Washer
	30	33024	Self-tightening nut
	31	96099	Cylinder liner

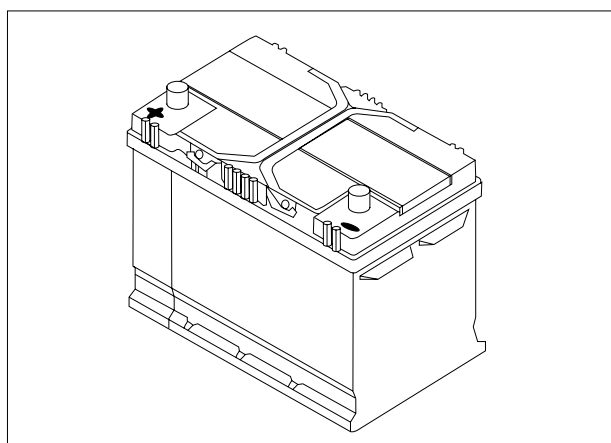
# S COMPLETE MOTOR UNIT

**WARNING:** Always indicate code and quantity for each part required.



Pos.	Code	Description	Pos.	Code	Description
54	95153	Washer ø9x36	66	32024	Washer ø 8
55	69107	Screw M10x80	67	96031	Screw M8x25
56	95096	Washer ø10	68	96030	Washer grower ø 8
57	96080	Nut M10	69	4436	Screw M8x70
58	20560	Screw M10x60	70	96893	Nut M12
59	81033	Washer ø10	71	52017	Nut M8
60	4440	Screw M10x100	72	5755	Screw M12x120
61	95083	Screw M12x40	73	6130	Screw M10x20
62	95066	Washer ø12	74	20560	Screw TE UNI5737 M10x60
63	6130	Screw M10x20	75	18192	Screw TE 3/8-24
64	32004	Screw M8x16	76	3305	Washer schnor ø 10
65	34009	Washer schnor ø 8			

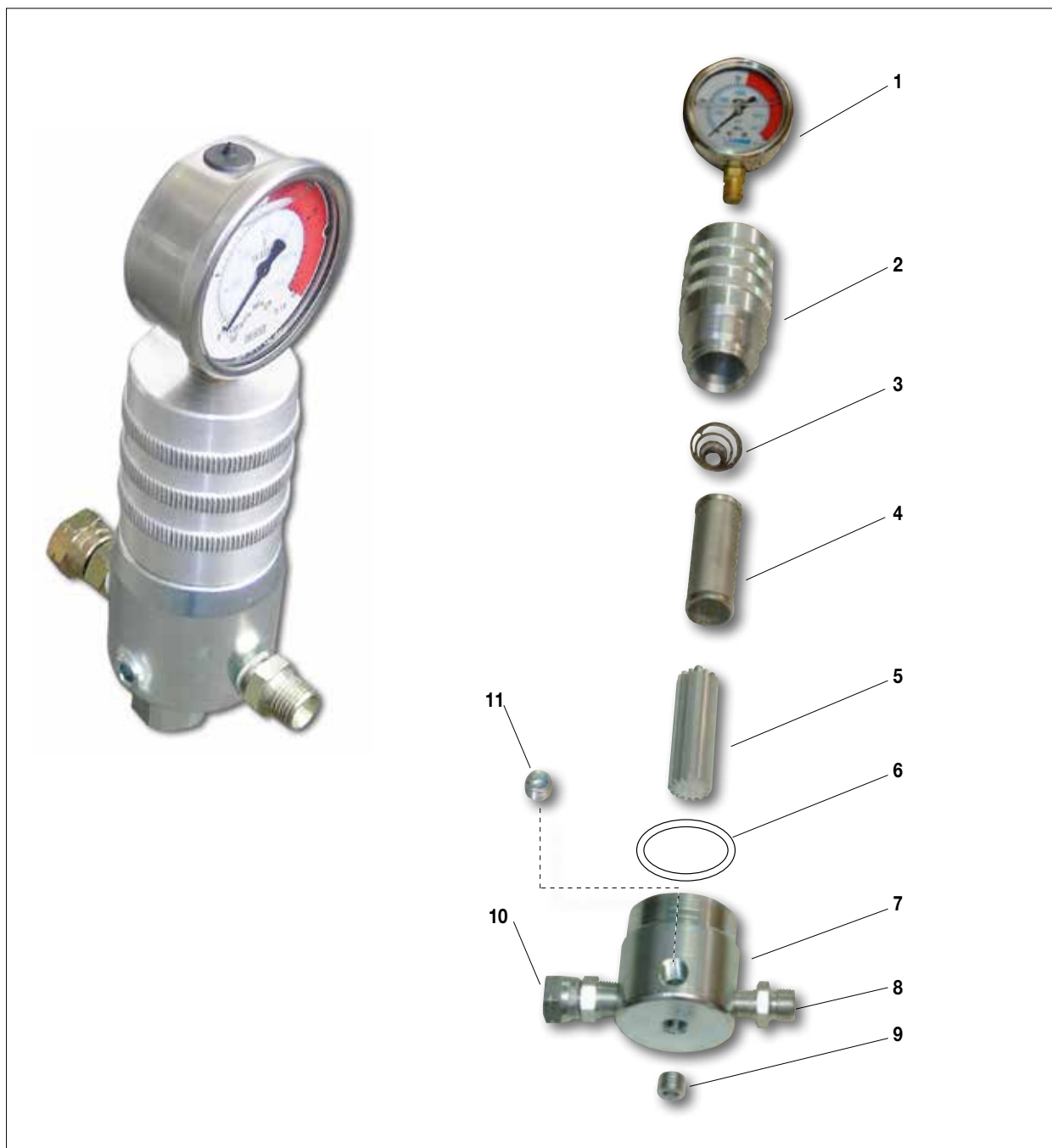
## T THE BATTERY GROUP



Code	Description
4010	Battery

## U FILTER GROUP REF. 16200

**WARNING:** Always indicate code and quantity for each part required.

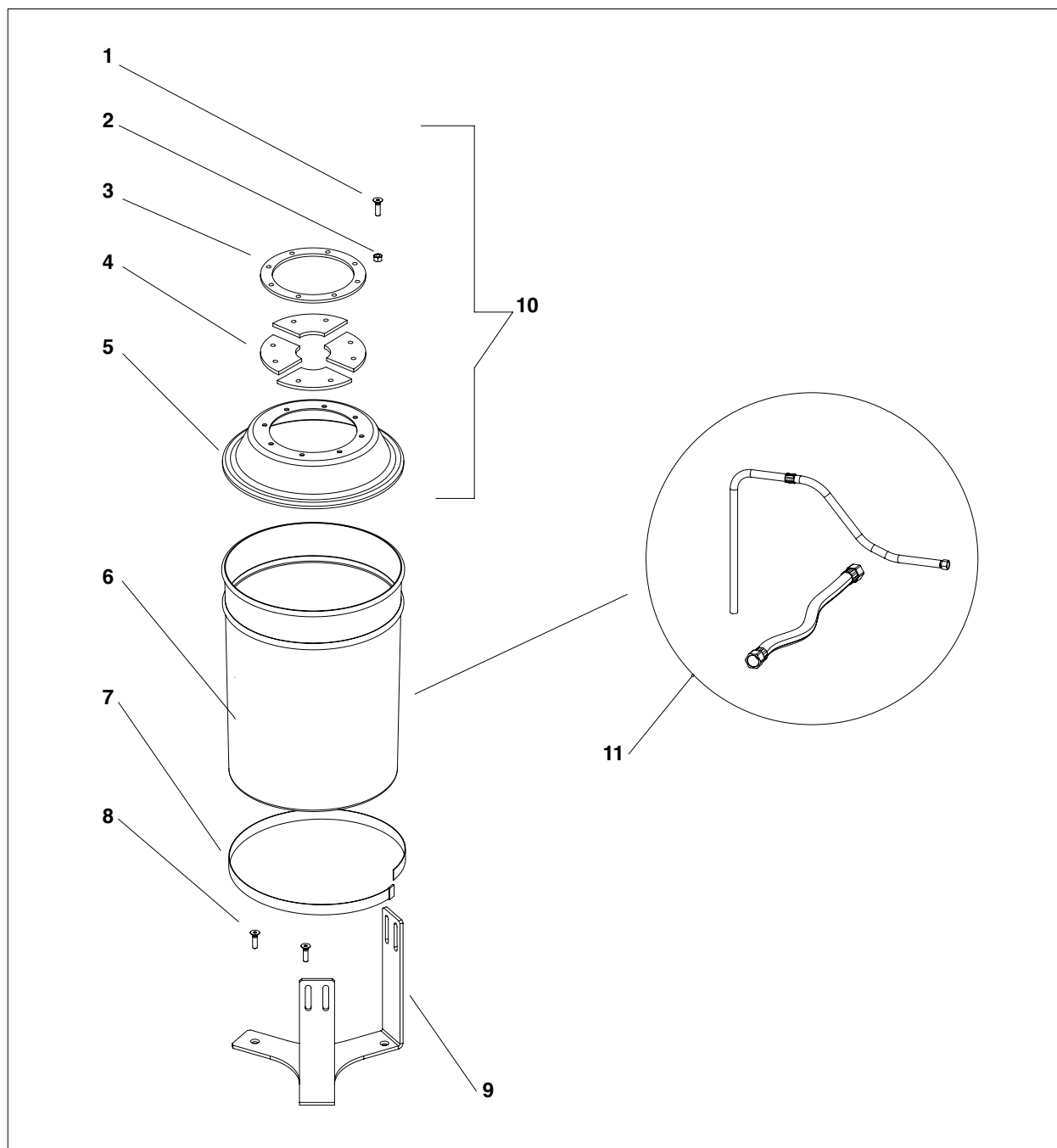


Pos.	Code	Description	Q.ty	Pos.	Code	Description	Q.ty
1	33008	Manometer 0-400 bar	1	6	96203	Gasket	1
2	16201	Filter tank	1	7	96204	Filter Base	1
3	96020	Spring	1	8	96026	Union	1
4	16205	Standard sieve 60	1	9	96205	Dowel	1
	16204	Standard sieve 100	1	10	3279	Articulated joint 3/8" Gas con.	1
	16203	Standard sieve 200	1	11	96205	Dowel	1
5	16202	Sieve support	1				



## V COMPLETE 25L TANK REF. 4810

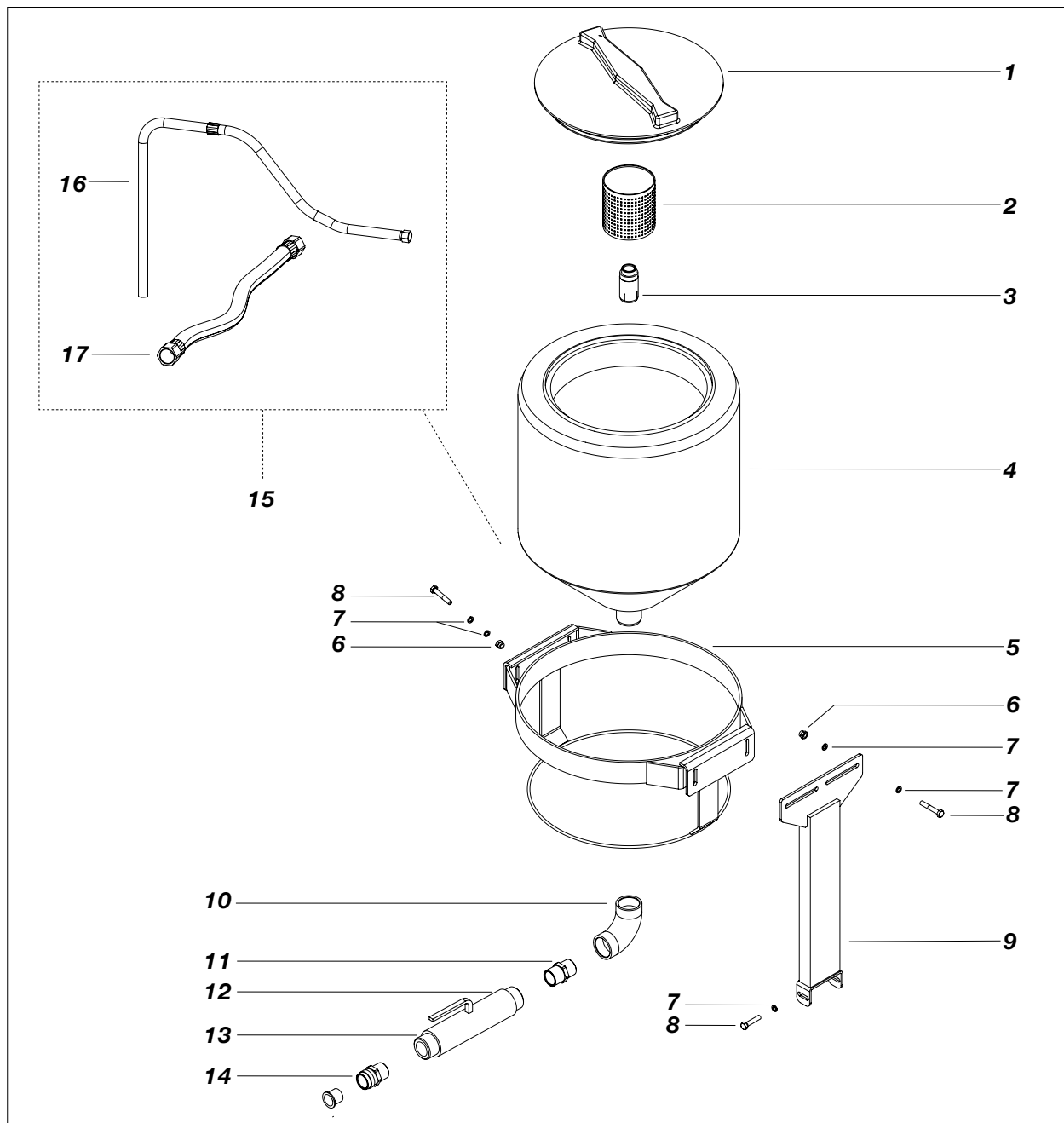
**WARNING:** Always indicate code and quantity for each part required.



Pos.	Code	Description	Pos.	Code	Description
-	4890	Complete 25L tank	7	4274	Belt
1	4314	Screw	8	69014	Screw
2	52017	Nut	9	4250	Base
3	4308	Ring	10	4111	Complete cover
4	4309	Rubber	11	16675	Complete aspiration system
5	4109	Cover			
6	4064	25L tank			

## W COMPLETE 50L TANK REF. 4895

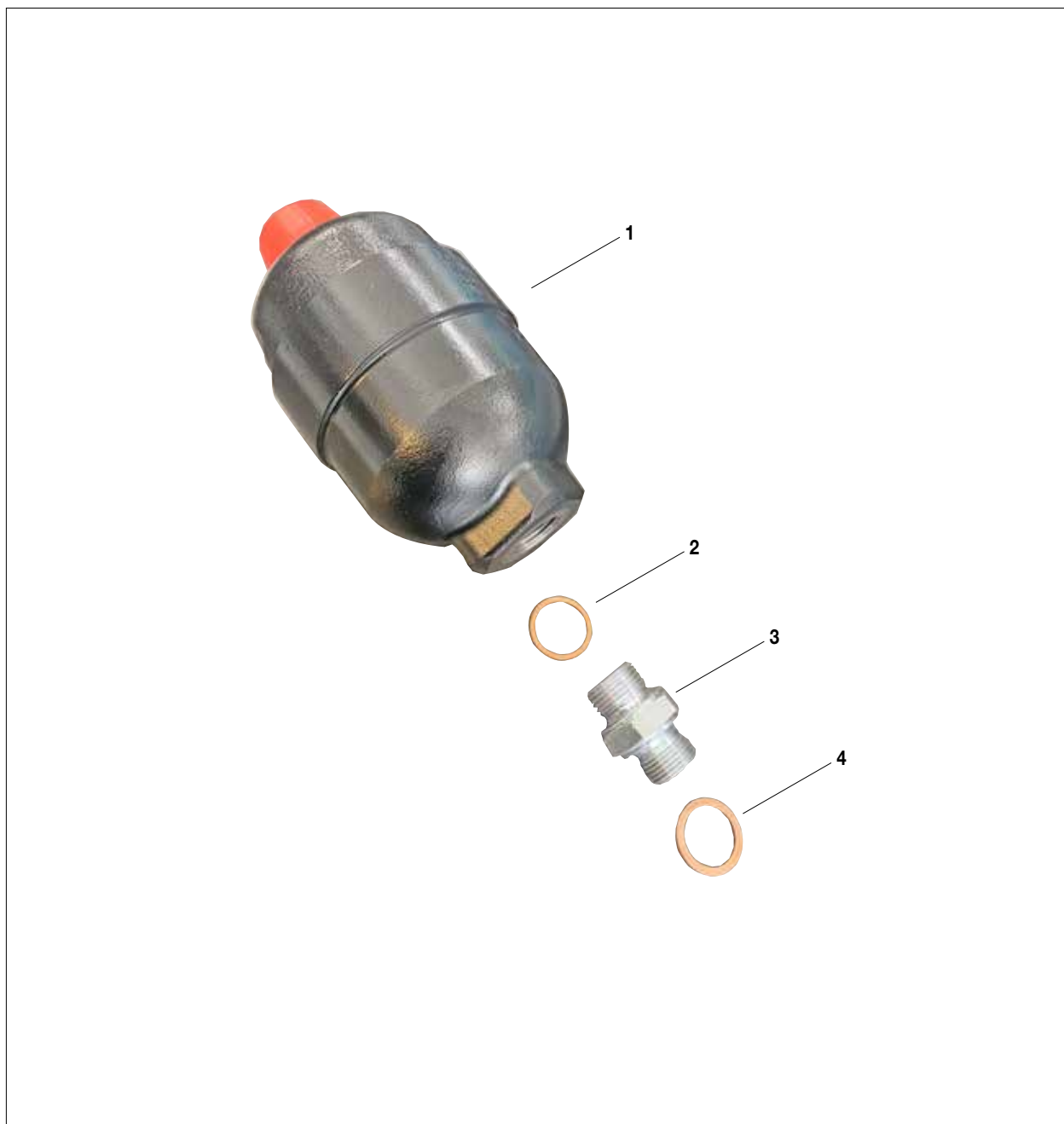
**WARNING:** Always indicate code and quantity for each part required.



Pos.	Code	Description
1	18249/1	Cover
2	85014	Filter
3	18231	Union
4	18249	Tank
5	18246	Union
6	3637	Nut
7	96030	Washer
8	901568	Screw
9	4894	Sostegno

Pos.	Code	Description
10	18215	Elbow
11	8375	Union
12	34107	Adaptor
13	95032	Union
14	96099	Seal
15	4834	Complete suction+recirculation system
16	16609	Recirculation tube
17	18223/1	Suction tube

## X FLOW STABILIZER



Pos.	Code	Description
1	3372	Flow stabilizer
2	37180	Copper washer
3	3283	Fitting
4	3310	Copper washer

**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:

**GIOTTO LINER PLUS**  
**Airless line striper with diaphragm pump**

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 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.

Calolziocorte, 31 August 2020  
Location / Date

Signature



**Pierangelo Castagna**  
Managing Director



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