

V-TUF[®]



RAPIDVTX

PROFESSIONAL HOT WATER HIGH
PRESSURE CLEANERS

OPERATOR MANUAL

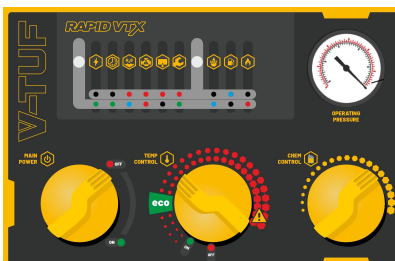


Please read this manual before using the RapidVTX

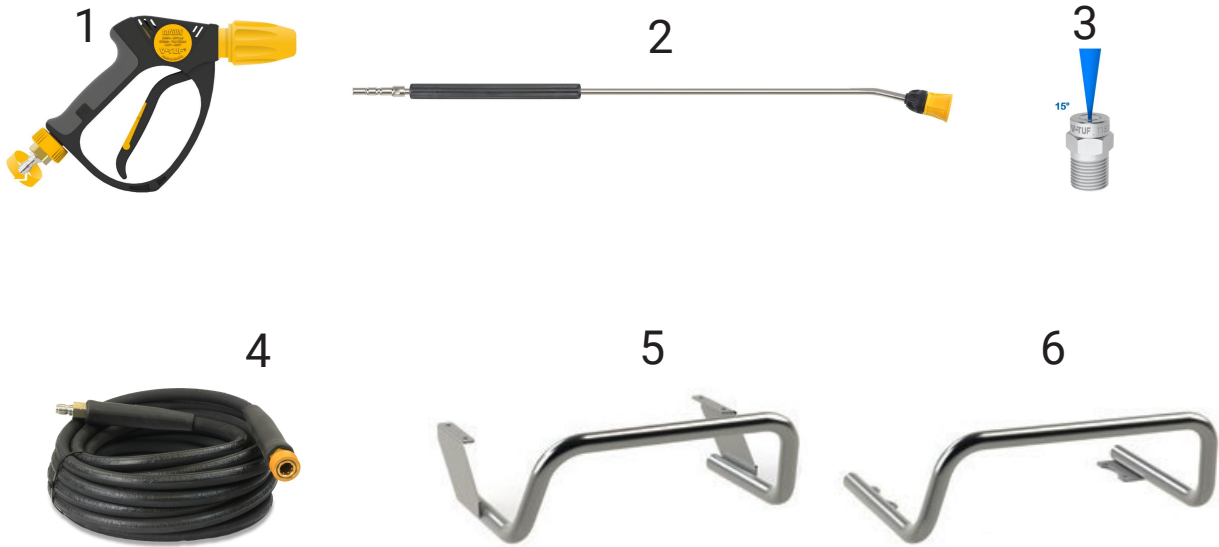
All Errors & Omissions Excused – Specification May Change Without Notice – Please Refer To www.v-tuf.co.uk For the Latest Version

RAPIDVTX

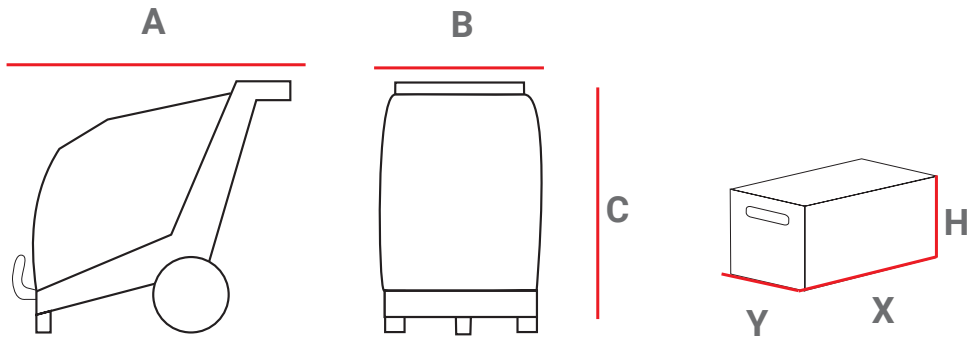
- Hot water high pressure cleaning - 230v electric with diesel fired boiler - HVO compatible
- XHDM300SS 200Bar Rated (100Bar Working Pressure) - 12lpm Triplex plunger pump with three ceramic pistons and brass head
- 1450 rpm Low-rev air cooled motor - quiet running
- Stainless steel cover and chassis
- Motor/pump coupling protection with special lubricant retention system
- High pressure valve regulation - with easy access
- High pressure detergent injection system
- Built-in water tank with floating valve
- Water filter, accessible for inspection from the outside of the machine
- Boiler with over 89% efficiency
- Pre-ventilation boiler
- IDPS Advanced Control Panel with Delayed Stop
- Micro leakage control
- Diesel level warning led and boiler stop
- Automatic shutdown if idle for more than 20 min.
- Front bumper • Motor thermal protection
- Two 10" rear wheels and two front swivel casters with brakes
- Hour counter device with service alert warning led
- Warning LED "machine ready" and "malfunction"
- Flame alert led signal
- Hose reel (optional)
- Limescale prevention system adjustable from 35 to 270 mml/h (optional)



SUPPLIED ACCESSORIES



N°	CODE	SPRAYEX60XR
1	TG350SKTQMSQ	EXTRA HEAVY DUTY SOFT GRIP TRIGGER SWIVEL
2	OPF093SS	KTQ - QR 1000mm STAINLESS STEEL LANCE WITH BEND
3	T15.045OJ	15° FAN NOZZLE 1/4 THREAD (MAX 300BAR)
4	VTK13810UVYK-HD	10m 1 WIRE, 3/8" 155°C V-TUF BLACK JETWASH
5	VTRP1050	Stainless steel rear bumper for RapidVTX
6	VTRP1043	Stainless steel front bumper for RapidVTX

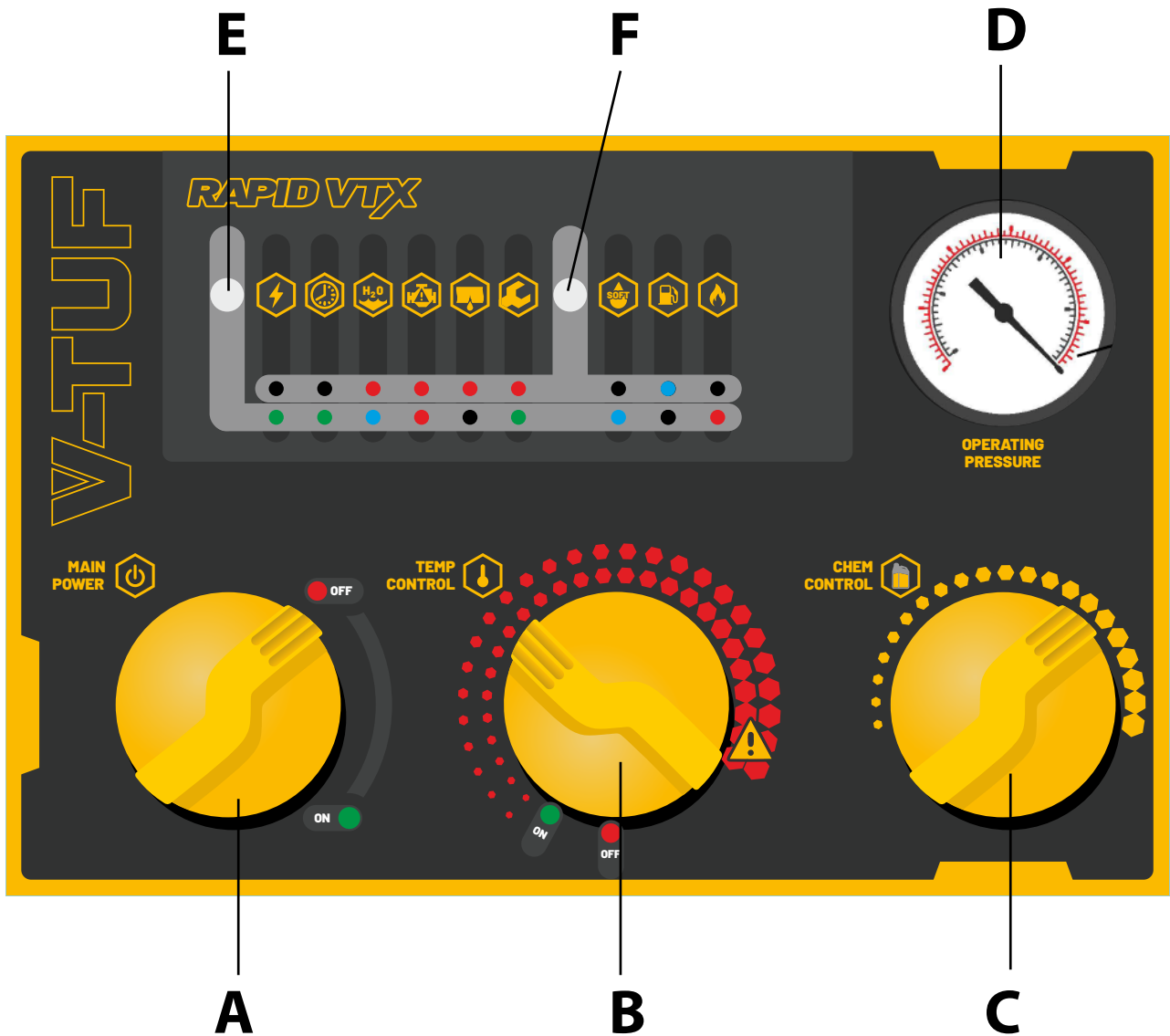


WEIGHTS AND DIMENSIONS MACHINE				
MOD	A	B	C	Net
	(mm)	(mm)	(mm)	(kg)
RAPIDVTX240	956	610	940	140
RAPIDVTX240HR	956	610	940	180
RAPIDVTX415	956	610	940	148
RAPIDVTX415HR	956	610	940	188

PACKAGING			
X	Y	H	Gross
(mm)	(mm)	(mm)	(kg)
1.050	720	1.120	158
1.050	720	1.120	198
1.050	720	1.120	166
1.050	720	1.120	206



MODEL	RAPIDVTX240	RAPIDVTX240HR	RAPIDVTX415	RAPIDVTX415HR
max. pressure	140 14 - 2.030	140 14 - 2.030	140 14 - 2.030	140 14 - 2.030
max. flow rate	720	720	900	900
pump	IP E2	IP E2	IP E2	IP E2
safety system	iDPS	iDPS	iDPS	iDPS
pump speed	1.450	1.450	1.450	1.450
max. absorbed power	3,0	3,0	6,5	6,5
supply voltage	230-1-50	230-1-50	400-3-50	400-3-50
max. temperature	140	140	140	140
fuel tank	35	35	35	35
cleaning agent tank	3	3	3	3



A. MAIN SWITCH

B. BOILER THERMOSTAT

C. DETERGENT ADJUSTMENT TAP

D. WATER PRESSURE GAUGE

E. LED WARNING LAMP 1

F. LED WARNING LAMP 2

IMPORTANT

Before using the high pressure washer, carefully read all of the instructions and follow them scrupulously. The manufacturer cannot be held responsible for damage to persons and/or property caused by improper use of the equipment.

This instruction manual is an integral part of the equipment and must therefore be stored carefully and passed on with the unit in the event of a change of ownership.



WARNING



- THE EQUIPMENT MUST BE CONNECTED TO THE POWER GRID THROUGH A CIRCUIT -BREAKER WITH A SENSITIVITY NOT EXCEEDING 30 mA AND FEED FLOW RATE SUITABLE FOR THE POWER OF THE MACHINE (SEE DATA PLATE)
- THE MINIMUM FEEDING FLOW RATE MUST NOT BE LESS THAN INDICATED IN THE PLATE
- THE FEEDING WATER PRESSURE MUST NOT EXCEED 3 BAR. IF HIGHER, YOU MUST BE PROVIDED WITH SUITABLE PRESSURE REDUCTION VALVE.



WARNING



- APPLIANCE NOT SUITABLE FOR CONNECTION TO THE DRINKING WATER NETWORK: THE PRESSURE WASHER CANNOT
- BE CONNECTED DIRECTLY TO THE DRINKING WATER DISTRIBUTION NETWORK WITHOUT HAVING INSTALLED AN ANTI- BACKFLOW DEVICE IN THE SUPPLY PIPE WITH EMPTYING CAPACITY COMPLIANT WITH CURRENT REGULATIONS. IT IS ALSO NECESSARY TO USE A REINFORCED PIPE WITH A DIAMETER OF AT LEAST Ø13MM - ½ INCH
- WATER PASSING THROUGH ANTI -BACKFLOW DEVICES CANNOT BE CONSIDERED DRINKABLE
- USE ONLY FILTERED OR CLEAN WATER, PLACING THE PRESSURE WASHER AS CLOSE AS POSSIBLE TO THE WATER SUPPLY NETWORK. THE WATER SUPPLY TAP MUST ALSO GUARANTEE A SUPPLY EQUAL TO TWICE THE MAXIMUM FLOW RATE OF THE PUMP

1 USE OF THE MANUAL

1.1 USE OF THE MANUAL

This manual was prepared by the manufacturer as an integral part of the machine's equipment. The manual for this high-pressure washer is intended for the end user customer. Its aim is to describe the use of the machine and to make the customer aware of its technical characteristics. This information must be known by the Customer as it allows the machine to be used safely because its operating principles and limits are known. It also contains information on how the machine is to be transported, started-up, adjusted and maintained.

1.2 STORAGE OF THE MANUAL

This manual should be carefully stored throughout the life of the machine, including when it is being dismantled. The manual should be kept in a dry place near the machine and should always be available to qualified personnel and the user. The manufacturer would like to point out that this manual reflects its level of technical advancement at the time the machine was marketed and should not be considered unsuitable in the event of updates. The manufacturer reserves the right to update its production and manual at any time without being required to update previous production and manuals unless those changes concern the protection of the health and safety of persons or property.

2. GENERAL WARNINGS

2.1 WORKING SAFELY

The safety instructions contained in the use and maintenance manual refer to operations that can be carried out on the machine. Safety symbols have been inserted at points in the text that require special attention. It is very important that these safety instructions be followed at all times. Failure to comply could result in personal injury and/or damage to the unit or other equipment. With all that in mind, below are some basic safety instructions:






WARNING

Read and fully comprehend this section of the safety instructions before installing, operating, maintaining, or repairing the machine. Read and follow all safety warnings in the text that apply to specific operations. Whenever provided for, put on personal protective equipment (PPE), such as safety glasses, gloves, and work shoes. Get to know and comply with all the safety instructions in this manual, general rules for accident prevention, and safety regulations.

2.2 SAFETY SIGNS

The symbols shown below are found in the use and maintenance manual and applied where they are intended to alert readers to the corresponding information. These symbols have been included to alert personnel to hazards or possible sources of danger. Familiarise yourself with them. Failure to heed those symbols could result in personal injury, death, and/or damage to the machine or other equipment. In general, there are three types of signs, as described in the table below:

 Hazard Signs	<i>Framed, triangular shaped</i>
	<i>These indicate prescriptions concerning present or possible hazards</i>

 Prohibition Signs	<i>Circular, framed with a diagonal cross through</i>
	<i>These indicate prescriptions concerning actions that must be avoided</i>
 Obligatory Safety Signs	<i>Full circle</i>
	<i>These indicate information that is important to read and comply with</i>

Depending on the information to be conveyed, the signs may contain symbols that, by association, help to understand the type of hazard, prohibition or obligation being indicated.

2.3 HAZARD SIGNS



General Hazard. This sign is used to point out hazardous situations that can create harm to people, animals or property. Failure to comply with the requirements associated with the sign may lead to hazards.



Explosion and/or fire hazard. This sign is used to point out explosion and/or fire hazards. Failure to comply with the requirements associated with the sign may result in explosion and/or fire.

2.4 PROHIBITION SIGNS



General Prohibition. This sign is used to point out that performing certain actions, operations or continuing with specific behaviour is prohibited. Failure to comply with the prohibitions associated with these signs may cause damage to property or cause harm to persons or animals.

2.4.1 Obligatory Safety Signs



General obligation This sign is used to point out that operators have the obligation to comply with the requirements. Failure to comply with requirements associated with these signs may cause damage to property or cause harm to persons or animals.



Obligation to use special P.P.E. This sign is used to point out the obligation to use special personal protective equipment during operations. Failure to comply with the requirements associated with the sign may result in serious harm to or the death of the operator.



Obligation to use protection of the eyes, the hands or the airways and to put on appropriate clothing.



WARNING

Ignorance of or failure to heed signs and warnings may result in personal injury, death, and/or damage to machinery or other equipment.

2.5 PHYSICAL AND MENTAL REQUIREMENTS OF USERS

Operators need no specific license to operate this machine; the only requirement is to read this manual. Operators must possess the cognitive acuity to understand and correctly apply the instructions and safety regulations written in this manual and found on the machine in the form of signs and symbols. Furthermore, operators must be physically able to perform the necessary operations on the machine as well as being able to safely operate and maintain it. The

machine is to be run only by authorised operators who have read this manual and who have been trained in its operation.



WARNING
Operators or users shall be responsible for any accidents or hazards that may affect other persons or their property.



WARNING
Users may not operate the machine if they are taking any substances (alcohol or medication) which might impair their normal levels of perception or awareness or compromise their reaction times.

2.6 IMPROPER USE

Any uses other than those described in this manual shall be considered improper and therefore not in compliance with safety regulations.



WARNING
Improper use of the machine may result in personal injury, death, and/or damage to the machine or other equipment.

Below is a list of possible misuses that could result in personal injury or damage to the machine or other equipment:

- Unauthorized modification or replacement of machine parts;
- Failure to comply with safety instructions;
- Failure to comply with instructions concerning installation, operation, maintenance, repair, or if these operations are performed by unqualified personnel;
- Use on improper and incompatible surfaces.

3. USE AND TECHNICAL DATA

3.1 USING THE MACHINE

The high-pressure washer is a professional machine for high-pressure washing with hot water. It is intended for cleaning tools, machines, vehicles, buildings and other surfaces that can be treated with a high-pressure water jet; any other use not mentioned must be considered improper.

3.2 CONDITIONS OF USE

The high-pressure washer has been specifically designed to perform only the functions described in this section of the manual. The machine must be operated under environmental conditions that comply with those described in the section on admissible environmental values.

3.3 NOISE

Lp dB(A) 93 (margin of error 1.5) - LwA dB(A) 96
Values obtained in compliance with EN60335 -2-79

3.4 VIBRATIONS

The vibrations produced are so slight that they cannot be a source of danger to the operator.

No special precautions are required to protect the operator from the effects of any vibrations produced. If abnormal vibrations do occur, the operator is to stop the machine immediately and report the phenomenon to the maintenance supervisor.

3.5 PROTECTION GRADES OF THE MACHINE (IP)

Degree of protection against solid foreign bodies (protected against dust)	5
Degree of protection against water (protected against jets of water)	4

3.6 ADMISSIBLE ENVIRONMENTAL VALUES

Admissible environmental values	
Admissible operational temperatures	-10°C ÷ 50°C (50° F ÷ 113° F)
Changes of ambient temperature	Max. 1.1°C / Min (Max 2°F / Min)
Range of relative humidity	75% or less
Vibrations	≤ 0.5 G

The machine is not intended to operate in environments with risk of fire or explosion.



WARNING
The machine must not be used where there is an explosive atmosphere. Machines, and their components or equipment designed to operate in explosive atmospheres, must bear the ATEX mark as provided for in standard EN 60079-14 (CEI 31-33) "Electrical installations for explosive atmospheres with the presence of gas".

3.7 ELECTRONIC CONTROL SYSTEM: MAIN FUNCTIONS

The high-pressure washer is equipped with a TSS electronic control system with a 15-second shutdown delay. The following main functions are also available:

- Low water cut off: if there is a water pressure drop, therefore a low water level inside the machine, detected for longer than 5 seconds, the machine will go into lockout and will be stopped completely to avoid damaging the pump and the boiler.
- Inactivity timeout: if the machine is left powered, with the SW switched to ON, but is not used for more than 20 minutes, the inactivity timeout will trip .
- Micro leak detection: if the machine is running and the gun is closed and there are 8 starts with immediate stops within 1.5 seconds, this means that there is a water micro leak, which will cause the machine to go into lockout to avoid the motor continuously and repeatedly restarting .
- Motor thermal management: the motor is equipped with a thermal switch that trips whenever the electric motor overheats. When it trips, the machine will go into lockout and will be stopped completely.
- Flame control (optional): if no flame is detected optically after one second from the activation of the fuel -oil solenoid valve, or if no flame is detected after one second while the boiler is operating, or if no flame is detected after the fuel -oil solenoid valve has closed, the machine will go into lockout and will be stopped completely.
- Fuel oil level control (optional): if the float switch contact closes, the machine detects a no-fuel-oil fault and stops operation with hot water. However, the machine can still be used with cold water.
- Anti-limescale level detection (optional): if the anti-limescale float switch contact closes, the machine signals a fault . However, the machine can still be used with either hot or cold water.
- Maintenance interval reminder: when 800 hours of operation have been reached, a maintenance reminder will be activated. Though the machine will continue to operate with all functions

enabled, it will impose a 2 second delay between the gun opening and motor start for work operations.

Functions (b), (c), (d), (e) and (h) can be deactivated if necessary for special cleaner applications: contact a customer technical service centre or your dealer to have this operation performed.

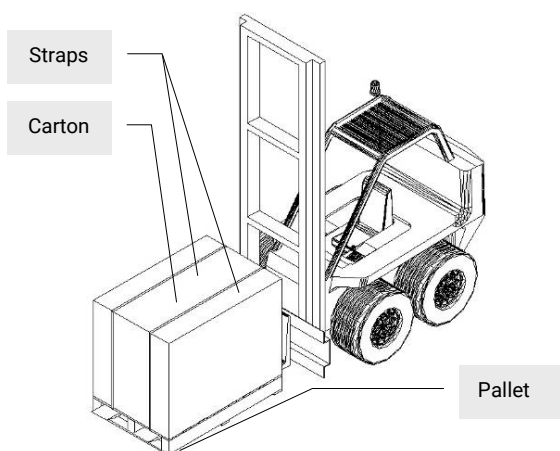
4. TRANSPORT AND INSTALLATION

4.1 HOISTING AND HANDLING

WARNING – Comply with the instructions below.



The machine will be delivered by the manufacturer packed in a cardboard box and on a wooden pallet. Before unpacking, it may be transported and handled using a forklift truck with a load capacity greater than 250 kg.



To unpack the machine, cut the straps that secure the carton to the pallet and then remove it. Once unpacked, the machine can be lifted by running the hoisting slings through the hooks provided. Below are some safety instructions for transport and handling operations.

The hoisting and handling operations required for installation are to be undertaken using suitable equipment and by specialised personnel who have been trained in this type of operation and who will take every precaution provided for and recommended to prevent harm to persons or property.

4.2 INSTALLATION



WARNING
Before proceeding with the installation, carefully read the following warnings. Non-compliance with these warnings could result in injury, death or damage to the equipment.

The machine is delivered with its handle folded to save space; loosen the knobs, position the handle and then tighten down the knobs.

5. DESCRIPTION OF THE SUPPLY

Below is a list of the contents of the package delivered to the customer. If you find that any of the parts listed below are missing, please contact the reseller immediately. To avoid losing it during

shipping, the spanner has been inserted in the bag containing the technical documents.

- 1 machine
- 1 high pressure hose with M22 fittings
- 1 handle
- 1 jet nozzle lance
- 1 complete water coupling
- 1 hexagonal spanner D4
- 1 use and maintenance manual
- 1 spare parts booklet

6. OPERATOR INSTRUCTIONS

6.1 SAFETY INSTRUCTIONS



WARNING
Non-compliance with these safety instructions could result in injury or damage to the equipment.

6.1.1 Checks to be made before starting the machine.



WARNING
Before operating the machine, make sure all protection devices are in their place and in good condition.

6.2 PROHIBITED INTERVENTIONS



WARNING
Carrying out any adjustment, maintenance and/or lubrication operations while the machine is running is prohibited.

6.3 TRAINING

All users should receive professional training and be able to practice working with the machine. This training should emphasize the following:

- The need to pay attention and be focused whilst working;
- Use by children or the disabled is prohibited
- Hold the gun and entire lance firmly
- Do not use the machine when placed on uneven surfaces
- Do not direct the jet towards animals or persons
- Do not direct the spray towards any live parts
- Do not disconnect the power plug by pulling on the cord
- Do not use any extension cords
- Do not use the machine with defective guards

7. USE OF THE HIGH-PRESSURE WASHER

7.1 WATER SUPPLY CONNECTION

Connect the machine to the water mains using a hose no smaller than 1/2" in size (use the supplied quick release coupling). Connect the high-pressure hose to the machine and to the lance by firmly screwing down the M22 diameter threaded couplings. Attach the nozzle to the end of the lance and the lance to the gun.

7.2 ELECTRICITY CONNECTION

Attach the electrical plug to the cable. First make sure that the main switch of the machine and the mains power switch are in the "OFF" position and then connect the plug to the mains.



WARNING

Check the data plate on the machine. Make sure that the machine's required power supply voltage and frequency correspond to what is supplied by the mains.



WARNING

The power supply socket must be protected by a differential circuit breaker that is in compliance with current regulations.

7.3 ELECTRICAL SWITCH PANEL

The electrical switch panel is equipped with:

- Main switch (a)
- Boiler thermostat (b)
- Detergent adjustment tap (c)
- Water pressure gauge (d)
- Operation/alarm warning lamp 1 - LED 1 (e)
- Alarm warning lamp 2 - LED 2 (f)

The two warning lamps can be red, blue or green. They can be lit at the same time or in a different combination as described in section 7.5 "Starting and Operation" and section 7.9 "Warnings".

7.4 TANKS

Fill the tanks with their respective products: fuel oil (main filler neck), detergent (small filler neck) and, if the model is equipped with anti-limescale device, anti-limescale additive through the filler neck located under the cover of the storage compartment on the hood. Each tank has an identification label near its respective filler neck.

7.5 START UP AND OPERATION

The LEDs on the electrical panel indicate the machine's operational status:

LED 1	LED 2	Notification
ON		Machine in stand-by or in operation with water supply under pressure
LL		Machine in lockout due to inactivity (machine not used for more than 20 minutes). Manual reset: by turning it OFF (4 seconds) and then ON using the main switch.

ON: Lighted steady

LL: Flashing 1 s ON – 1 s OFF

7.5.1 Start up

- Fully open the water supply tap.
- Wait for the internal tank to fill up completely.
- Rotate the SW switch from OFF to ON. The motor will turn on and the pump will start rotating.
- If no pressure is detected in the water circuit within five seconds (presence of air to be purged), the machine will stop and show a

"no water" signal (both LEDs flash blue).

- Rotate the SW switch from ON to OFF and wait 5 seconds to reset the error.
- Repeat the actions in point 3. It may become necessary to repeat steps 3 through 5 before the circuit is full of water and free of air.
- When the water shortage fault has been resolved, the machine will be ready to work.
- Disengage gun safety lock.
- Squeeze the trigger on the gun to allow the delivery of pressurized water.



WARNING

This machine is equipped with TSS, which allows delivery to be stopped automatically:

- by releasing the gun, the electric motor will stop after a 15 second delay;
- by opening the gun, the pressure drop will cause the motor to start automatically and the pressure to recover with a very slight delay.

For the TSS to function properly, the gun closing and opening operations must not be carried out in a time interval of less than 4 - 5 seconds.

Hot water

- To start the boiler rotate the SWT knob from OFF to ON and continue rotating it until the temperature desired is reached.
- When the gun is pressed with the water supply on, the boiler will turn on to heat the water.

7.5.2 Stop

Cold water

- Rotate the SW switch from ON to OFF.
- Open the gun and release the pressure inside the piping.
- Click the gun safety lock to safe

Hot water

- If you are working with hot water, rotate the SWT switch to the OFF position.
- Continue working with cold water for a few minutes to allow the boiler to cool down properly
- Rotate the SW switch from ON to OFF.
- Open the gun and release the pressure inside the piping.
- Click the gun safety lock to safe

7.5.3 Restarting

Cold water

- Disengage gun safety lock.
- Turn the SW switch from OFF to ON. The motor will turn on and the pump will start rotating.
- Squeeze the trigger on the gun to allow the delivery of pressurized water.

Hot water

- To start the boiler rotate the SWT knob from OFF to ON and continue rotating it until the temperature desired is reached
- When the gun is pressed with the water supply on, the boiler will turn on to heat the water.

7.5.4 Shutdown

Cold water

- Close the water supply tap
- Continue working to completely empty the machine's water tank and the water in the pump.
- When the machine is completely empty, rotate the SW switch from ON to OFF.
- Unplug the machine from the power mains.

Hot water

- If you are working with hot water, rotate the SWT switch to the OFF position.
- Continue working with cold water for a few minutes to allow the boiler to cool down properly
- Close the water supply tap
- Continue working to completely empty the machine's water tank and the water in the pump.
- When the machine is completely empty, rotate the SW switch from ON to OFF.
- Unplug the machine from the power mains.

7.6 OPERATING PROCEDURES

The Super and Super Plus series high pressure washers are equipped with a "delayed total lockout system", which stops the machine a few seconds after the gun is released. Pressing the gun again will cause the machine to restart normally.

The high-pressure cleaner is equipped with a "micro leak detection" function, which will stop the machine after repeated starts caused by small leaks. If this function is tripped, the machine will stop. To restart it (reset), first rotate the main switch to "OFF" and then back to "ON"

The high pressure washer is equipped with a "time-out" function, which stops the machine after 20 minutes of inactivity. If this function is tripped, the machine will stop. To restart it (reset), first rotate the main switch to "OFF" and then back to "ON" This function can be excluded but this operation is to be carried out only by expert personnel.

7.7 PRESSURE CONTROL VALVE

The pressure control valve allows the water pressure to be reduced from its maximum value down to about 25 bar. Reducing this value, the valve partializes the quantity of water to be heated thus allowing the water's temperature to be increased. This function is intended to obtain short periods of water spray at temperatures greater than 100°C (this value is variable depending on the model and its flow rate).



WARNING
With the water at such high temperatures, great care must be taken when handling the jet.



WARNING
Prolonged use at high temperatures causes rapid limescale buildup.

7.8 WASHING WITH DETERGENT

Open the tap located on the panel and then activate the lever on the gun; the pump will automatically draw detergent from the tank. Spray the surface to be treated, release the lever on the gun and then close the detergent tap. Activate the lever on the gun again to begin rinsing. Note: detergent delivery will continue for a few more seconds once the tap is closed due to residual product in the piping.



WARNING
Do not spray detergent on hot surfaces and then rinse within the time recommended by the manufacturer of the chemical product.

7.9 SIGNALS

The LEDs on the electrical panel indicate the machine's operational status:

LED 1	LED 2	Fault
LL	LL	<u>Low water</u> : indicates insufficient water supply. The machine stops. Manual reset: by turning it OFF (4 seconds) and then ON using the main switch .
LL		<u>Low anti-limescale product</u> : indicates that the anti-limescale product tank is empty. The machine continues to run. Automatic reset: this occurs when the anti-limescale product tank is filled up .
	LL	<u>Low fuel oil</u> : indicates that the fuel oil tank is empty. The burner shuts down but the machine continues to run. Automatic reset: this occurs when the fuel oil tank is filled up .
LL	LL	<u>Thermal motor protection tripped</u> : indicates that the safety thermostat has tripped due to the electric motor overheating WARNING : it may be necessary to wait for the motor to cool down completely before being able to restart the machine
LL		<u>Flame control tripped</u> : indicates that the flame has not been lit. The machine stops Manual reset: by turning it OFF (4 seconds) and then ON using the main switch.
	LL	<u>Micro leak detection tripped</u> : indicates that the machine has stopped because of the presence of "micro leaks". Manual reset: by turning it OFF (4 seconds) and then ON using the main switch .
LL	LL	<u>Maintenance threshold</u> : indicates that the 800 hour threshold has been reached and that technical service centre should be called to perform scheduled maintenance. WARNING : though the machine will continue to operate, the motor start will be delayed by 2 seconds when the lance is activated

LL: Flashing 1 s ON – 1 s OFF

8. ROUTINE MAINTENANCE



WARNING
During routine maintenance, cleaning or extraordinary maintenance operations, it is mandatory to put on the personal protective equipment provided.



WARNING
Non-compliance with these safety instructions could result in injury, death or damage to the equipment.



WARNING
All maintenance or cleaning operations are to be carried out with the machine switched off, the spark plug cable disconnected and only once the motor has cooled to avoid burns and fire hazards. No one other than maintenance personnel should be permitted to approach the machine.

8.1 SAFETY STANDARDS FOR ROUTINE MAINTENANCE

Routine maintenance comprises a series of simple operations to be carried out at regular intervals and in accordance with the manufacturer's instructions. The manufacturer has reduced the number and complexity of the routine maintenance operations so that they can be performed even by those who do not have considerable technical skills or complex equipment. Mainly these include:

- Checking pump oil levels using the sight glass on the pump housing
- Cleaning the fittings and greasing the fittings gaskets



WARNING
If the oil needs to be changed, dispose of the old oil responsibly in compliance with all current regulations. Under no circumstances are these substances to be released into the environment.

8.2 SAFETY STANDARDS FOR CLEANING THE MACHINE

The machine must be stopped and switched off before performing any cleaning operations.

Comply with the warnings below when cleaning the machine or any of its parts:

- Never clean electrical equipment using water or other fluids.
- To remove any dust deposits use only a clean brush or a dry cloth.
- Do not clean plastic surfaces with alcohol, detergents or solvents.
- Dispose of cleaning materials responsibly pursuant to current applicable regulations.
- Do not release used materials or cleaning residues into the environment.
- Clean using water or compressed air and soft cloths.



WARNING
During cleaning it is mandatory to put on personal protective equipment.

8.3 SAFETY STANDARDS FOR REPAIRS AND EXTRAORDINARY MAINTENANCE

The manufacturer recommends that an authorized repair shop be contacted for any operations that do not fall under normal maintenance.



WARNING
These operations are to be carried out only by qualified personnel, who have all the technical skills to perform these operations safely and in full compliance with the applicable laws in force.

It should be pointed out that the right to the warranty offered by the manufacturer shall be void if:

- The instructions given in the "use and maintenance manual" are not scrupulously complied with;
- The scheduled maintenance services are not carried out;
- Lubricants other than those indicated are used;
- Repairs or maintenance are carried out by unqualified personnel;
- Non-original spare parts are used;
- Unsuitable work equipment is used.



WARNING

It is the Customer's responsibility to verify that only original spare parts, which are the only parts that will not compromise machine safety, are used for repairs.

When ordering spare parts, ensure that the machine model, the serial number, the part reference number from the spare parts booklet and the quantity are specified to the manufacturer.

9. MACHINE STORAGE CONDITIONS

9.1 MACHINE DECOMMISSIONING

If the machine will not be used for significant periods of time, it will be sufficient to protect the raw parts (those not protected by paint, surface treatments or plastics) with rust preventive oils. If the machine is to be removed from service for a significant period of time, it should also be thoroughly cleaned. Once these operations have been completed, seal the machine inside an opaque multi-layer black nylon bag where an appropriate desiccant (silica gel packets) has been inserted beforehand.

10. DISPOSAL

10.1 MACHINE DISPOSAL

At the end of its working life, this machine is to be scrapped and disposed of by handing it over to the local separate waste collection system pursuant to and in scrupulous compliance with current legislation. Before scrapping, check the machine's serial number



label. If the label bears this symbol, this means that disposal is regulated by Legislative Decree no. 151 of 25/07/2005 and directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). You should therefore become apprised of the local waste collection system for electrical and electronic products and comply with its requirements. Improperly disposing of this product as normal municipal waste may result in serious harm to the environment and human health, and may be subject to penalties from local authorities.

11. PERIODIC MAINTENANCE TABLE

PROCEDURE					
	AT DELIVERY	AT END OF USE	EVERY 10 HOURS	EVERY 50 HOURS	EVERY 100 HOURS
Check operation of all controls	X				
Check the fittings gaskets				X	
Check pump oil level	X			X	

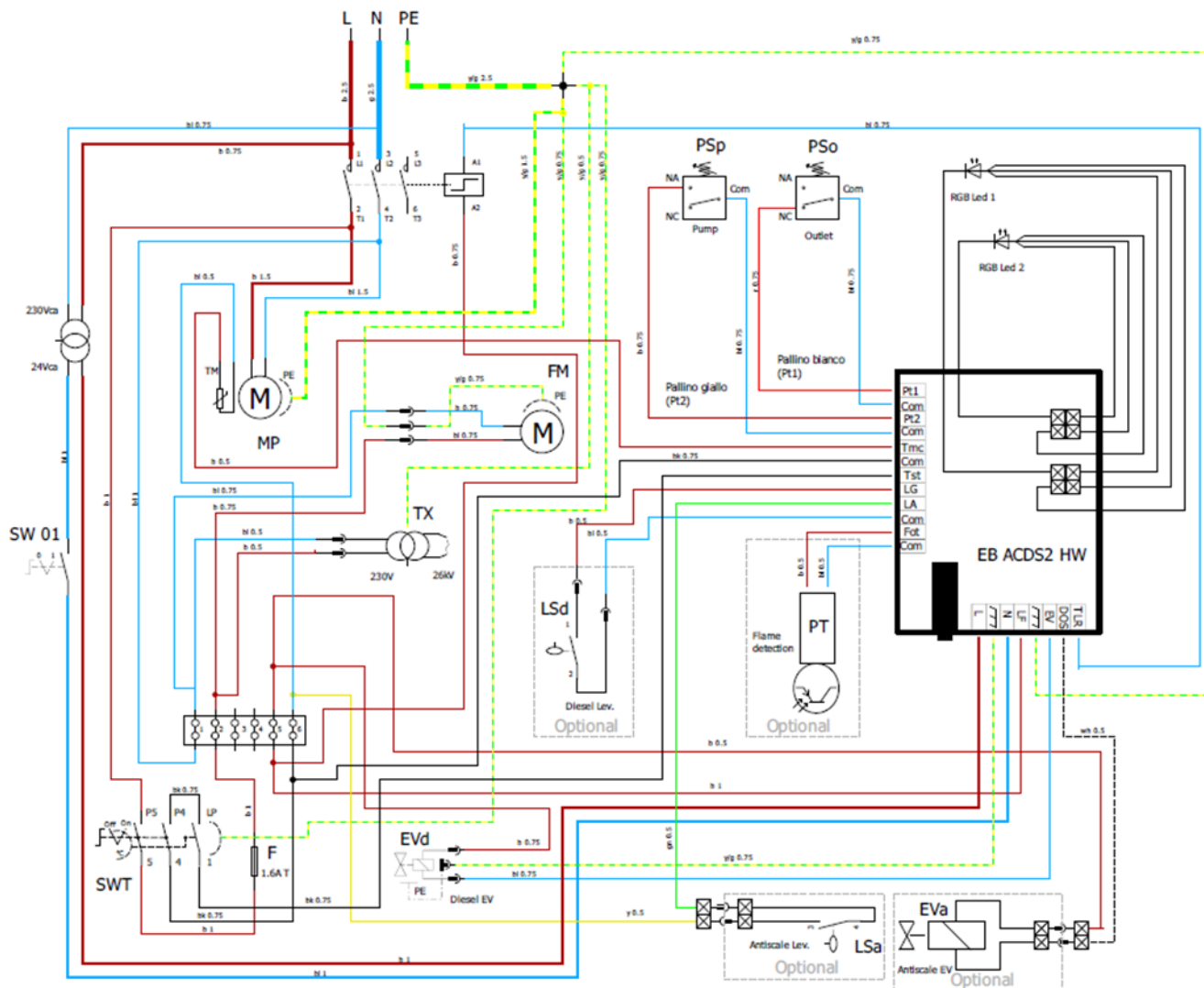
12. DEFECTS, CAUSES AND REMEDIES

The table below lists the defects that are most commonly found in normal use of the high pressure washer. The causes of these operating defects are easily solved with operations that fall within the scope of ordinary maintenance. If the defect is not listed in the table below or cannot be eliminated by following the recommendations found herein, it is suggested that you contact a qualified and authorized service centre.

DEFECT	POSSIBLE CAUSE(S)	CORRECTIVE ACTION(S)
The machine does not start	Power supply interrupted or insufficient	Check the properties
	Circuit breakers tripped.	Contact a service centre
Motor does not start but makes noise	Insufficient voltage	Check the line properties
Insufficient pressure	Nozzle fouled or deformed	Clean or replace
	Valve fouled or worn	Contact a service centre
Vibrations and/or irregular water output	Pump is drawing air	Check supply fittings
	Air in piping	Purge by disconnecting the pipes
	Pump seals worn	Contact a service centre
	Delivery and suction valves blocked	Unscrew the valve caps, remove them and clean them (it is preferable to contact the service centre)
Pump noisy	Bearings worn	Contact a service centre
Milky oil	Water leaking into the oil system (emulsion)	Request the seal replacement pack from the service centre
Water leaks	Gaskets and/or pistons worn	Request the seal replacement pack from the service centre
Water does not heat or temperature too low	No fuel oil	Fill fuel tank
	Fuel oil filter fouled	Inspect and clean
	Photocell fouled	Clean photocell (model Plus)
	Thermostat malfunctioning	Request replacement
	Serpentine fouled	Request technical service

WIRING DIAGRAM -

230V, 1 ~, 50Hz



WIRING DIAGRAM -

FM FAN MOTOR

PM PUMP MOTOR

TM MOTOR THERMAL SWITCH

PT PHOTO-TRANSISTOR

LSd FUEL OIL LEVEL GAUGE

LSa ANTI-LIMESCALE LEVEL GAUGE

SW MAIN SWITCH

PSp PUMP PRESSURE SWITCH

EVD FUEL OIL SOLENOID VALVE

Eva ANTI-LIMESCALE SOLENOID VALVE

TX IGNITION TRANSFORMER

F FUSE

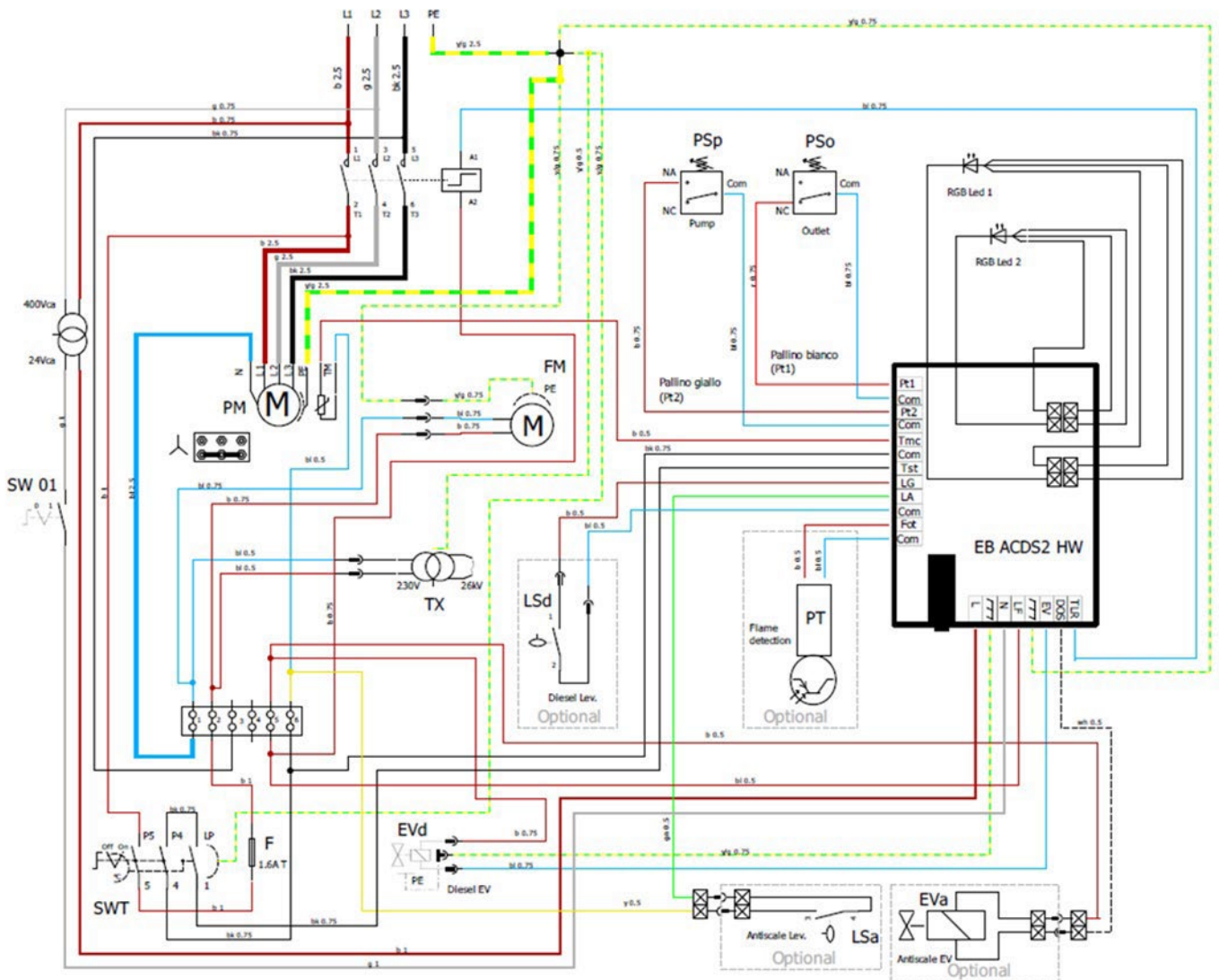
EB ELECTRONIC BOARD

PSo OUTPUT PRESSURE SWITCH

SWT SW-THERMOSTAT

WIRING DIAGRAM -

230/400V, 3 ~, 50Hz



WIRING DIAGRAM -

FM FAN MOTOR

PM PUMP MOTOR

TM MOTOR THERMAL SWITCH

PT PHOTO-TRANSISTOR

Lsd FUEL OIL LEVEL GAUGE

Lsa ANTI-LIMESCALE LEVEL GAUGE

SW MAIN SWITCH

Psp PUMP PRESSURE SWITCH

EVD FUEL OIL SOLENOID VALVE

Eva ANTI-LIMESCALE SOLENOID VALVE

TX IGNITION TRANSFORMER

F FUSE

EB ELECTRONIC BOARD

Pso OUTPUT PRESSURE SWITCH

SWT SW-THERMOSTAT

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