HOT 2021 N



	Read carefully the present use and maintenance manual in every part before proceeding to use. The following machine has been examined according to the Directive Machines 2006/42, 2004/108, 2006/95 and following changes and integrations.

	Annovi Reverberi S.p.A SERVICE Dept. Via Aldo Moro, 40/42 41030 Bomporto (MO) – Italy supporth@annovireverberi.it	**USE AND MAINTENANCE HANDBOOK** **Code 91590 - LW**

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1. GENERAL WARNINGS

Congratulations for having chosen our new model of machine which underlines Your level of technical know how and good taste for design.
Innovation and technology, high performances and sturdiness are the main characteristics of the **HOT 2021 N**.
The present manual is an integrant part of the machine and must be easily found by the personnel in charge of its use and maintenance.
The user, the operator and the person in charge of maintenance must know the content of the present manual.
In case of doubts regarding the comprehension of this manual, You must contact the company **ANNOVI REVERBERI** - Via Aldo Moro, 40/42 - 41030 Bomporto (MO) Italy, supporth@annovireverberi.it.
Descriptions and drawings contained in the present manual can be changed at any time without prior notice.

WARNING !

Read the present manual before starting the machine to ensure a correct and safe running of the same. The machine is exclusively meant for washing and cleaning with hot and cold water surfaces apt to being treated with mechanical high pressure jet system and subject to eventual chemical action of detergents.

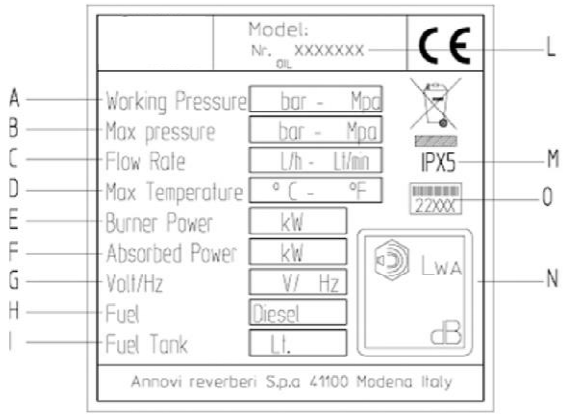
Before using the machine, make sure that the identification plate is fixed on the machine; if the plate is missing, please don't use the machine and contact immediately your dealer (see fig. 1). Don't leave the machine unattended in your work environment. After the daily use, it is recommended to keep the machine in a dry place protected from bad weather conditions.

Don't use the machine for any other purposes than the ones described above.

Never use the machine if the safety conditions are uncertain.
In case of demolition, please follow the law in force in your Country.

2. MACHINE IDENTIFICATION

Fig. 1 below indicates where the identification plate is fixed.





Description:

A = WORKING PRESSURE
B = MAX PRESSURE
C = FLOW RATE
D = WATER TEMPERATURE
E = BURNER POWER
F = ABSORBED POWER
G = VOLT/HZ
H = FUEL TYPE
I = FUEL TANK CAPACITY
L = SERIAL NUMBER
M = PROTECTION DEGREE
N = NOISE VALUE
O = PRODUCT CODE

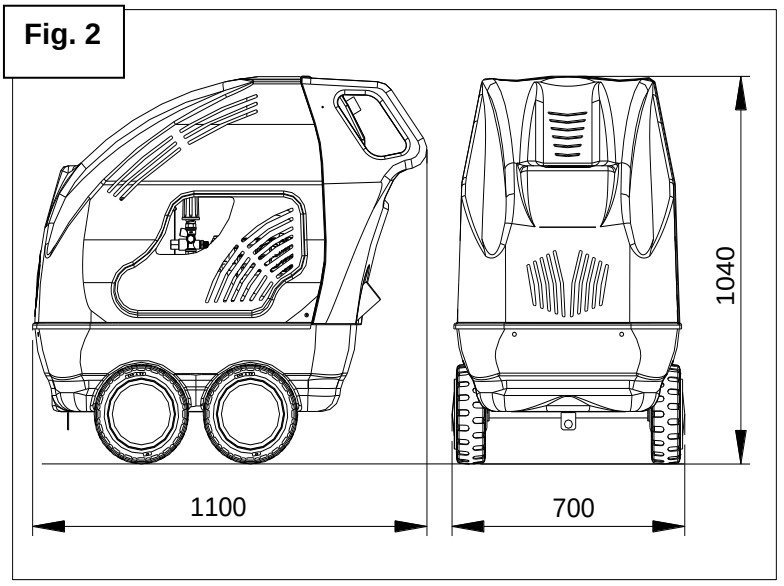
The data on the plate must not be erased for any reason.

3. TECHNICAL DATA

MODEL		HOT 2021 N
Pressure	BAR	200
	P.S.I.	2900
Power	KW (OUTPUT)	7.4
	KW (INPUT)	9.3
	RPM	1450
Voltage	V/Hz	400V-50Hz 3 ~
Max capacity	L/H	1260
	Gal/h	333
Temperature °Δ T	°C	55
Water tank	Liters	5
Fuel tank	Liters	24
Detergent tank	Liters	8
Dimensions	H.	1040
	L.	700
	P.	1100
Lpa (EN 60704-1)	Db (A)	86,1
Lwa (EN 60704-1)	Db (A)	94
Machine vibrations	M/s^2	1,49
Weight	kg	135

4. DIMENSIONS OF THE MACHINE

Fig. 2



5. MAIN PARTS

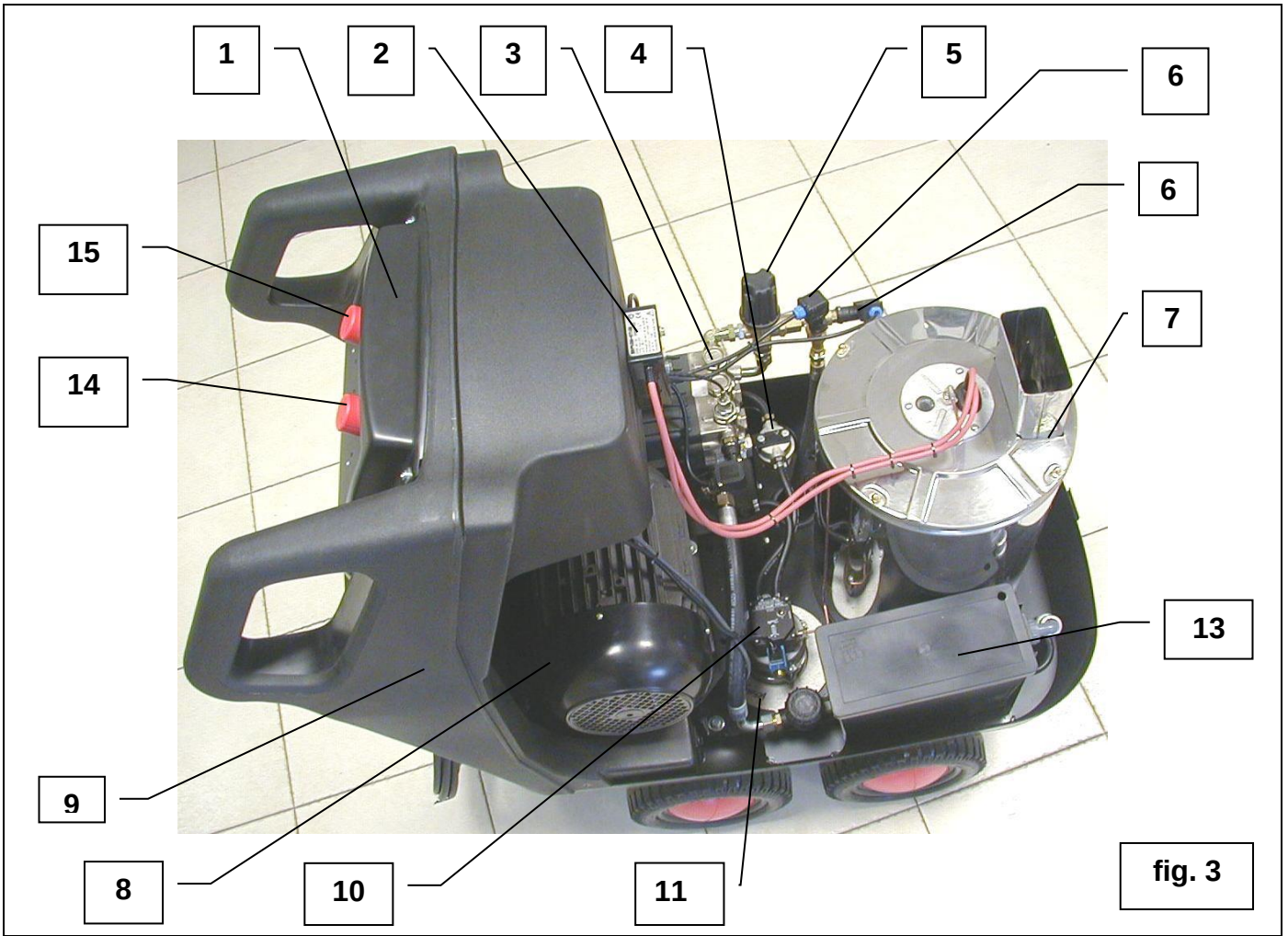


fig. 3

KEY					
1	Electric system board	6	Pressure switch	11	Burner Motor
2	Tramsformer	7	Hot water boiler		
3	High pressure pump	8	Electric motor	13	Water tank with inside filter
4	Filter	9	Tank body	14	Starting knob
5	Pressure valve	10	Fuel Pump	15	Temperature knob

6. WORKING AND SAFETY NORMS

- Make sure that the machine is constantly supplied with water. Dry working would cause serious damages to the machine seal system.
- Electrical connections must be carried out by skilled/trained personnel only.
- Never pull the power cord to disconnect the plug nor pull the hose to move the machine.
- Don’t leave the machine in a low temperature place and protect it from frost and general bad weather conditions.
- Avoid vehicles transit on the high pressure hose.
- While the machine is running do not cover it and avoid placing it where there’s low air supply.

- Avoid vehicles transit on the high pressure hose.
- While the machine is running do not cover it and avoid placing it where there's low air supply.
- If you are working indoors, it's compulsory to install a fan to discharge the exhaust gases outside.
- The fan terminal must not be obstructed. Don't leave the lance or any other object near the exhaust outlet.
- The nature of the gases as well as the high temperature are to be considered very dangerous, the operator must thus be adequately informed in order to avoid being scalded.
- Don't leave the machine outside when it rains or when the weather conditions are bad. The operators must wear protection clothes while using the machine.
- Do not leave the machine for more than 15 minutes working with the gun closed, the water temperature would increase rapidly causing serious damages to the seal system.
- Each time the machine has to be switched off blow off the hose residual pressure by using the gun.
- Don't put the hands in front of the machine's water jet while the machine is working.
- Do not use different fuels other than the ones recommended by the manufacturer.



WARNING !

- Don't carry out any operation on the machine before having unplugged it.
- Don't carry out any unwary operation on the electric cable and make sure the same is not damaged.
- Never direct high pressure water jets towards people, animals, electrical installations or the machine itself.
- Use always only clean water. Dirty water and chemical corrosive products are harmful for the machine.
- The machine is equipped with idle wheels; it thus recommendable to avoid placing the machine on ramps or slanted floors. Do not tilt the machine by more than 20 °C (with full tank).
- It is forbidden to use plug extensions if the work environment is subject to water/humidity presence which could cut the isolating conditions of the system. Always check the isolation of the electric cable as well as the equipment's integrity.
- In case an extension is required, be sure that plugs and sockets have a protection type IP65 and that the power cord complies with the table reported here below.

VOLTAGE V	EXTENSION LENGTH	CABLE SECTION
380 - 415	Max 50 mt	4x4 mm^2

7. MACHINE INSTALLATION

The machine you are about to use will operate at it's best if all instructions are duly followed. Before turning on the machine, make sure it is perfectly horizontal on a surface.

Connect the high pressure hose **A** to the gun **B** and the other end of the hose to the intake fitting, fixing tightly the fastening nut **C** (see fig.4).
Connect the lance **B1** to the gun **B**.

To start working press the lever pos. **1** and the water jet will come out from the lance. To stop the water jet just release the lever pos. **1**. Once you finished working release the lever, rotate the switch pos. **A** fig. 8 and set it on the **OFF**. To place the lance safely away once finished working insert the safety catch see fig. pos. **2**.

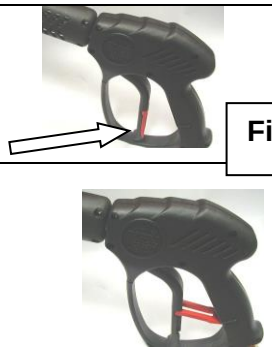
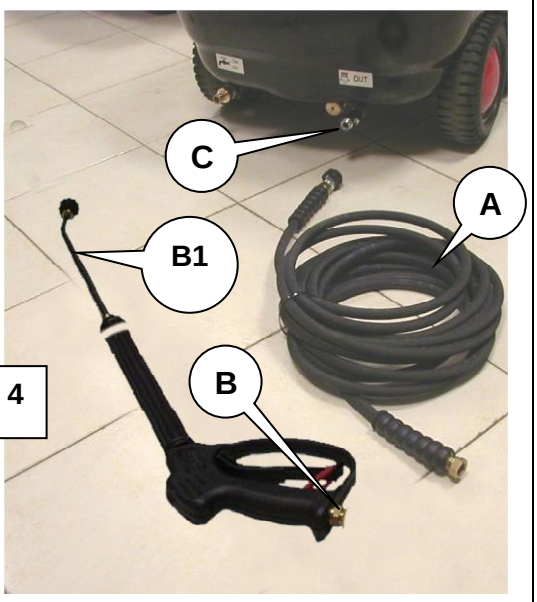


Fig. 4



Connect the water feeling hose **D** to the inlet fitting **E** (see fig.5).
It is recommended to use a reinforced hose having an inner diameter of at least 16 to 18 mm.
The water intake must be of at least 15 l/min and have a max inlet temperature of 60 °C.

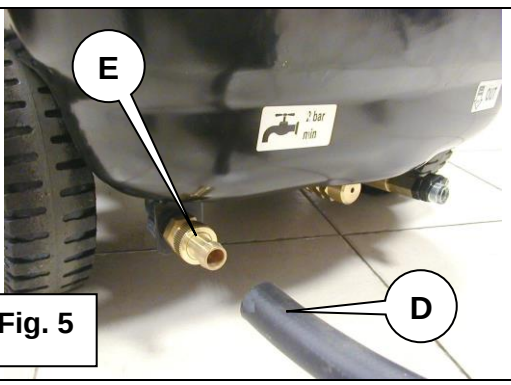


Fig. 5

Fill tank **F** (see fig. 6) with gas oil (Diesel).
Fill the detergent tank **G** (see fig. 6) with a biodegradable product.

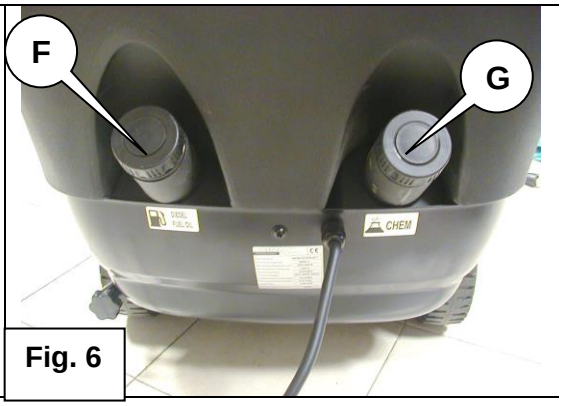


Fig. 6

Make sure that the electrical tension and amperage are suitable for the machine (see para. 3 «Technical data» and see electic motor plate). The machine must be connected to a suitable feeding point equipped with an efficient contact to earth and controlled by an overload cut out switch.

8. MACHINE START-UP

After having installed the machine, in order to operate it, open the water supply faucet **H**.

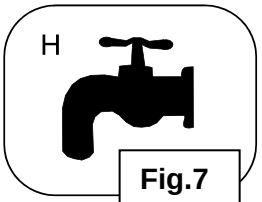


Fig.7

The control panel has been designed to run the operations easily. The knob **A** has three main functions:

Pos.1	OFF indicates that the machine is turned off.	Pos.2	The second position indicates that the motor pump is on.	Pos.3	The third position ON indicates that the boiler is on.

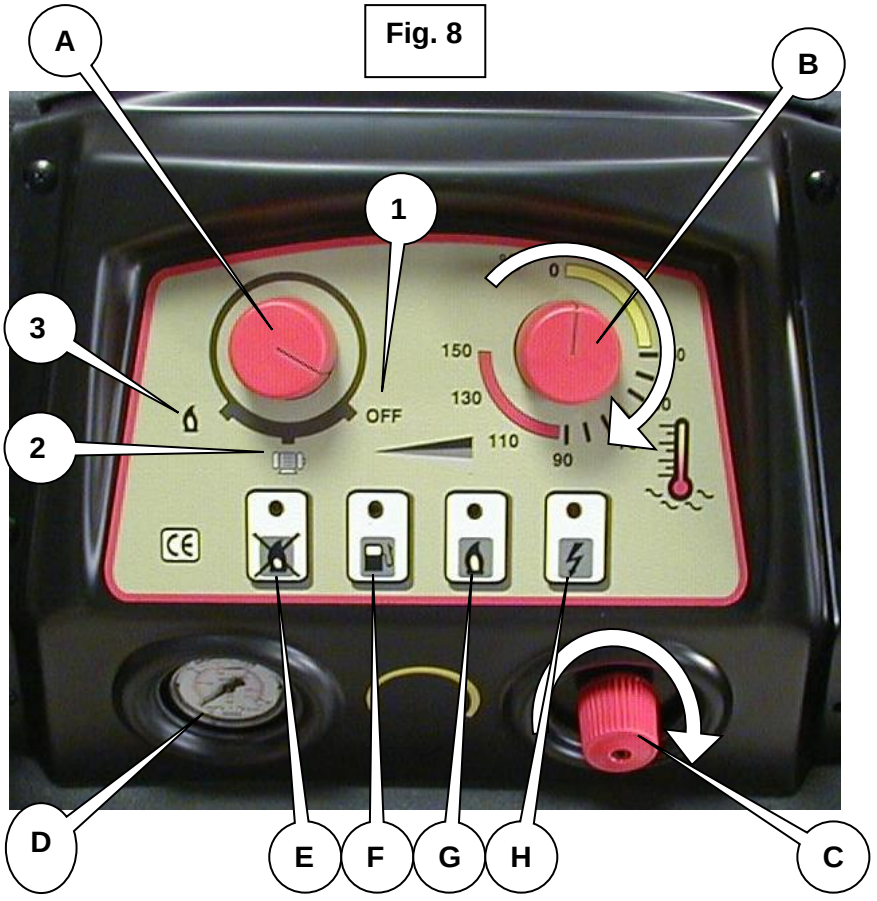
Knob **B** turns on the thermostat and permits to reach temperatures from 0 to 150 °C.

Knob **C** permits the operator to add chemical biodegradable detergent while the machine.

Attention: When the detergent suction use has finished, put again the knob in "OFF" position, otherwise the group suck up the air. When the use of detergent has finished, to clean, run the system with cleaning water.

Manometer **D** indicates the working pressure.

Fig. 8



On the machine's board are found also 4 lighted leds which indicate the following functions.							
 **E**	This is lit when the machine is working. It flashes (if provided) when the flame turns off inside the boiler.	 **F**	This is lit when there's a lack of fuel in the tank.	 **G**	This is lit when the burner is on.	 **H**	This is lit when there's tension in the electrical installation.

9. REGULATION OF THE OPERATING PRESSURE

On this machine It is possible to regulate the operating pressure. Move to near the machine cover, in the valve access window, see fig. **9**. Grip the valve knob, if provided, or use a wrench, if provided, in pos. **1**, and rotating clockwise (fig. **10** pos**. 1)** the pressure increases; rotating the knob (fig. **10** pos. **2)** anti-clockwise the pressure decreases.

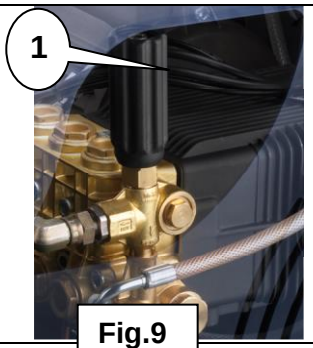


Fig.9

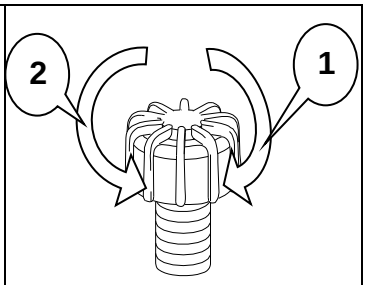


Fig.10

IMPORTANT! Make sure that the operating pressure never exceeds the pressure indicated on the pump's plate.

The hydraulic installation is equipped with a safety valve which operates in case of exceeding pressures.

10. MACHINE SHELTER

Once finished working after having discharged the remaining pressure in the hose and after having inserted the safety catch on the gun picture **4** pos. **1** and **2,** wind-up the electrical hose and the high pressure hose in order not to damage them. Place the high pressure cleaner in a sheltered away from the possibility of non authorized people to use it.

11. STANDARD EQUIPMENT

Check the machine as soon as you receive it. The machine must be equipped with a thermic lance, a 10 m. High pressure hose and a nozzle suitable for the model.

12. ACCESSORIES

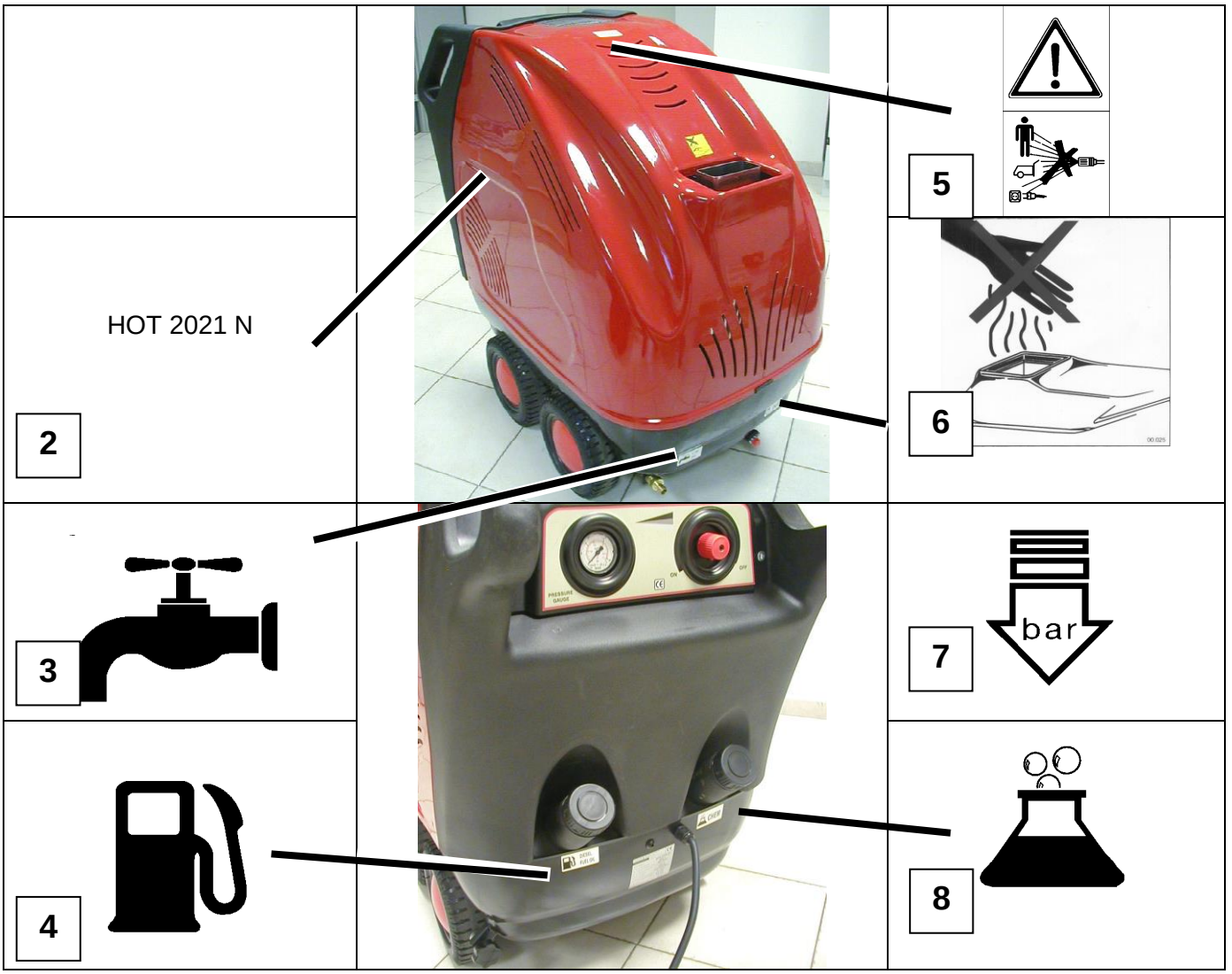
The company ANNOVI REVERBERI can supply, upon request, a nozzle with rotating jet suitable to clean up the hardest dirt present on the surfaces to be cleaned.

13. DETERGENTS

It is recommended to use only liquid detergents an to avoid using powder detergents. The detergents must be biodegradable as per the laws in force.

14. LABELS

Here below are listed all labels used and their meaning.



		5	Warning! Do not direct the high pressure jet towards people , animals or objects, etc.…
2	Type of machine	6	Warning! Outlet of high pressure exhaust gases
3	Water feeling	7	Lance delivery
4	Fuel tank	8	Detergent tank

WARNING !

Make sure that the labels are present on the machine and that they are readable; if they are missing or erased, please aattach new ones or replace them. They are available from the licensed dealers.

15. MAINTENANCE

WARNING!

- All maintenance operations must be carried out keeping the machine on an even floor. The machine must be disconnected from the main power and from the water supply.

- All fixing and maintenance operations must be carried out by authorized personnel.

- A correct use and maintenance are necessary to guarantee the machine's reliability and it's best performances.

- In order to ensure regular and constant performances it is recommended to use original spare parts only.

- The machine you have bought has undergone a factory test which ensures correct running at standard conditions.

- Beware! In case the machine has been kept inoperative for a long time, run some water through the coil until it comes out before using it again.

Besides preliminary controls, the machine needs constant checks that are to be carried out according to following time schedules.

Daily

Check the oil level of the pump, after having removed the cover. Unscrew the cap fig. **11** pos. **A**, check the level which should be between the max and the min., fig. **11** pos. **B** and if necessary add some**.** After having checked the level place back the cap and the cover. It is recommended to use oil type SAE 15W/40. The first oil top up should be carried out after one week work.

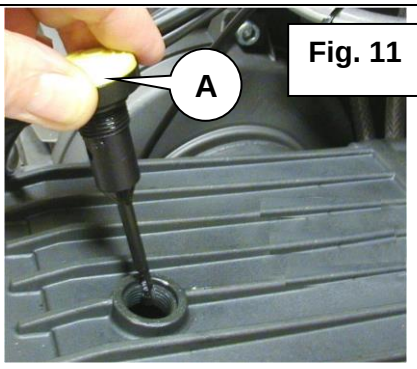
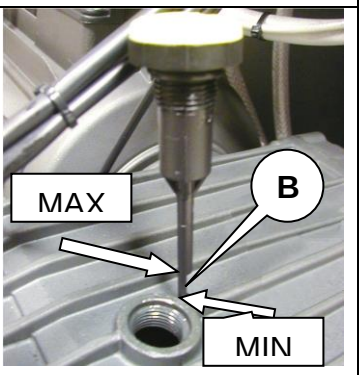


Fig. 11



Check the working condition of the feeding hose and the extension cable.

Every 2 weeks or after 50 hours of work

Clean the water filter inside the tank. Remove the cover and the cap of the tank fig. **12** pos. **A** Unscrew the plastic filter pos. **B.** Blow into it with an air jet and re-screw, put the cap and mount again the machine's cover.

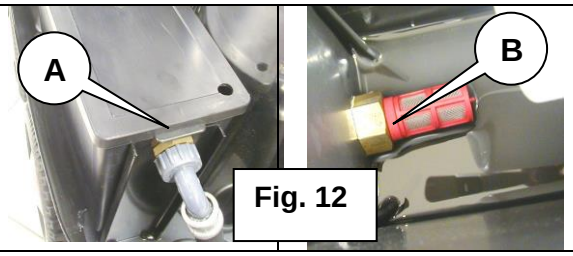


Fig. 12

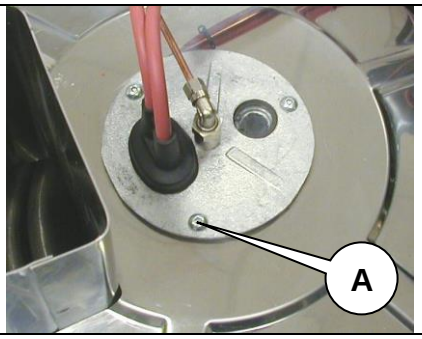
Replacing the fuel filter.
Remove the cover from the machine (check the filter cleaning). If dirty, replace it with a new filter.

Fig.14



Every month or after 100 hours of work

Clean the combustion head and check the electrodes. Remove the cover, unscrew the three screws fig. **15** pos. **A,** extract the combustion head group pos. **B**. Clean with an air jet the head and check the glow plug pos. **C.** The distance between the electrodes must be of 3 mm. If the distance must be adjusted, unscrew glow plug screw pos. **E**, remove the glow plug, udjust the distance to acheive the 3 mm distance. Reassemble the glow plug while checking it is fixed correctly. Place the combustion back in place using the three screws pos. **A**.
This maintenance operation must be carried our by skilled personnel.



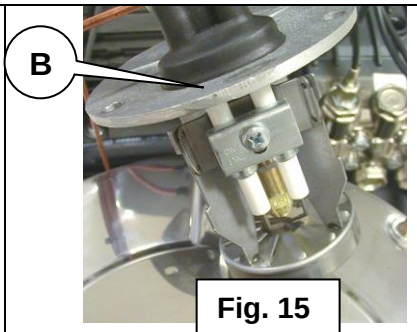
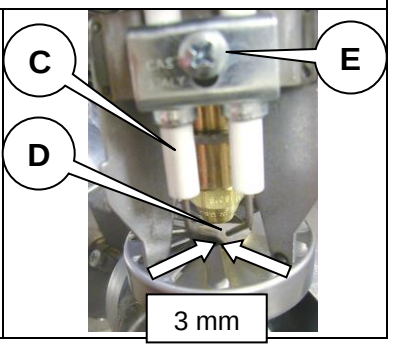


Fig. 15



Every month o after 200 hours of work

Clean the combustion filter.
Remove the cover.
Near the pump picture **16** pos. **A** on the side of the filter symbol, extract the plastic filter using a 4 mm socked head screw. Clean the filter with a light air jet an place it place back. I necessary replace it.

This maintenance operation must be carried our by skilled personnel.

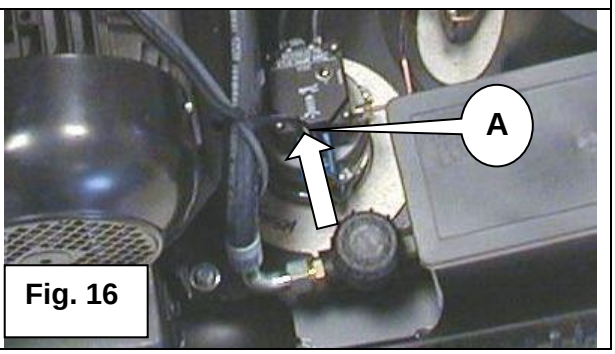


Fig. 16

16. COOLING COIL INTERNAL CLEANING

Contact an Authorized Service Centre.

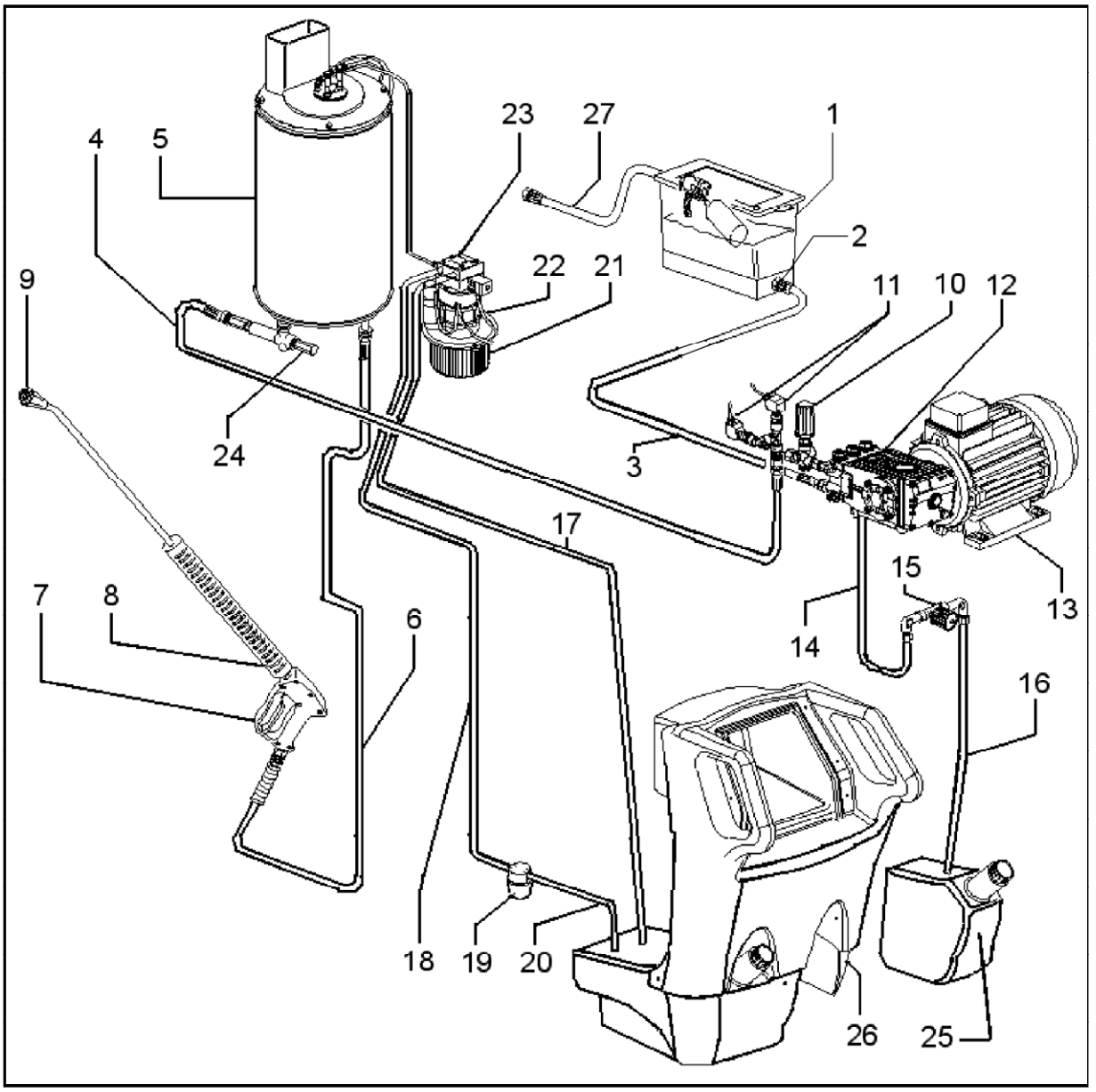
17. MACHINE DEMOLITION

If you want to junk your machine, please comply to the laws in force in your Country.
The machine is manufactured with parts containing recyclable metals and plastics. The oil found inside the pump is highly dangerous and pollutant and must not be wasted in the environment or poured into civic drains. For further informations, please contact your local commitee for exhaust oil drainage.

18. WARRANTY

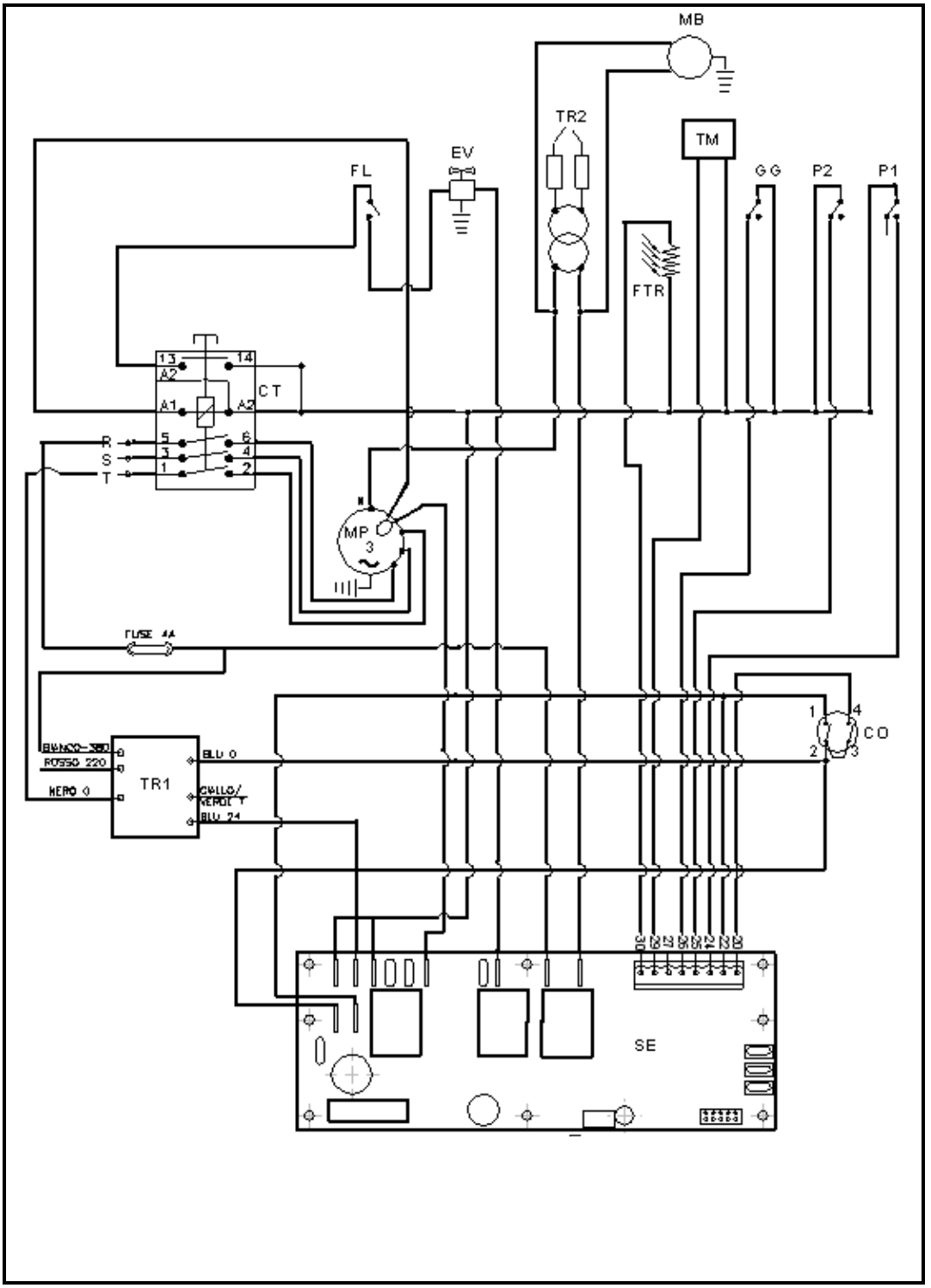
For as much as the machine's warranty is concerned apply to **WARRANTY CONDITIONS** and **WARRANTY CERTIFICATE** given with the machine.

19. HYDRAULIC SYSTEM DIAGRAM



1	Water tank	10	Pressure regulation valve	19	Fuel filter
2	Outer water filter	11	Pressure switch	20	2° fuel intake hose
3	A water intake hose	12	Pump	21	Motor fan
4	Boiler delivery hose	13	Electric motor	22	Burner motor
5	Boiler	14	Detergent intake hose	23	Fuel pump
6	High pressure hose	15	Detergent tap	24	Safety valve
7	Gun	16	Tank detergent hose	25	Detergent tank
8	Lance	17	Fuel discharge hose	26	Fuel tank
9	Nozzle	18	1° Fuel intake hose	27	Water net connecting hose

20. 3-PHASES ELECTRIC SYSTEM



FTR	PHOTORESISTANCE	P2	PRESSURE SWITCH 15 BAR
SE	ELECTRICAL CARD	P1	PRESSURE SWITCH 40 BAR
TR1	LOW PRESSURE TRANSFORMER	GG	FUEL FLOATING DEVICE
TR2	ELECTRODES HIGH PRESSURE TRANSFORMER	EV	ELECTROVALVE
TM	THERMOSTAT	MP	PUMP MOTOR
CO	COMMUTATOR	MB	BURNER MOTOR
FL	FLOW SWITCH	CT	CONTACTOR

21. DRAWBACKS, CAUSES AND SOLUTIONS

PROBLEM	CAUSE	SOLUTION
WATER DOESN'T COME OUT	Dirty water filter Blocked intake valves Clogged lance nozzle	Clean or replace Check Clean
INSUFFICIENT OR IRREGULAR PRESSURE	Open detergent valve intaking air Insufficient water supply Pump intaking air Worn out valve Worn out or not suitable nozzle Worn out gaskets Exceeding water temperature Encrusted coil	Check Check the capacity Check Replace Repalce Change Check Descale
THE BURNER DOESN'T TURN ON	Exceeding air intake Dirty fuel filter Dirty fuel pump filter Dirty burner nozzle Defected thermostat Obstruct or broken electrovalve Insufficient spark to the electrodes Defected flow meter and/or pressure switch Motor pump joint Insufficient or non exhisting voltage	Check Replace Clean or replace Replace Repalce Replace Replace Replace Replace Check
NOISY MACHINE	Air intake Worn out, dirty or obstructed valves Exceeding water temperature	Check the intake tubes
PRESENCE OF WATER IN THE OIL	Worn out water-oil seals High level of humidity in the air	Replace Check
OIL LEACKAGE FROM THE HEAD	Worn out O.Rings in the seal system	Replace
MOTOR DOESN'T START WHEN PRESSING THE SWITCH	The plug is not working due to overheating	Check the plug, the hose and the switch
MOTOR STOPS SUDDENLY	The thermic protection is not working due to overheating	Make sure that the tension is suitable

22. DECLARATION OF CONFORMITY

CE

DECLARATION OF CONFORMITY

Declares taking full responsability that
the product is in accordance with the following regulations
and relative documents

EN 60335-1 - EN 60335-2-79; EN 55014-1; EN 55014-2;
EN 61000-3-2; EN 61000-3-3; EN 61000-3-11; EN 60704-1

on the basis of the directives prescriptions

2006/42/CE

2006/95/CE, 2002/95/CE, 2002/96/CE, 2004/108CE, 2000/14/CE

Date: 29/12/2009
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