MADE IN ITALY

ASTRA

IDROPULITRICE AD ALTA PRESSIONE A CALDO
HOT HIGH-PRESSURE WASHER MACHINE

Manuale di istruzioni
Instruction manual

ATTENZIONE: leggere attentamente le istruzioni prima dell'utilizzo
WARNING: read the instructions carefully before use

CE

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v. 1.00

FIG.1

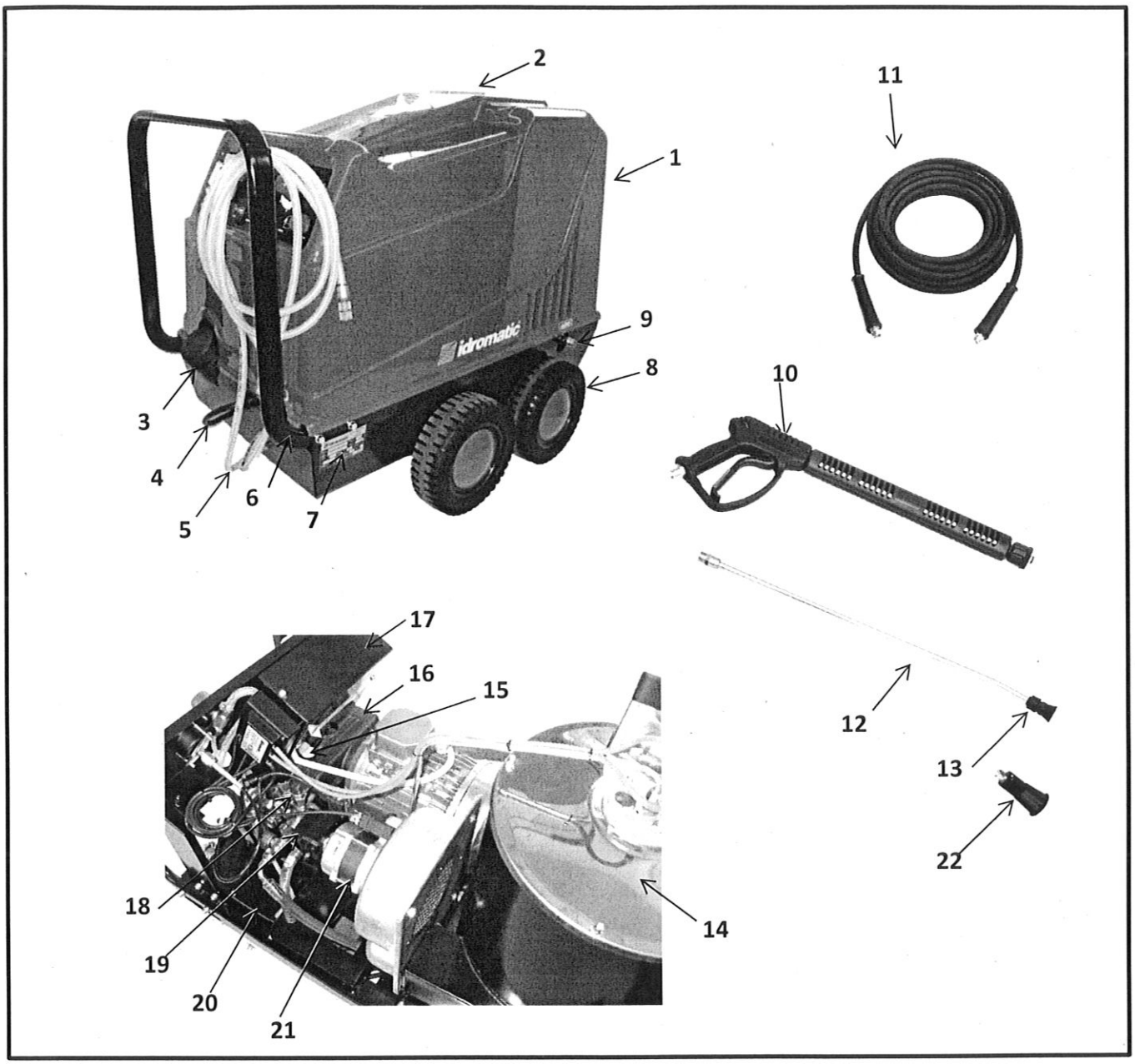
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FIG.2

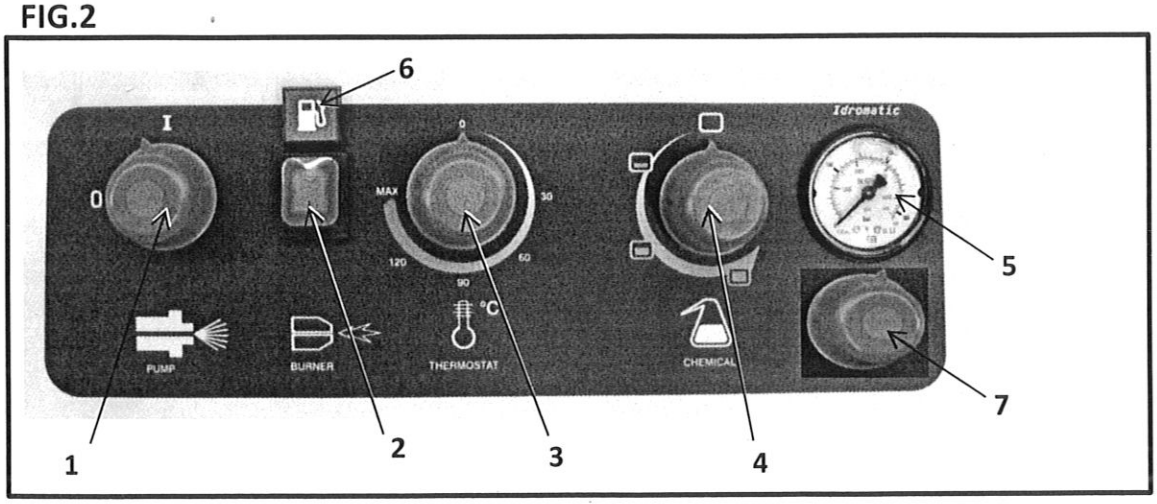
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FIG.3

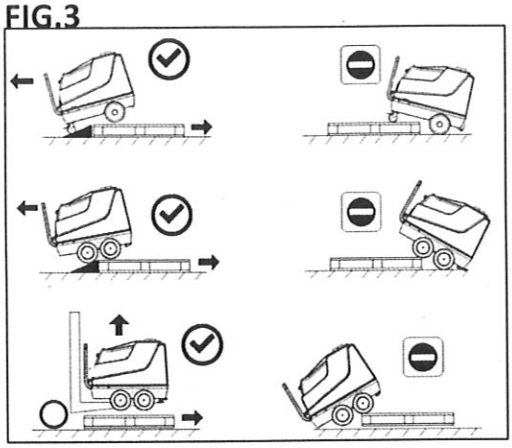


FIG.4

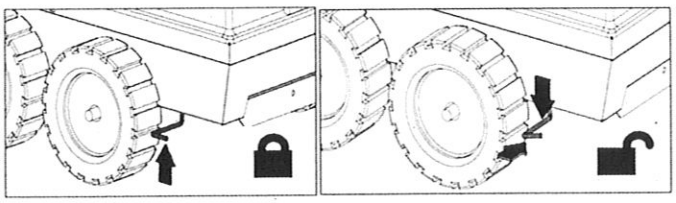


FIG.5

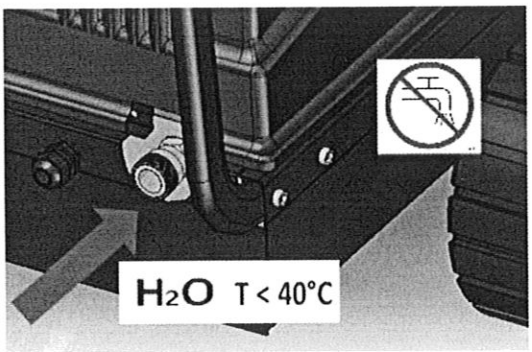
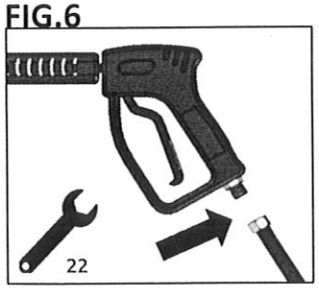


FIG.6



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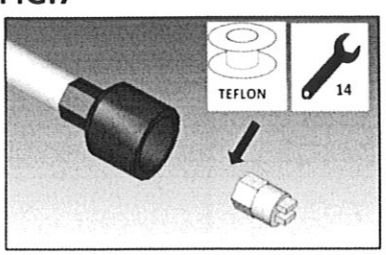


FIG.8

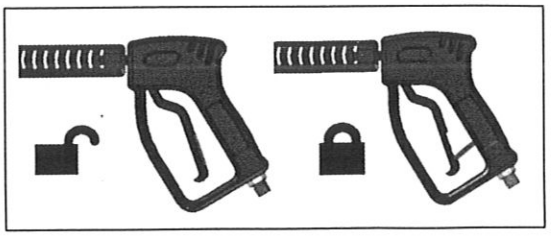


FIG.9

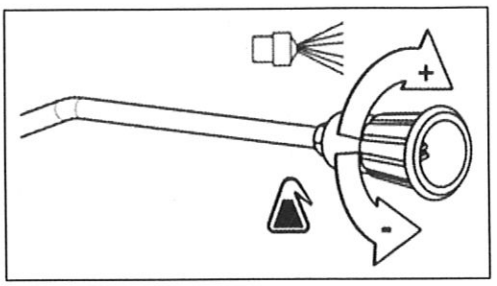


FIG.10

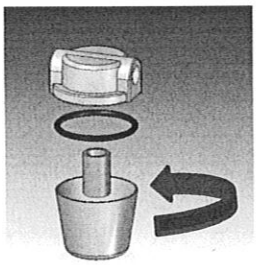


FIG.11

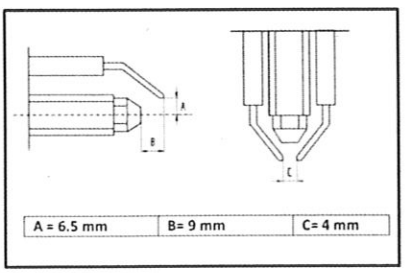
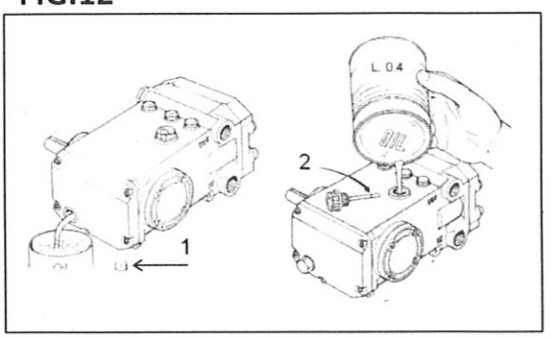


FIG.12



Please read and comply with these original instructions prior to the initial operation of your appliance and store them for later use or subsequent owners.

Check the contents of the pack before unpacking. In case of transport damage or missing components inform vendor immediately

❖ Contents

❖ General description

Main components (Fig.1)

1.Protection cover
2.Boiler chimney
3.Diesel tank inlet
4.Power supply cable
5. Detergent suction hose (low and high pressure)
6. Water supply inlet
7.Serial number and techincal specifications
8.Brake
9.High pressure outlet
10.Spray trigger gun
11.High pressure hose
12. Lance
13.Nozzle
14.Boiler
15.Oil level cap
16.High pressure pump
17.Electrical box
18.By-pass valve
19.Diesel pump and diesel filter
20-Water supply tank with float and filter
21.Buner fan
22. Adjustable head for detergent suction in low pressure (OPTIONAL)

Control panel (Fig.2)

1.Main switch 0-1
2. Burner switch 0-1
3. Thermostat for hot water regulation
4.Detergent regulation knob
5.Manometer
6.Diesel shortage lamp
7.Flow regulation knob for steam (Optional)

❖ Symbols used in the manual and on the machine

Important

WARNING: pay attention for safety

WARNING: Hot surfaces

WARNING: Electrical shock hazard

This appliance is without backflow prevention device. The appliance is not suitable for connection to potable mains water.

High pressure jets can be dangerous if subject to misuse. The jet must not be directed at persons, animal, live electrical equipment or the machine itself.

Use protective goggles

Use protective gloves

WARNING: hot steam jets

Do not inhale gases

Operations that must be done by assistance technicians

❖ Proper use of the appliance

- The device can be used for washing surfaces in outdoor environments, whenever it requires the use of high pressure water with the addition of a suitable detergent to remove dirt.
- The performance and ease of use of the device are suitable for PROFESSIONAL use.
- With the appropriate optional accessories you can operate sandblasting, weeding or other cleaning operations with special brushes to apply to the gun.

Always use the device as described by the following instructions.

Any other use is not considered to be finalized. For any damage resulting from such use, the manufacturer assumes no responsibility. Proper use also includes the maintenance of the conditions of operation described by the manufacturer such as maintenance and repair.

❖ Safety instructions

General warnings

- Appliance to be used outdoors only.
- The warning labels on the appliance provide important informations for safe use.
- Always follow the safety instructions given in this manual and also the existing rules on safety at work and accident prevention.
- At the end of each work, always disconnect both electrical and water connection.
- Keep packaging films out of the reach of children. Risk of suffocation.
- Do not use the machine if the electric cable or important parts are damaged: eg. safety devices, high pressure hose, gun etc.
- This unit is designed to be used with the detergent provided or prescribed by the manufacturer, shampoo detergent based with biodegradable anionic surfactants. The use of other detergents or chemicals may compromise the safety of the device.
- Do not use the device in close proximity to people, except in cases they wear protective clothing.
- Do not accept the presence of people or animals within a radius of 5 meters.
- Always work with suitable clothing to protect against the possible rebound of material removed by the jet of hot high pressure washer.
- Do not touch the plug of the appliance with wet hands and bare foot
- Do not touch the appliance with wet hands and bare foot
- Wear protective goggles and shoes with rubber soles.
- The jet lance shall not be directed towards mechanical parts containing grease: otherwise it will be dissolved and dispersed on the ground.
- Tires and air valves should be washed maintaining a minimum distance of 30 cm. Otherwise these might be damaged by the water jet in high pressure / temperature. The first sign of such deterioration is given by the discoloration of the tire. Pneumatic valves and air are dangerous for life.
- WARNING: high pressure jets can be dangerous if used improperly. Jets must not be directed towards people, animals, to the electrical live equipment or at the appliance itself.
- The hoses, accessories, fittings in pressure are important for the safety of the device. Only use hoses, fittings and couplings recommended by the manufacturer (it is extremely important to preserve the integrity of these components avoiding misuse and preventing them from folds, bumps, abrasions).
- Appliances without TOTAL STOP system must not be running more than 2 minutes with the triger gun released. The water in by-pass mode can produce overheating and damages to the pump.
- Turn off the appliance completely (switch OFF) whenever it is left unattended.
- Each machine is tested in its conditions of use, it is normal the presence of a few drops of water in it.
- Be careful not to damage the power cord. If the cord is damaged it must be replaced by the manufacturer or service, or by qualified personnel in order to avoid dangerous situations.
- Machine with pressurized fluid. Hold the trigger gun firmly.
- Only use nozzle and accessories supplied with the machine.
- This device is not intended for use by persons (including children) with reduced physical or mental capabilities or lack of experience and knowledge, unless they have had instructions or supervision of the appliance by a person responsible for their safety.
- Children should be supervised to ensure they do not play with the appliance.
- Do not spray flammable liquids. Risk of explosion.
- Do not operate the unit until you have rolled out the high-pressure hose.
- Wrap and carry the pressure hose taking care not to cause the overturning of the unit.
- During winding and unwinding operations of the pressure hose the machine must be turned off and the pressure hose without pressure.
- To ensure the safety of the machine, use only original spare parts from the manufacturer or approved by the manufacturer.
- Do not direct the jet towards yourself or towards other people to clean clothes or shoes.
- Do not allow the appliance to be used by children or untrained personnel.
- The water that has passed through anti-reflux devices is not considered potable.
- Disconnect the unit from the mains, unplugging it from the electrical outlet before performing any maintenance and cleaning.
- Extensions inadequate can be dangerous.
- If you use an extension cord, the plug and the socket must be waterproof.
- It is absolutely forbidden to use the machine in a potentially explosive or hazardous areas.
- Do not pull the power cord or the appliance itself to unplug it from the outlet.
- If during operation the power supply fails, for safety reasons, turn off the machine (OFF).
- If the technical data indicates a sound pressure exceeding 80 dB (A) wear protective goggles.
- If the item technical data has shown a hand-arm vibration value greater than or equal to 2.5 mm2 make some stops during use.

Electrical connection

- The electrical connection of the appliance must be done by an electrician and conform to IEC 60346-1.
- Before connecting the appliance make sure that the data on the label correspond to those of the mains and that the socket is protected by a differential circuit breaker (RCCB), with intervention sensitivity 0.03 A - 30ms.
- In cases of incompatibility between the socket and the appliance plug, have the socket replaced with a suitable type by a qualified professional.
- Do not use the device in case of temperature below 0 ° C, if it is equipped with cable PVC (H VV-F).
- WARNING: Extension not adequate may be dangerous or create situations of overload of the unit.
- The transitional insertion of the appliance may cause a temporary decrease in voltage.
- To prevent damage to other equipment the line impedance must be less than 0.15 Ohm.
- Ensure that the cable for connection to the network or the extension cable is not damaged passing over, crushing them, casting or the like. Protect the cable from heat and from contact with oil or sharp edges.
- We recommend using a cable roll, which ensure that they are taken at least 60mm above the floor.
- If you use an extension cord, the plug and the socket must be waterproof and the cable must have the dimensions shown in the table below.

LENGHT	SECTION	
	< 16 A	< 25 A
Max. 20 m	1,5 mm2	2,5 mm2
Da 20m a 50 m	2,5 mm2	4,0 mm2

Water connection

The appliance can be connected directly to the mains drinking water supply only if in the supply line is installed a back-flow prevention device complying with current regulations.

The water that has passed through the back-flow preventer device is considered non-potable.

❖ Safety devices

Main safety devices:

- **Safety lock on trigger gun**. It doesen't lock during operation under pressure but to prevent accidental opening. Whenever you stop using the machine it is important to activate the safety lock to prevent unwanted access or accidental.

- **Safety valve positioned on boiler input.** It protects the circuit from over-pressures that can damage internal components of the machine. It recommends replacing it (or restore) every 2 years from the date of commissioning by qualified personnel.

- The **motor thermal protection** intervenes upon the occurrence of an electrical or mechanical overload. In case of intervention of the device, wait a few minutes or alternatively disconnect and reconnect the device to the network electricity. In case of recurrence of the problem, contact an Authorized Service Center-

- **Flame faiulure detection system by photocell** (OPTIONAL). It prevents the accidental admission of diesel inside the boiler during the heating operation by stopping the machine.

- **Stop for lack of water**. Protects from the occurrence of the absence of pressure as a result after 3 attempts to start the unit. It also protects the boiler from operating without water pressure.

- **Electronic system of protection from micro-leakage**. It spoke to the occurrence of losses along the circuit in pressure downstream by-pass valve.

- **Flow Switch** (OPTIONAL) The device allows the safe operation of the boiler interrupting operation in case of lack of water.

❖ Use

Transport and handling

⚠ For transport in vehicles, always ensure the machine so that it can not slip and fall over. Risk of injury and damage. Observe the weight of the unit during transport.

Installation

➢ Remove the carton box from the pallet and bring down the machine following Fig.3. Before starting the machine, check that there are no defects and that the standard equipment is complete.

➢ Place the machine on a stable and horizontal surface and activate the brake. (Fig.4)

⚠ In case you need to use extension tube to evacuate exhaust fumes place the specific adapter to the chimney (optional equipment).

Working with mains supply water (Fig.5)

☞ Use only clean or filtered water. The tap of the water intake and the supply mains must ensure a flow equal to double the maximum flow of the pump. (see SPECIFICATIONS). Minimum flow: 30 l / min.

Maximum temperature of the inlet water 40 ° C.
Maximum pressure of the incoming water: 1 MPa (10 bar).

➢ Connect the pressure washer the as close as possible to the water supply system.

☞ We recommend the use of a water supply hose reinforced with the inner diameter of at least 1/2 " (13mm)

☞ With poor water quality (presence of sand) we recommend the additional installation of a fine filter. (Optional).

➢ Connect a supply hose (not supplied in standard equipment) to the inlet for the water unit and to the water supply.

➢ Open the tap.

Working with open air water tank

☞ This type of connection is only possible in versions without the filling water with float.

Proceed as follows:

➢ Screw the suction hose with filter (not included) to the water connection of the unit.

➢ Put the hose with filter in the water tank suction.
➢ Start the machine without the high-pressure hose and run it until the water comes out free of bubbles from the high pressure outlet.
➢ Turn the machine off and reconnect the hose high pressure.

Supply diesel

➢ Fill the tank with at least 5 liters of fuel specified on the rating plate. (DIESEL).

⚠ The use of not appropriate fuels may cause danger or serious damage to the circulation diesel pump.

Supply detergent (Optional tank)

⚠ Use only cleaning fluids. Avoid acid or very alkaline.

☞ Be sure to read the specifications of the detergent to be used, in particular the right dilution before filling the tank

➢ Fill the detergent tank with the recommended products suitable for the type of cleaning to be carried out.

➢ Enter the detergent suction hose with filter provided in the tank with the cleaning solution.

Supply descaling liquid (Optional)

The automatic descaling (Optional) is present only if the device is equipped with filling water tank using float. If the unit is equipped with automatic dosing descaling (Optional) proceed with filling the tank as follows:

➢ With the machine off (OFF) open top cap
➢ Fill the tank with 1 liter product specific descaling.

⚠ Only use descaler recommended by the manufacturer.

The dosing pump of the decalcifier will be activated automatically during operation in

Starting the appliance

➢ Check that the main switch is in the OFF position (0)
➢ Connect the water supply hose to the quick coupling water inlet of the unit.
➢ Connect the high pressure hose to the outlet of the pump (OUTLET). The connection of high-pressure hose is pushed to the end and then screwed by hand without the aid of tools.

- Connect the high pressure hose to the gun using tool. (Fig.6)
- Open the water supply tap completely
- Insert the lance to the spray - gun
- Insert the nozzle to the outlet of the lance by applying Teflon and tightening with tool. (Fig.7).
- Put the plug in the socket.

For the first start or after a long period of inactivity it is necessary to connect for a few minutes only the suction pipe and the water and keep disconnected high pressure hose and gun to let out from the discharge any impurities deposited inside the circuit. In this way you avoid clog the nozzle of the gun.

Use

Whenever you use the 'high-pressure cleaner is recommended to hold the gun in the right position, with one hand on the handle and the other on the lance.

- To start the machine turn the main switch to on (I) and pull the trigger of the gun.
- During stops and abandonment of the spray gun trigger safety lever (Fig.8)

Washing with hot water

- Turn the switch for hot water to position 1.

The burner starts and the pump will start to circulate the diesel.

- Set the water temperature by turning the knob of temperature regulation.

The boiler will start heating with the flame only during the phases of out coming of the pressurized fluid from the nozzle and stops when pump is in by-pass.

TOTAL STOP SYSTEM (Standard) When the trigger gun in relased the automatic pistol stops the pressure to the nozzle and starts the water pump by-pass. Automatically the heating stop burner is shut down after programmable timing (Standard 20sec); the reopening of the trigger gun makes the water pump to restart pressure and the burner restarts automatically.

Setting the working pressure

- Adjust the pressure by turning the knob of the valve by-pass clockwise to increase pressure or counterclockwise to decrease.

Use with thermostat set at over 100 ° C by adjusting the steam valve. (Optional)

When working with a set temperature of over 100 ° C is necessary to do the following.

- Set up a working pressure not exceeding 32 bar.
- Adjust the flow outgoing turning the steam knob on the control panel.

Warning: hot steam jets

During operation with steam the lance and the fittings reach high temperature. Use of protective gloves.

Washing with detergents in High Pressure (Standard)

Washing with detergents in high pressure with the pump suction is possible if the appliance is equipped with filling water tank with float.

- Put into the detergent tank (Optional) the pipe with suction filter.
- Rotate the detergent knob on the control panel to start suction.

Washing with detergents in Low Pressure (Optional)

The suction of the detergent at low pressure takes place by means of an ejector (kim-jet) positioned downstream of the unloader valve and through the adjustable head(Optional) positioned nearby the pressure nozzle outlet.

The adjustable head allows you to select the jet at low and high pressure. Turn the the adjustable head (Fig.9)

- Reduce pressure to the nozzle by turning the knob counterclockwise to use detergent.
- The detergent suction is automatic.

❖ Care and Maintenance

Proper maintenance and periodic checks maintain the equipment in state of efficiency and the safety preventing the risk of problems.

Risk of injury from accidental operation of the appliance and electrical shock. Turn off the machine and pull the power plug before working on the device.

Before any maintenance intervention do the following:

- Set the appliance switch to "0 / OFF".
- Close the water supply.
- Switch unit for several seconds, and actuate the spray gun until complete depressurization of the unit.
- Remove the water connection e and the power plug from the socket.
- Lock the spray gun with the safety.
- Let the appliance to cool down.

Maintenance plan

Every week (50 h)

- Cleaning of the water filter
- Cleaning of the diesel filter
- Pump oil check

After first 100 h e then after 500h

- Replace water pump oil

Every 180-200 h

- Cleaning the boiler and control of combustion head.

Every 2 years

- Replace the safety valve.

Maintenance operations

- **Cleaning the water filter.** In standard versions with tank water filter is located inside the tank and connected to suction hose. To remove the filter and clean use compressed air. If too deteriorated replace it.
- **Cleaning the diesel filter. (Fig.10)** Remove the glass and remove the fuel filter. Clean with compressed air. If too deteriorated replace it. Pay attention to OR.
- **Check and replace oil pump** (Figure 12). Check the transparent dome on the pump to see level. Unscrew the cap with dipstick and check that the oil level is between the MIN. and MAX. If the oil is milky (presence of water) call for service. To replace oil use SAE 15W-40. Dispose of used oil in an authorized areas.
- **Cleaning the boiler coil.** The descaling treatment must be done periodically with specific products. The frequency depends on the hardness of the water. In a drum of water of at least 30 liters pour the product in proportions of one liter every 15 liters of water. Disconnect the gun from the high-pressure hose, put the free end of the tube in the tank, so as to form a closed circuit and to draw out the product from high-pressure cleaner, then wait for at least 10 minutes. It's advisable that the end of the discharge pipe discharges into a canvas bag or strainer to avoid putting in the circuit the limestone removed. Then restore the normal connection and rinse with cold water. It is advisable to perform the cleaning of the coil by **Authorized Service** because the descaling product may cause wear. Dispose the descaling liquid in accordance with local regulations.
- **Frost protection.** Do not leave the appliance exposed to temperatures below 0 ° C. During periods of rest should protect the local machine safe from frost or use antifreeze commercial. Observe the regulations of the antifreeze manufacturer .This also ensures some protection against corrosion.
- **Setting the spark electrodes (Fig.11)** Remove head before unscrewing the boiler combustion diesel fuel hose and disconnecting the connectors of the ignition. Make sure that the electrodes are clean and respect the distances specified in Figure 11.
- **Setting diesel pressure** The pressure adjustment is made by turning the adjustment dowel with allen wrench clockwise increasing and decreasing counterclockwise.

For all maintenance of the boiler, high pressure pump and the machine it is necessary to contact a professionally qualified or one of our Authorized Service Center.

For any problems not mentioned in this manual or breakage of the machine, please contact an Authorized Service Center for its repair or for the replacement of original spare parts.

Spare parts

Use original spare parts to not compromise efficiency and safety.

❖ Warranty

- All our machines are subjected to strict tests and are covered against manufacturing defects in accordance with applicable regulations (minimum 12 months). The warranty is effective from the date of purchase. If your machine or accessories are handed in for repair, a copy of the receipt must be enclosed.

- **Guarantee repairs are being made on the following conditions:**
  - That defects are attributable to flaws or defects in materials or workmanship.
  - That the directions of this instruction manual have been thoroughly observed.
  - That repair has not been carried out or attempted by other than authorized service staff.
  - That only original accessories have been applied.
  - That the product has not been exposed to abuse such as knocks, bumps or frost.
  - That only water without any impurities has been used.

- **The following are not included in the warranty:**
  - Parts subject to normal wear.
  - The high-pressure tube and optional accessories.
  - Accidental damage, caused by transport, neglect or inadequate treatment, incorrect or improper use and installation failing to comply with the indications in the instruction manual.
  - The warranty shall not cover any cleaning operations to which the operative components may be subjected. Repairs under this guarantee include replacement of defective parts, exclusive of packing and postage/carriage.
  - The warranty shall not cover replacement of the machine or extension of the guarantee resulting from a breakdown.
  - The manufacturer declines all responsibility for damage to persons or property caused by bad installation or incorrect use of the machine.
  - The manufacturer is not responsible for any economic losses as a result of the forced immobilization of the device.

WARNING! Failures, such as clogged nozzles, valves and mechanism blocked due to limestones, damaged pressure cleaner accessories (like kinked high pressure hose) and/or appliances normally working without any defects ARE NOT COVERED BY THE WARRANTY.

❖ Disposal and environmental protection

The packaging material can be recycled. Please do not throw the packaging material into household waste; please send it for recycling.

Do not release packing materials into the environment.

Old appliances contain valuable materials that can be recycled; these should be sent for recycling. Batteries, oil, and similar substances must not enter the environment. Please dispose of your old appliances using appropriate collection systems.

Please do not release engine oil, fuel oil, diesel and petrol into the environment. Protect the ground and dispose of used oil in an environmentally-clean manner.

❖ Troubleshooting

☞ In any situation of problem with the machine understand the reason by consulting the following table. Solve the problem before resuming normal operation. All operations must be performed with the machine off , without pressure and disconnected from the power cable plug.

☞ In any situation of block of the machine due to micro lackages, lack of water, the thermal motor protection intervention and flame failure (photocell) to restart is necessary to return the switch to 0 and wait at least a few seconds to the next power.

Operations that must be done by assistance technicians

Problem	Cause	Repair
Turning the main switch ON the machine does not start	1)Plug not properly connected 2)Main supply fuses blown 3)Transformer fuse blown	1)Check power supply plug 2)Check fuse/replace 3)Check/replace
Electric motor hums but not start	1) Lack of a phase (vers. Three Phase) 2) Low supply voltage 3) Pump blocked	1)Check power supply fuses 2)Check powe rsupply voltage 3)Check pump
The motor stops suddenly or after a while	1)Low supply voltage 2)Motor Thermal protection	1)Check power supply 2)Overload/overheating
When the trigger gun is open the pressure goes up and down	1)Pressure nozzle dirt or worn 2)Coil or trigger gun dirt with limescale	1)Clean nozzle 2)Clean the coil from limescale
When the trigger gun is close (by-pass pump) the pressure goes quickly up and down	1)Micro-leaks in pressurized circuit 2)Unloader valve doesn't work properly 3)Unloader valve dirt or worn	1)Check pressure hose connections. If problem persists call Assistance. 2) 3) Check/clean unloader valve
Vibration at the trigger gun and irregular flow	1)Pump valves dirty or worn 2)Unloader valve is dirt	1) 2) Check/replace
Pump runs properly but doesn't reach nominal value	1)Low power supply voltage 2)Air suction 3)Pump valve worn 4)Unloader valve worn or dirt 5)Pressure nozzle not correct or worn 6)Leaking from pressure seals	1)Check power supply voltage 2)Check suction hoses of the pump/tighteness and check water filter 3) 4) Check/clean 5) Check/clean 5) Call Assistance
Lack of pressure	1)Dirt/worn pressure nozzle 2)Inlet/outlet pump valves dirt or worn 3)Unloader valve dirt or worn 4)Air suction 5)Water filter dirt	1)Check/clean or replace 2) 3) Check/ clean or replace 4)Check water pump suction connection 5)Clean water filter
Pump is too noisy	1)Air suction 2)Pump valves springs worn 3)Roll bearings worn (pump or motor) 4)Unloader /pressure fittings dirt or worn 5)Water temperature too hot	1) Check water pump suction connection 2) 3)replace valves/ roll bearings 4)Clean unloader valve and fittins (ejectorsi etc.) 5)Verify water temperature

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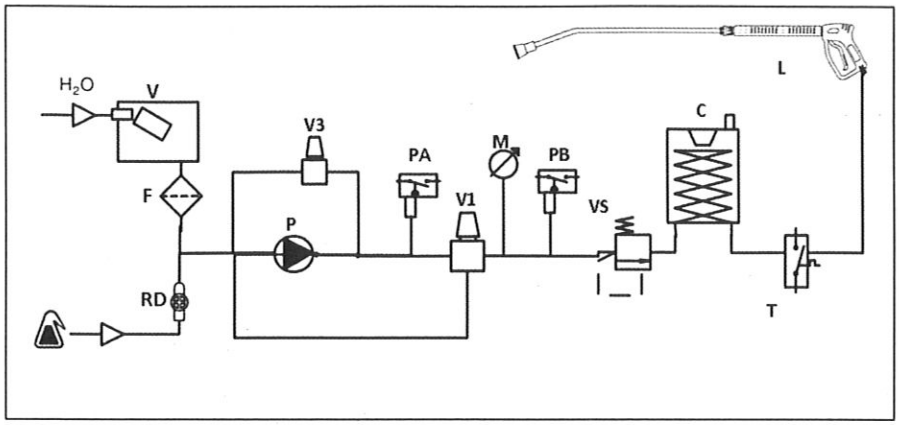
Problem	Cause	Repair
Turning the main switch ON the machine does not start	1)Plug not properly connected 2)Main supply fuses blown 3)Transformer fuse blown	1)Check power supply plug 2)Check fuse/replace 3)Check/replace
Electric motor hums but not start	1) Lack of a phase (vers. Three Phase) 2) Low supply voltage 3) Pump blocked	1)Check power supply fuses 2)Check powe rsupply voltage 3)Check pump
The motor stops suddenly or after a while	1)Low supply voltage 2)Motor Thermal protection	1)Check power supply 2)Overload/overheating
When the trigger gun is open the pressure goes up and down	1)Pressure nozzle dirt or worn 2)Coil or trigger gun dirt with limescale	1)Clean nozzle 2)Clean the coil from limescale
When the trigger gun is close (by-pass pump) the pressure goes quickly up and down	1)Micro-leaks in pressurized circuit 2)Unloader valve doesn't work properly 3)Unloader valve dirt or worn	1)Check pressure hose connections. If problem persists call Assistance. 2) 3) Check/clean unloader valve
Vibration at the trigger gun and irregular flow	1)Pump valves dirty or worn 2)Unloader valve is dirt	1) 2) Check/replace
Pump runs properly but doesn't reach nominal value	1)Low power supply voltage 2)Air suction 3)Pump valve worn 4)Unloader valve worn or dirt 5)Pressure nozzle not correct or worn 6)Leaking from pressure seals	1)Check power supply voltage 2)Check suction hoses of the pump/tighteness and check water filter 3) 4) Check/clean 5) Check/clean 5) Call Assistance
Lack of pressure	1)Dirt/worn pressure nozzle 2)Inlet/outlet pump valves dirt or worn 3)Unloader valve dirt or worn 4)Air suction 5)Water filter dirt	1)Check/clean or replace 2) 3) Check/ clean or replace 4)Check water pump suction connection 5)Clean water filter
Pump is too noisy	1)Air suction 2)Pump valves springs worn 3)Roll bearings worn (pump or motor) 4)Unloader /pressure fittings dirt or worn 5)Water temperature too hot	1) Check water pump suction connection 2) 3)replace valves/ roll bearings 4)Clean unloader valve and fittins (ejectorsi etc.) 5)Verify water temperature

Problem	Cause	Repair
Water inside oil pump	1)Pump oil seals worn 2Pump o-rings worn	1)2)Replace
water leakage from the pump casing and the head	1) Seals worn. 2) Piston wear. 3) O.R. cap worn piston.	1) 2) 3)Check/replace
Oil leakage from the pump casing and the head	1) Seals side crankcase worn.	1)Replace.
Operating the burner switch does not start heating	1) Low fuel. 2) Diesel nozzle clogged 3) Fuel filter clogged. 4) Intake air from the fuel filter 5) diesel pump blocked 6) Internal filter diesel pump dirty 7) Thermostat failure. 8) Ignition insufficient or totally absent. 9) Dirty electrodes or not at the correct distance. 10) Fuse burner blown 11) Combustion air is not correct	1)Check diesel level in the tank 2)Check/replace 3)Check diesel filter 4)Check diesel suction hose 5)Dismount pump and check if turns 6)Clean inside diesel pump filter. 7) Replace 8) Call Assistance. 9) Clean electrodes and set correct distance between 10) Replace fuse. 11) Set combustion air regulation
Water not enough hot	1)Low boiler efficency 2)Heating coil dirt with limescale	1)Clean boiler and check combustion 2)Clean the heating coil.
Execessive smoke from chimney	1) Combustion incorrect. 2) Incorrect fuel or presence of dirt inside 3) Ignition electrodes poorly positioned 4) Wrong combustion air setting 5) Boiler dirty with soot or diesel	1) Check combustion 2)Check fuel 3)Check/clean electrodes and set distance 4)Air flow regulation with flap (internal/external) 5)Remove soot from boiler
Low detergent suction	1)Low detergent 2)Ejector dirty	1)Refill with detergent 2)Clean/replace

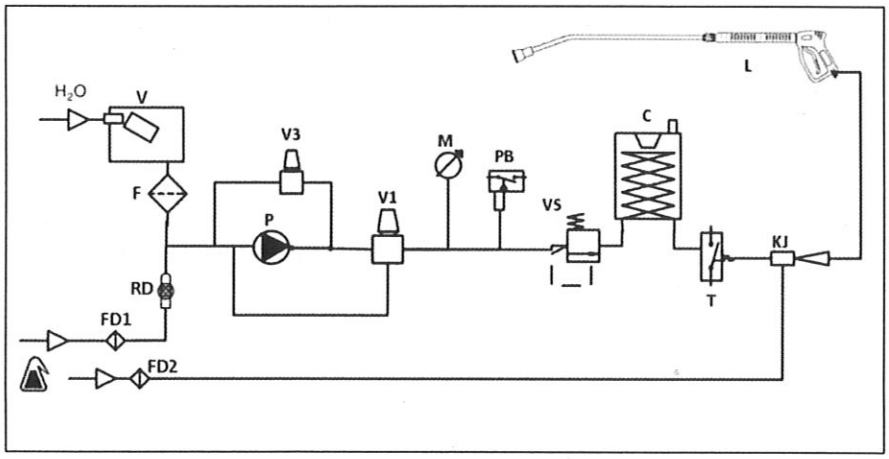
❖ Hydraulic diagram

Standard version with water float tank and detergent suction (low pressure)



LEGEND
F = water filter
RD=detergent regulation valve
L=Lance
M=Manometer
P =High pressure pump
PA=Pressure switch (pump head)
PB=Pressure switch (after by-pass)
VS=Safety valve
C=Heating boiler with coil
T=Thermostat
V=Water tank with float
V1=By-pass valve
V3=Steam regulation valve (Optional)

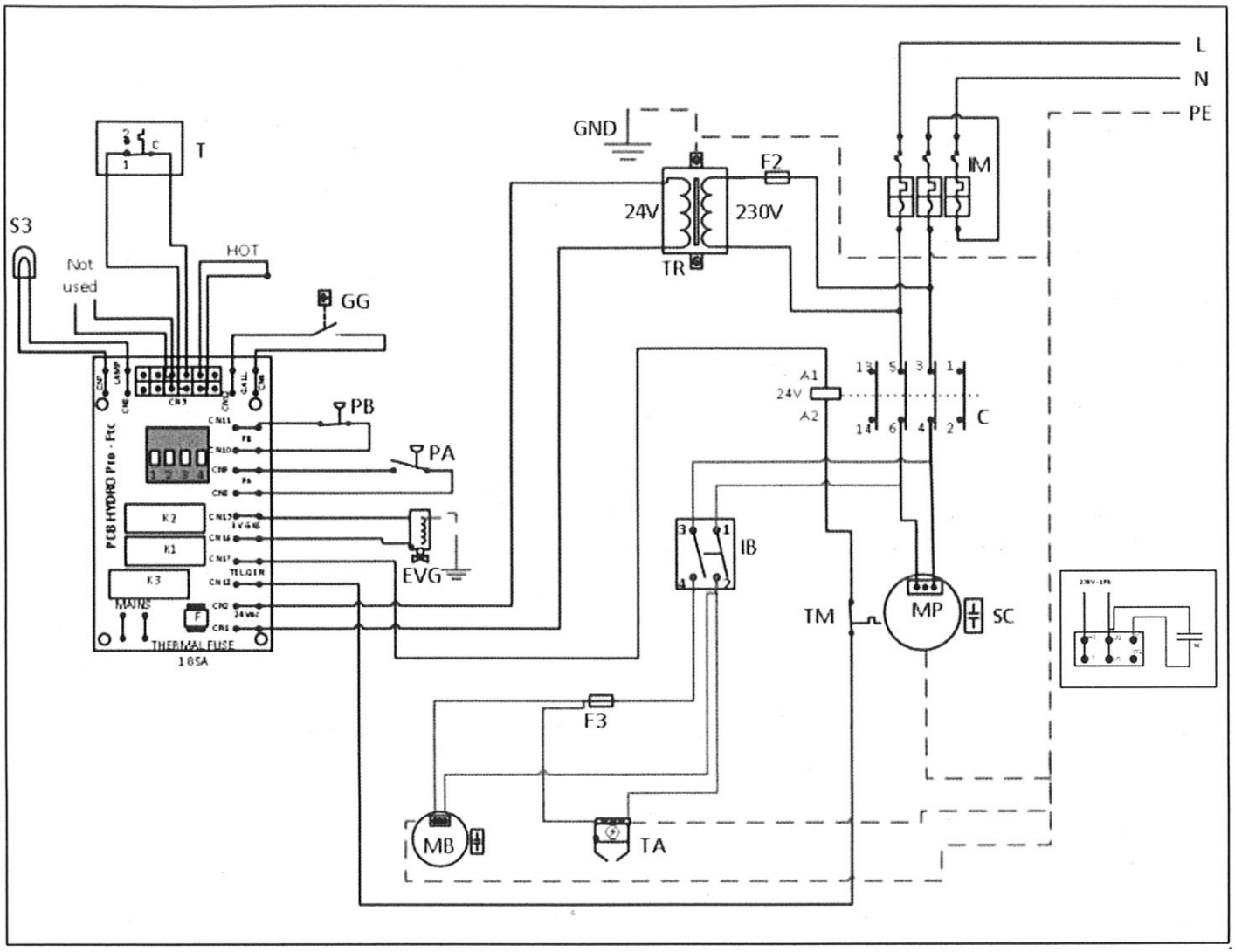
Version with water float tank and detergent low/high pressure and steam regulation



Note: Diagram with PB as flow-switch and total stop from the trigger gun without restart.

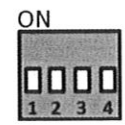
❖ Electric diagram

230Vac 1Ph 50Hz



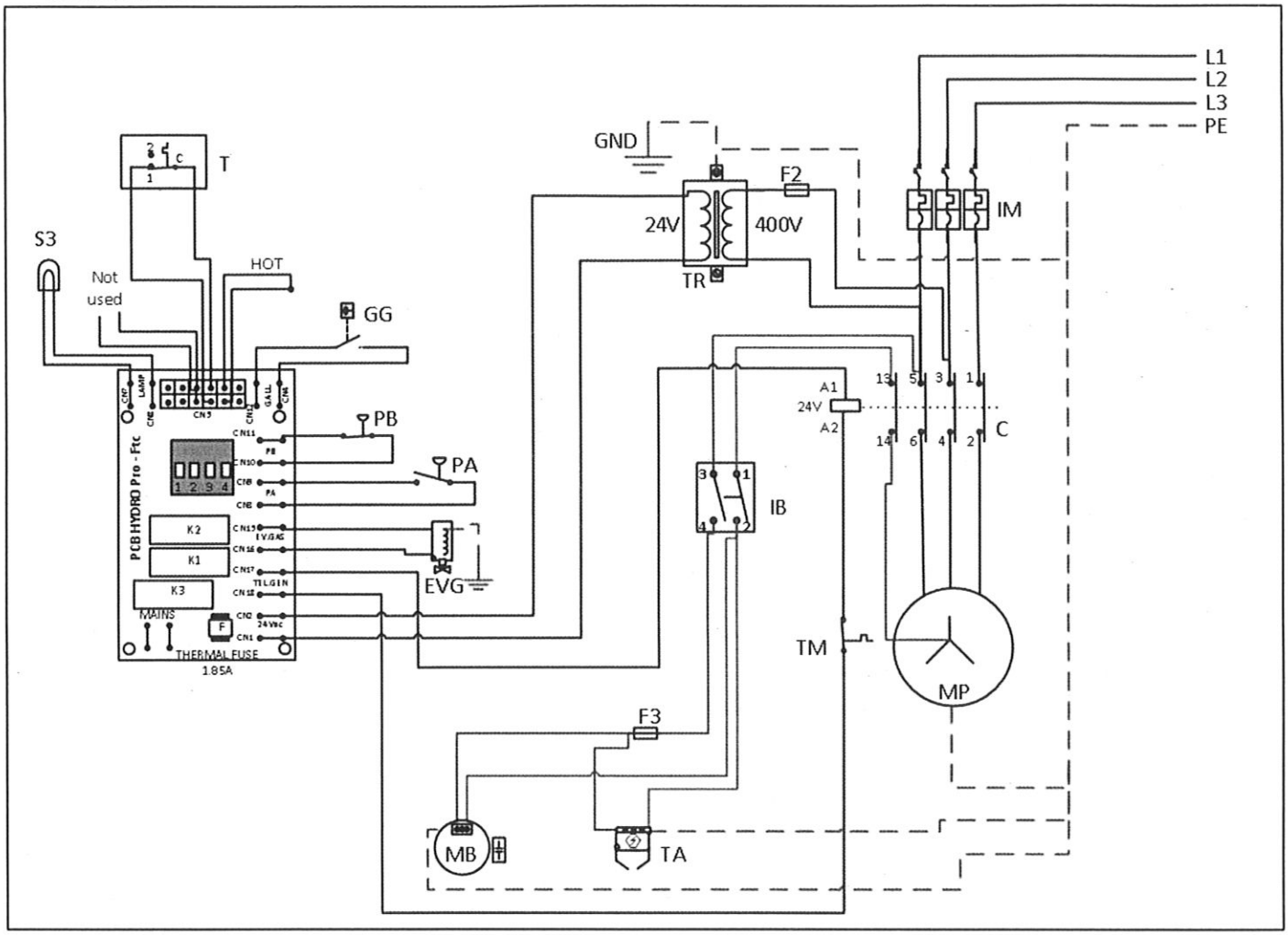
LEGEND
C =contactor
EVG=diesel solenoid valve
F2=fuse
F3=fuse
GG=Diesel float-switch
IM=Main switch (Circuit breaker)
IB=Burner switch 0-1
MB=Burner motor
MP=High pressure pump motor
PA=Micro pressure switch n/a (or flow switch)
PB=Micro pressure switch n/c
S3=Diesel shortage lamp
T=Thermostat
TA=Ignition high voltage transformer
TR= transformer
TM=Motor thermal protection

DIP-SWITCH pcb configurations

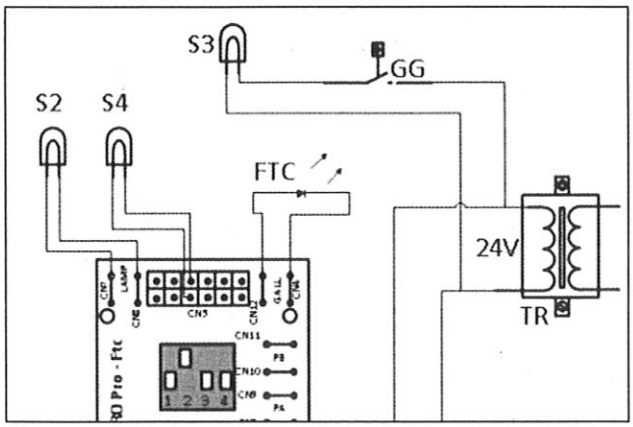


SW1	SW2	SW3	SW4	FUNCTION
OFF				Auto off 30min = ON
ON				Auto off 30min=OFF
	OFF			Burning functioning standard
	ON			Burner functioning from photocell
		OFF	OFF	Total stop delay TELG = 20sec
		ON	OFF	Total stop delay TELG = 6min
		OFF	ON	Total stop delay TELG = 60sec
		ON	ON	Total stop delay TELG = 90sec

400Vac 3Ph 50Hz



Photocell wiring diagram FTC (Optional)



S2 =Hot mode lamp
S4=Alarm lamp
S3=Diesel shortage lamp
FTC= Flame sensor (photocell)

❖ Technical specifications

		100.12	150.15		200.15	
Electrical connection						
Voltage	V	230	230	400	230	400
Type of current	Hz	1 ~ 50	3 ~ 50		3 ~ 50	
Connected load	kW (Hp)	2.3 (3.1)	4.2 (5.5)		5.5 (7.5)	
Fuse (Slow)	A	16	20	13	25	16
Protection degree	--	IPX5				
Protection class	--	I				
Max. net impedance	Ohm	0.150	0.150		0.150	
Water connection						
Temperature inlet (Max.)	°C	40				
Flow (Min.)	l/min	20	25		25	
Suck height from open air container (20°C)	M	0.5	0.5		0.5	
Pressure inlet (Max.)	Bar	10	10		10	
Performance						
Flow-rate max.	l/min	12	15		15	
Working pressure (standard nozzle)	Bar	100	150		200	
Overpressure admissible (safety valve)	Bar	130	170		220	
Steam flow-rate	l/min	4.0	5.0		5.0	
Steam working pressure	Bar	32	32		32	
Hot water temperature (max.)	°C	90	90		90	
Steam working temperature max.	°C	140	120		120	
Detergent suction	l/min	0.7	0.7		0.7	
Boiler power	kW	65	65		65	
Diesel nozzle	GPH	1.50	1.50		1.50	
Diesel consumption	Kg/h	5.00	5.00		5.00	
Motor pump	Rpm	1400	1400		1400	
Max. recoil at hand spray gun	N	20	21		23	
Pressure nozzle	--	055	055		045	
Noise emission (*)						
Sound pressure L_{pA}	dB (A)	79	85		86	
Uncertainty K_{pA}	dB (A)	3	3		3	
Sound power L_{wA} + Uncertainty K_{wA}	dB (A)	85	87		87	
Hand-arm vibration (*)						
Hand spray gun	m/s^2	2.6	2.6		2.7	
Lance	m/s^2	2.9	2.9		2.2	
Uncertainty K	m/s^2	0.3	0.3		0.3	
Fuel and additional liquids						
Fuel	--	Diesel				
Pump oil quantity	L	0.8	1.0		1.0	
Type of pump oil	--	SAE 15 W-40				
Dimensions and weights						
Lenght x Widht x Height	mm	1060x700x1020				
Weight	kg	120	135		135	
Typical working weight	kg	130	150		150	
Diesel tank	l	20				
Detergent tank (optional)	l	5				

(*) values according to EN 60335-2-79

EN

❖ EC Declaration of Conformity

IDROMATIC s.r.l. - Via F. Petrarca Borgoforte,127 - 46034 BORGO VIRGILIO (MN) – Italia

hereby declares that the machine described below complies with the relevant basic safety and health requirements of the EU Directives, both in its basic design and construction as well as in the version put into circulation by us. This declaration shall cease to be valid if the machine is modified without our prior approval.

Product: Hot high-pressure washer machine
Model: ASTRA 100.12
Model: ASTRA 150.15
Model: ASTRA 200.15

Relevant EU directives

2006/42/EC (Machinery Directive)
97/23/EC (Pressure Equipment Directive - PED)
2004/108/EC (Electromagnetic Compatibility Directive - EMC)
2000/14/EC (Noise emission in the environment by equipment for use outdoors)
2002/96/EC (Waste of electrical and electronic equipment – WEEE)
2011/65/EU (Restriction of Hazardous Substances Directive – RoHS)

Applied harmonized standards
EN 12100-1
EN 12100-2
EN 60335–1:2013
EN 60335–2–79:2013
EN 55014–1: 2006 + A1: 2009
EN 55014–2: 1997 + A2: 2008
EN 61000–3–2: 2006 + A2: 2009
EN 61000–3–3: 2008
EN 61000–3–11: 2000

Applied conformity evaluation procedures
2000/14/CE: Annex V
Sound power level guaranteed L_{wA} dB(A)

Mod. ASTRA	100.12	150.15	200.15
Measured	79	85	86
Guaranteed	85	87	87

Signature of the Legal Representative
Borgo Virgilio, 01/02/2016

Firma del Legale Rappresentante

CE

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❖ Inspection sheet

Regarding the control of the annual occupational safety (accident prevention) according to the guidelines for liquid jet devices. This control module serves as a demonstration of proof of upgrading and should be stored carefully.	
Owner: _____ Address: _____	Model: _____ Year.: _____ Serial number: _____
-Instruction manual (yes/no) -Protection covers -Internal hoses (tighteness) -Manometer -Water tank float -Spray gun (integrity) -Spray gun safety block -High pressure hose (connection/integrity) -Safety valve (+ 10% / 20% working pressure): -Fuel hoses (tighteness) -By-pass valve (regulation-working) -Thermostat -Steam valve regulation -Power cable -Power plug (integrity-connection) -Protective earthing cable (integrity) -Main power switch ON/OFF - Alarm/functioning lamps -Flame failure control check -High pressure nozzle -Working pressure ..... -Exhaust gases.....n. Bach. -Value CO^2 ..... % CO^2 -Boiler efficency.....%	
The appliance was checked by an expert according to the guidelines for liquid jet devices. Job security was again assured after the elimination of defects by repair or replacement of damaged parts.	
The next inspection of upgrading according to the guidelines for liquid jet devices must be done no later than Month: _____ Year: _____	
Place_____ Date:_____ Signature: _____	

EN

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-High pressure nozzle
-Working pressure .....
-Exhaust gases.....n. Bach.
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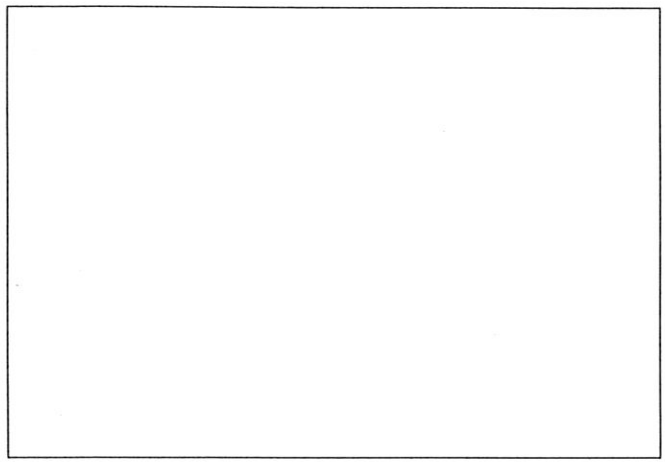

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