

VULCAN ADU INFRARED HEATER FOR CAR BODY SHOP ORIGINAL INSTRUCTION MANUAL



TROLLEY ITEM CHH5404
GENERATOR ITEM CHH5402
CHILLER ITEM CHH5403



ITEM CHH5408



ITEM CHH5409

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INTRODUCTION



PLEASE READ THIS INSTRUCTION MANUAL CAREFULLY BEFORE INSTALLING AND USING YOUR MACHINE

The purpose of this manual, and enclosed documents, is to transmit information necessary for the user to use this product skillfully and safely. This manual provides information on safety, installation, use, maintenance and disposal of this product. This manual is addressed to the plant manager who must hand it out to the personnel in charge of the installation, use and maintenance of this machine. The manager must make sure the information provided in this manual, and in the enclosed documents, is read and fully understood before operating this machine. This manual should be stored in a known place that is easy to access by all personnel involved, and should be referred to whenever any doubts arise.

This manual is an integral and essential part of the product; it must be kept for the machine's entire service life and must go with it in case it is transferred to a new user.

The time invested in adhering to these instructions will be amply rewarded by the perfect working order and safety of the machine. It is mandatory to comply with that which is outlined in this manual.

The machines described in this manual are designed solely for professional use in an industrial environment. They are not intended for use at home or in public low-voltage power lines that power buildings used for household purposes, as this can cause radio frequency interference.

This machine should be used only with original accessories or approved by the manufacturer.

Any changes, even though slight, are prohibited because they may compromise machine safety, and shall void the machine's EC certification.

The purpose of this machine consists in repair work at car body shops using infrared heating to remove the panels glued to the inside of a motor vehicle.

This machine is not suitable for production work.

CHIEF Automotive Technologies is not responsible for any injury or damage to people, animals, property and to the Vulcan ADU itself either caused by:

- failure to comply with all requirements of current safety standards;
- wrong installation;
- improper or incorrect use of the Vulcan ADU;
- non-compliant use as compared to that specified in this manual;
- lack of maintenance;
- changes or tampering, even slight, or any unauthorized intervention:
- use of non-original or incompatible accessories or spare parts;
- total or partial failure to comply with instructions;
- special events.

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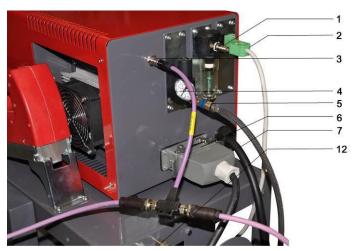
SYMBOLS USED

The following symbols are used in this manual and on the machine to: highlight potential hazards, indicate prohibitions and requirements for safe product use and to identify machine parts.



IDENTIFICATION OF THE MAIN PARTS OF THIS MACHINE





- 1 Compressed air inlet line
- 2 Chiller power cord connection
- 3 CAN cable to connect calibrator and lamp controls
- 4 Pressure gauge (to be set to 1 bar)5 Air outlet for lamp cooling
- 6 Lamp power cord connection
- 7 Generator power cord
- 8 Generator
- 9 IR-Lamp
- 10 -Trolley
- 11 Chiller
- 12 Water inlet/outlet

STANDARD ACCESSORIES

The machine comes with the following parts:

- 1 Generator ITEM CHH5402
- 1 Lamp ITEM CHH5408 and connecting cables.

OPTIONS

- 1 Trolley ITEM CHH5480.
- 1 Chiller ITEM CHH5480.
- 1 Vulcan ADU Instruction Manual.
- 1 Control Unit Instruction Manual.

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS	,				
Power supply (three-phase)					
U1N	V	400	400	230	230
f	Hz	50	60	50	60
Insulation class		F	F	F	F
IP rating		IP21	IP21	IP21	IP21
Chiller cooling system capacity					
Generator weight	lbs	57	57	57	57
Chiller cooling	Kg	26	26	26	26
Chiller cooling Lamp weight	lbs	7	7	7	7
Lamp weight	IDS	/	<i>'</i>	,	/
Lamp art. CHH5408	Kg	3	3	3	3
CONNECTION DATA	rtg	0			<u> </u>
Power cable					
Length	m	10	10	10	10
Core section	mm ²	6	6	6	6
Required distribution system					
cables / extension cords					
		6	6	6	6
Total L <= 15 m	mm ²	10	10	10	10
Total L = 30 m	mm ²				
Required line protection					
Plug	Α	32	32	32	32
Delayed fuses (aM)	Α	32	32	32	32
Compressed air minimum pressure					
for rated performance				_	
n1min	bar	3			
p1min Compressed air maximum pressure	psi	43.5			
Compressed all maximum pressure					
	bar	9			
p1max	psi	130.5			
Compressed air hose min. inside Ø	POI		10	0.0	
Compressed an index imm meide 2	mm	8			
Minimum compressed air flow					
	l/min		12	20	
Environmental operating conditions	°F	5-104	5-104	5-104	5-104
	%/°F	50/107	50/107	50/107	50/107
Temperature	%/°F	90/68	90/68	90/68	90/68
Humidity (non-condensing)					
	°C	5-40	5-40	5-40	5-40
	%/°C	50/40	50/40	50/40	50/40
	%/°C	90/20	90/20	90/20	90/20
EMISSION DATA	1	1	ı	1	1
Airborne noise					
Standard cooling	dB(A)	< 70	< 70	< 70	< 70
Heat exchanger	` '				

GENERAL DESCRIPTION

Infrared heating, microprocessor controlled, fully automatic system, suitable for bodywork applications.

New Vulcan ADU control touch screen with user-friendly graphics, to aid the operator in using this machine. Choose between automatic and manual mode or according to temperature profiles. USB interface to export data relating to performed heating profiles.

This heating system's main features are:

- 1. Temperature management both in °C and °F.
- USB interface to load the pre-parameterized profiles for the automatic and temperature profile operating modes.
- 3. Firmware upgrade through USB.
- 4. Alarms buzzer.
- Automatic recognition of the type of heating tool connected to the machine.

SAFETY REQUIREMENTS



This paragraph contains important information on how to use the product safely. Anyone using this product must read and understand its contents before using the machine. You must

follow what is indicated.

Use the Vulcan ADU in a place that meets the following characteristics:

- It must be used in a closed environment and may not be used outdoors.
- Ambient temperature between 41 and 104 °F and not higher than 914 yard above sea level.
- In a well-ventilated, dry area, free from dust, vapours, acid fumes
- Not to be used in environments with explosive atmosphere or fire risk.
- In a well-lit room in relation to the work to be done.
- Floor must be level, smooth and obstacle-free.

If you plan on using this machine for work that may generate fumes, you should install a suitable suction system.

The polymerization of adhesives can generate fumes that can be harmful if inhaled. Follow the directions provided by the material manufacturers, so as to take the necessary protective measures.

In order to use this machine safely, it must first of all be installed by qualified personnel, complying with all the instructions provided in the "INSTALLATION" chapter.

Experienced personnel should carry out the job. The machine should be adjusted solely by personnel authorized to do so. Since machine adjustments affect operational safety, whoever performs said adjustments must possess the required skill. Carefully follow the instructions provided in the "WORK" paragraph.

It is forbidden for more than one person to work on this machine at a time. Prohibit access to the work area to anyone who is not authorized to operate this machine.





While working with this machine, use tinted glasses to reduce glare due to light reflection on heated parts. Wear work gloves or use special tools when

handling heated sheets to avoid getting burnt.



Some parts of the machine (heating tools) may get excessively hot if the machine is used at a too-fast work pace. Carefully analyze work conditions and use appropriate personal protective equipment

(such as gloves, aprons and other PPE clothing).



The sheets on which work is performed reach high temperatures in the heated area. Make sure there are no flammable materials in contact with or close to the sheets on which you have to work as

they could ignite during the process. Always wear suitable protective gloves to avoid getting burnt.

Your gloves should always be dry and in good condition.



Keep the area surrounding the machine free of flammable materials. In case of fire do not use water but do use adequate fire extinguishers.

Do not cover the machine's air grids. Insufficient ventilation could cause excessive temperature and trigger a fire.

Do not pull the machine's cables when moving it around. Do not pull its cord to remove the plug from the socket. Keep cords away from heat, oil and sharp edges. If you damage the power cord while working, unplug the power plug immediately. Do not use the machine if the power cord is damaged.

Machine maintenance should be carried out by carefully following the safety instructions provided in the "MAINTENANCE" chapter. In particular, be sure to power off the machine before carrying out maintenance in the heating tool.

The machine's cooling liquid contains ethylene glycol which is harmful if swallowed and can cause redness and irritation if it comes into contact with your eyes. Be careful when replacing arms and electrodes.

If this machine comes into contact with water that penetrates into its inner parts, power off the machine immediately and unplug the power plug. Follow this same procedure whenever there is any situation where there may be a risk of electric shock. After an emergency, the machine may be restarted solely by trained personnel who know which checks must be performed on the machine.

In addition to the information provided in this paragraph, always keep in mind the relevant prevailing regulations.

INSTALLATION

Firstly, make sure the place in which the machine is used complies with the specifications outlined in the "SAFETY RULES" paragraph.

On receiving the Vulcan ADU, check that the outside of the packing is intact, otherwise report any anomalies to the person in charge. Any damage to the packing should give rise to doubts as far as what condition its contents might be in.

In order to handle the packing, use only a forklift or a transpallet, paying attention to its weight and other handling instructions reported on it.

Remove the packing and visually inspect machine integrity. Ensure the machine has all the accessories that come with it (page 4) as well as the optional items indicated in the compiled and signed check-list (page 20). Promptly report any missing parts to the supplier.

Use a suitable lifting device and straps to unload the machine from the pallet.

All the material that makes up the packing should be disposed of in full compliance with current environmental protection regulations.

ASSEMBLY

Refer to the following instructions and directions shown in Fig. 2 (page 15) to assemble parts that are supplied disassembled.

If you purchased only the generator Item CHH5402, with lamp included, be sure to have performed the following steps:

- 1. Connect the machine from an electric standpoint:
 - Connect the lamp power supply through the appropriate ilme connector.
 - b. Connect the chiller power supply to the generator.
 - c. Connect the CAN cable to the lamp's control and also, where applicable, to the optional calibrator through a "T" connection.
- 2. Connect the machine from a pneumatic standpoint;
- 3. Connect the machine from a hydraulic standpoint.

If you also purchased the chiller art. Item CHH5480, repeat steps from 1 to 3 using the chiller in question.

If you also purchased the trolley Item CHH5404, place the chiller and the generator above it and repeat steps from 1 to 3.

COOLING SYSTEM

In order to cool the machine adequately, it is equipped with a chiller that maintains the water in the cooling circuit at a temperature of 68°F. This machine cannot be used if connected to a heat exchanger.

Fill the tank using only a mixture of water and antifreeze liquid for car radiators. The antifreeze liquid is necessary for its anticorrosive properties.

Use only antifreeze liquid similar to that supplied: ethylene glycol-based, in a concentration of about 50%, with the addition of corrosion inhibitors.

Mix the antifreeze liquid with water in a range of 10 to 20%.

Use a higher percentage if you need to prevent the liquid from freezing when the machine is kept in cold environments. Keep in mind that this reduces machine performance, since increasing glycol percentage decreases cooling efficiency.

Follow the antifreeze liquid manufacturer's instructions to determine the amount to be used, in relation to the desired freezing temperature. The table below shows an example for the antifreeze liquid supplied (50% of glycol).

Freezing temperature	Percentage of antifreeze liquid with 50% of glycol
0 °C / 32 °F	0 %
-2 °C / 28 °F	8 %
-5 °C / 23 °F	18 %
-10 °C / 14 °F	36 %
-15 °C / 5 °F	54 %
-20 °C / -4 °F	68 %

When filling and/or topping up the coolant, always be sure to use perfectly clean liquids and containers.

ELECTRIC INSTALLATION



The installation should be carried out by qualified personnel, aware of safety rules, who closely adhere to the directions contained in this manual.

The machines described in this manual are designed solely for professional use in an industrial environment.

WARNING: the machines in question are not intended for use in public low-voltage power lines that power buildings used for household purposes. This can cause radio frequency interference.

Before connecting the machine to the line, check that the mains voltage matches that indicated on the plate. This machine was built to be used solely at the supply voltage indicated on the plate and is not set-up to be adjusted to other supply voltages.

Install a plug on the power cord; its required flow rate is indicated in the technical specifications table (page 4). Figure 2 (page 13) shows some connection examples,

It is mandatory to connect the machine to the ground wire. Ensure the system's protective conductor is efficient and complies with current regulations.

The technical features table (page 4) outlines supply line requirements.

Do not use extension leads but if strictly necessary they should be as short as possible and have a core section appropriate to their length (indicated in the technical features table on page 4).

This machine is not designed to be powered by electricity generating units. Using a unit of that type should be carefully evaluated to avoid the presence of surges that could damage the machine.

WORK

PRELIMINARY CHECKS

Make sure the floor is level, smooth and obstacle-free. While moving this machine, any obstacles on the floor could cause the wheels to lock and overturn the machine.

Check that the machine is not exposed to water splashes or penetration of liquids, dirt, metal filings, etc.

Check that the cables do not get in people's way and do not cause danger or risk of being damaged.

Check the machine's condition each time before using it and also that of the power cable and plug; do not use the machine if you notice any defects.

Before connecting the plug and turning on the machine, check that all safety requirements have been met.

Connect the plug only to a socket having characteristics that correspond to the specifications provided (capacity and sizing of the protective devices indicated in the specifications table) and equipped with a protective conductor (ground wire).

PROGRAMMING

You can work in the following three ways:

- The <u>manual</u> mode is used when you have to heat a part by supplying heat in a constant manner to it, without the control unit having any limits on the temperature that the heated piece can reach.
- The <u>automatic</u> mode is used when you have to heat a part at a user-defined temperature and you want to prevent the temperature of the heated object from exceeding the set value, even in case of prolonged exposure to infrared radiation. The Vulcan ADU will modulate power so that the object to be heated will not exceed the temperature set on the control unit.
- The <u>profile</u> mode generates a temperature profile that varies over time and contains 5 different temperature values at the most. Heating that varies according to a thermal profile is useful to reduce paint drying time or the polymerization time of structural adhesives. Drying or adhesive polymerization operations are performed in this work mode.

The programming instructions are included in the control unit manual.

AUTOMATIC mode

Allows the user to access the Vulcan ADU automatic work mode. This mode is used when a part needs to be heated at a temperature defined by the user and when the user wants to prevent the temperature of the heated object from exceeding the set value, even in case of prolonged exposure to infrared radiation. The Vulcan ADU will modulate power so that the object to be heated will not exceed the temperature set on the control unit.

MANUAL mode

Allows the user to access the Vulcan ADU manual work mode. This mode is used when a part needs to be heated through constant heat without the control unit having any limits on the temperature that the heated part can attain.

TEMPERATURE PROFILES mode

Allows the user to access the Vulcan ADU profile work mode. This mode allows the generating of a temperature profile that varies over time and that features up to 5 different temperature values. Heating, according to a variable thermal profile, is useful to reduce paint drying time or polymerization time of structural adhesives.

PROCESS

Strictly respect all safety requirements when working.

Refer to the control unit manual for the operating information.

If necessary, calibrate the lamp's temperature sensor by placing the calibrator on the surface to be processed, press the calibration start key (22) and wait until the screen displays that control unit calibration is finished. Refer to the control unit manual for any further relevant information.

Place the lamp on the surface to be processed. Heating starts by pressing the start trigger (25). You can see operating temperature and power applied to the lamp on the control unit monitor. Refer to the control unit manual for any further relevant information.

Once the surface process is over, you can terminate the heating procedure in the ways described in the control unit manual.

If any problems occur, an appropriate error message will be displayed on the screen.

At the end of the process, the display shows the temperature values reached by the surface to be heated and the power and set point temperature used.

To avoid performing low-quality work, it is advisable to adhere to the following recommendations:

• The glass of the lamp must always be clean:

When the process is finished, power off the machine, unplug the electrical plug and shut off the compressed air supply. Store the machine in a dry, protected place. Before powering off the machine and unplugging the plug, wait until the system properly cools down the lamp; wait until the message clears from the control unit (approximately 5 minutes after using it the last time).

IR-LAMP AND CALIBRATOR





- 20 Temperature sensor
- 21 Calibrator interface
- 22 Calibrator start button
- 23 Calibration done
- 24 Handgrip
- 25 Control trigger to start the heating process

DESCRIPTION

The cables that connect the heating tool to the machine are very light and flexible, ensuring good tool handling during the heating stages.

The heating tool has an anatomic grip (24) that houses the start control trigger (31).

The start triggers begins the heating stage.

MAINTENANCE

The following maintenance operations are to be performed solely by trained personnel, able to perform the specified operations safely. When possible, the machine should be powered off, the power cord unplugged and the compressed air supply disconnected.

Warning! After powering off the machine, some of its inner parts remain live for several minutes (power capacitors). Wait at least 5 minutes before performing maintenance inside the Vulcan ADU.

ORDINARY MAINTENANCE

GENERAL INFORMATION

- Check the cleanliness of the heating tool's contact surfaces. If necessary, clean it with a soft cloth.
- Check the cleanliness of the infrared lamp glass and, if necessary, clean it with isopropyl alcohol and a soft cloth.
- Keep the machine clean. Do not use water jets to clean the machine as they could penetrate inside. Also avoid using strong solvents, thinners or gasoline that could damage the paint or the machine's plastic parts.
- Clean the control unit's screen using a dry soft cloth; do not use water, solvents, alcohol or abrasive cloths. Limit the exposure of the control panel to direct sunlight.

ELECTRICAL CIRCUIT

- You should frequently check the condition of the power cord, the plug and the heating tool connecting cables. Replace the power cord if you notice any cracks, cuts, scrapes, etc.
- Make sure the machine is connected to the protective conductor and that the ground wire, both inside the power cord and the heating tool connecting cable, is not interrupted.
- Periodically check the ground efficiency of the system.

COOLING CIRCUIT

- Keep the water level in the chiller within the "normal" water level.
- Clean the chiller heat exchanger, Item CHH5480, using compressed air, on a regular basis.
- Check that slag/waste of any kind does not deposit inside the tank and hoses, otherwise remove and wash properly.

WARNING: do not keep the machine in places where the coolant could FREEZE.

If you have to store the machine in a place where the aforesaid risk subsists, be sure to use an appropriate amount of antifreeze otherwise empty the cooling circuit completely.

EXTRAORDINARY MAINTENANCE

Only specialized technicians are allowed to perform interventions inside the machine.

The machine is equipped with a thermostatic safety device. If it overheats, the following message is displayed:

TFMP

Do not power off the machine but let it cool down. This message clears automatically once the machine has cooled.

The control unit's internal memory is powered by a lithium battery type CR2032. Replace the battery in case of a memory malfunction. Perform the replacement after unplugging the power cord and be sure to use only a similar battery.

REPLACING THE QUARTZ GLASS LAMP

- 1. Refer to the assembly figure on page 17.
- Power off the machine and electrically disconnect it from the mains as a precaution.
- 3. Wait until the lamp is cold before continuing.
- Disconnect the lamp from the generator by disconnecting the ilme supply connector and the CAN communication cable.
- 5. Remove the two no. 5 Allen screws of latch no. 9.
- 6. Remove latch no. 9.
- Slide out the lamp's quartz glass (11) paying attention not to touch it with your fingers; use gloves or a soft cloth for this operation.
- 8. Fit the new quartz glass (11) paying attention not to touch it with your hands.
- Use isopropyl alcohol to clean the glass (11) in case you touched it with your hands.
- 10. Refit latch no. 9.
- 11. Refit the two no. 5 Allen screws of latch no. 9.
- Reconnect the lamp to the generator, connecting the ilme supply connector and the CAN communication cable.

REPLACING THE IR-LAMP

- 1. Refer to the assembly figure on page 17.
- 2. Power off the machine and electrically disconnect it from the mains as a precaution.
- 3. Wait until the lamp is cold before continuing.
- Disconnect the lamp from the generator by disconnecting the ilme supply connector and the CAN communication cable.
- Open the two covers (10), located on the lamp's righthand and left-hand sides, proceeding with one cover at a time as follows:
 - a. Place the lamp on one cover (on the side).
 - b. Remove the screws marked by numbers 1-2-3-4.
 - c. Remove the cover (10).
 - d. Place the lamp on the opposite side.
 - e. Remove the screws marked by numbers 1-2-3-4.
 - f. Remove the cover (10).
- 6. Remove the two no. 5 Allen screws of latch no. 9.
- 7. Remove latch no. 9.
- 8. Slide out the lamp's quartz glass (11) paying attention not to touch it with your fingers; use gloves or a soft cloth for this operation.
- Remove the two no. 5 Allen screws that support latch no. 8 which holds the infrared bulbs in place.
- Slide out the electrical connection cables, of the infrared lamp to be replaced, from the specific connector no. 7.
- 11. Replace the damaged infrared lamp (6) paying attention not to touch it with your fingers. Since the bulb should not be touched with your fingers, used clean gloves during this operation, but if you mistakenly touch the lamps before installing them, be sure to clean them using isopropyl alcohol.
- 12. Reconnect the electrical connection cables of the infrared lamp by shortening them as required.
- 13. Refit the latch no. 8.
- 14. Refit the two no. 5 Allen screws of latch no. 8.

- 15. Refit the quartz glass (11) paying attention not to touch it with your hands.
- 16. Refit the latch no. 9.
- 17. Refit the two no. 5 Allen screws of latch no. 9.
- Close one lamp cover and refit the screws marked by numbers 1-2-3-4.
- 19. Place the lamp on the side of the cover (10) that was just mounted.
- 20. Close the cover (10) over the lamp and refit the screws marked by numbers 1-2-3-4.
- 21. Reconnect the lamp to the generator, by connecting the ilme supply connector and the CAN cable.

SERVICE AND WARRANTY

Contact your distributor either to order spare parts or for repairs. To know the warranty conditions, see the general terms of sale on the www.chiefautomotive.com website.

DISPOSAL

All the materials that make up the packing must be disposed of in full compliance with the regulations in force on environmental protection.

The control unit contains a lithium battery that must be replaced on a regular basis. Do not dispose of that battery in your general household waste and do not throw it in fire or water. Keep out of each of children. You should collect and dispose of batteries correctly, respecting the environment and local regulations.

The coolant must be disposed of in accordance with local regulations.

Only for Countries belonging to the EC:



In accordance with that stipulated by European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), the presence of this symbol means that the product should not be disposed of as municipal waste. It must be

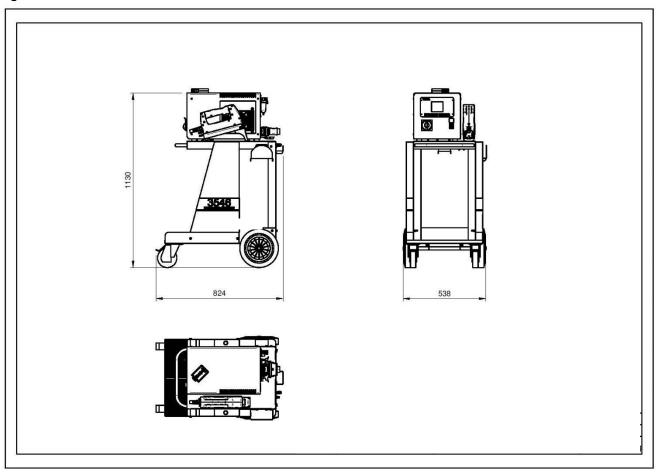
collected separately. The user is responsible for the proper disposal of the product by contacting his/her relevant local authority or local dealers. You will incur in sanctions if you unlawfully dispose of this type of waste.

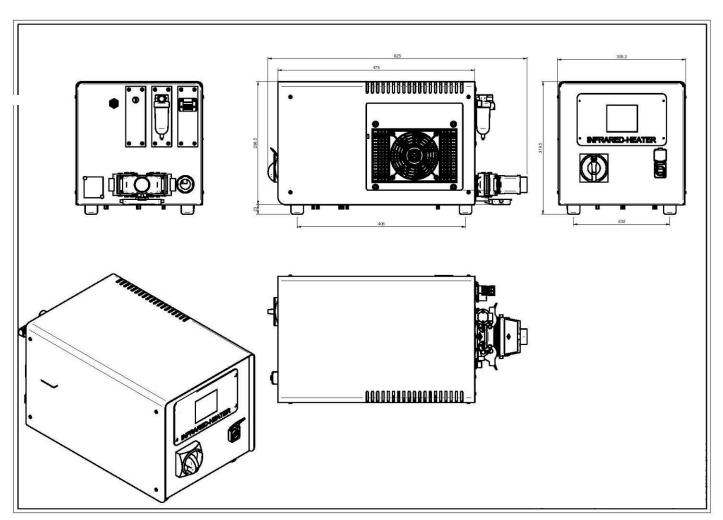
Correct disposal will help maximize recovery, recycling and reuse of materials while minimizing potential adverse effects on the environment and health.

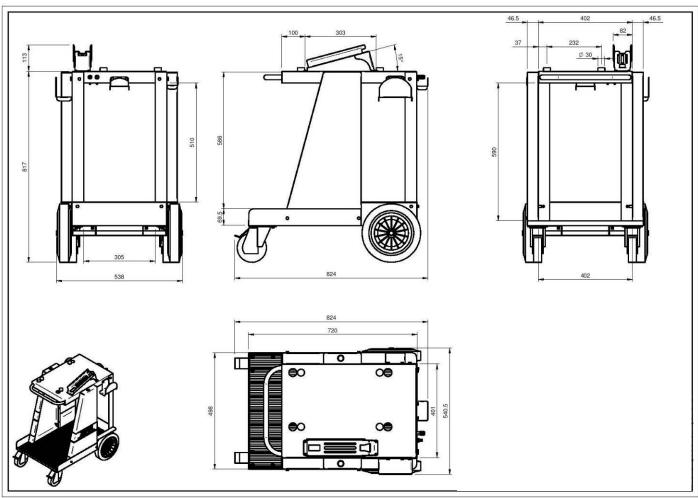
TECHNICAL DOCUMENTATION

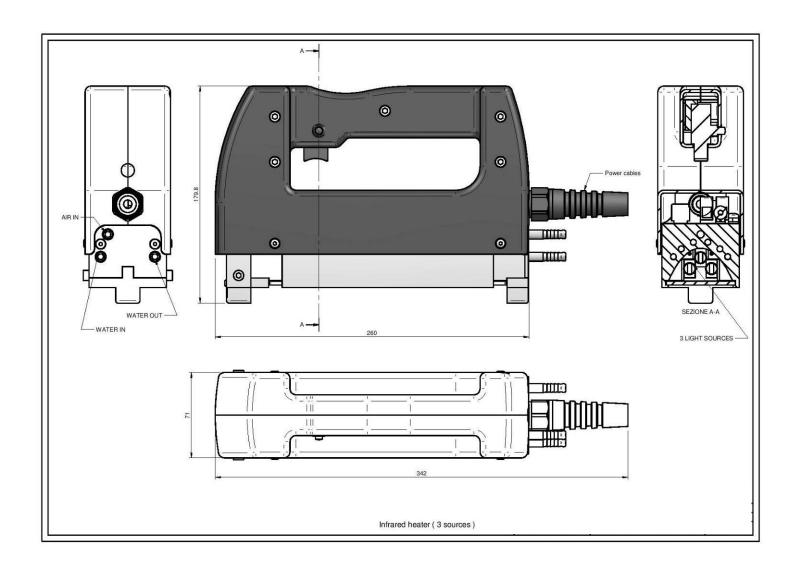
DRAWINGS AND TABLES

Fig. 1 Dimensions









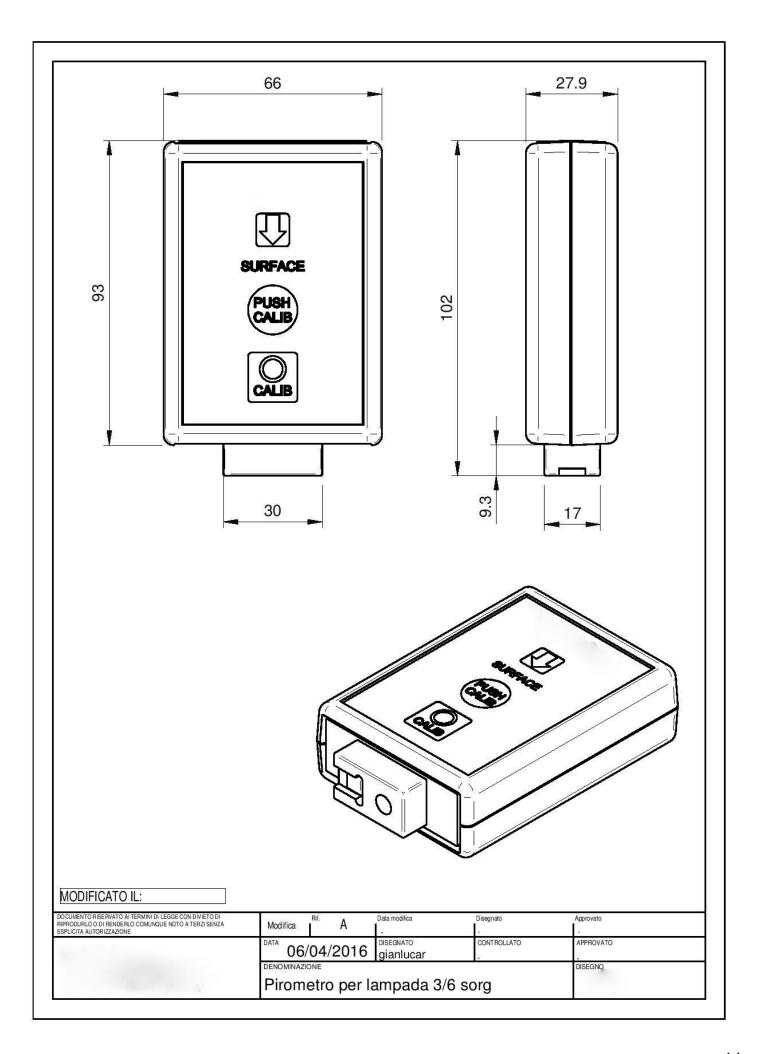


Fig. 2 Trolley assembly

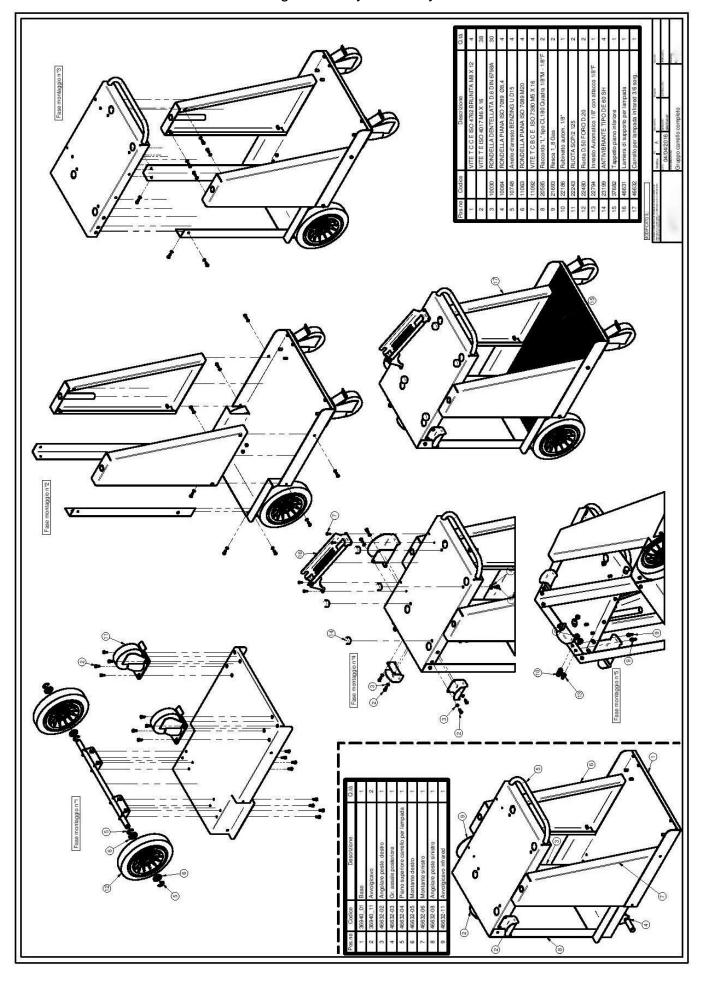


Fig. 3 Replacing the glass and/or lamp

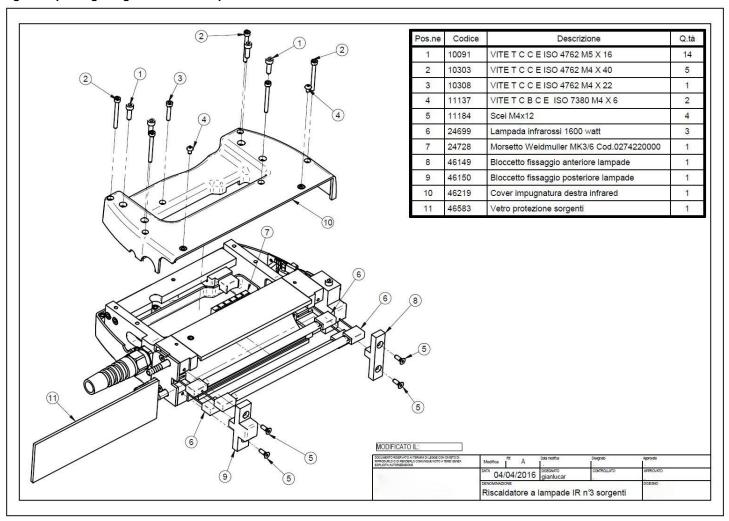


Fig. 4 Control unit assembly

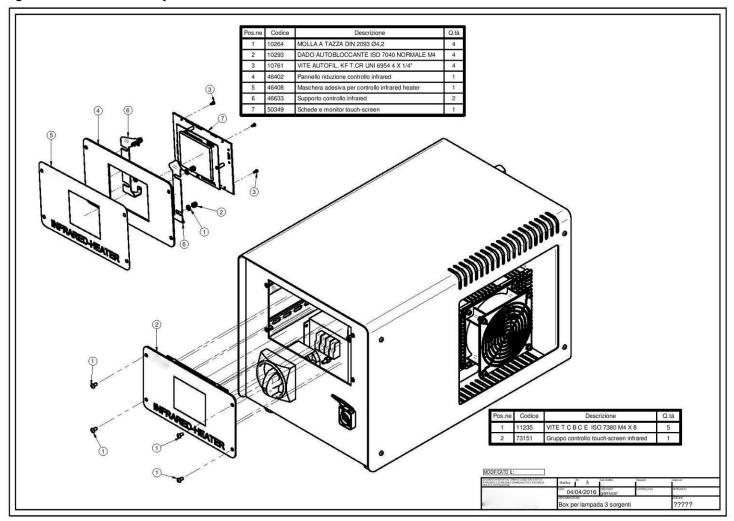
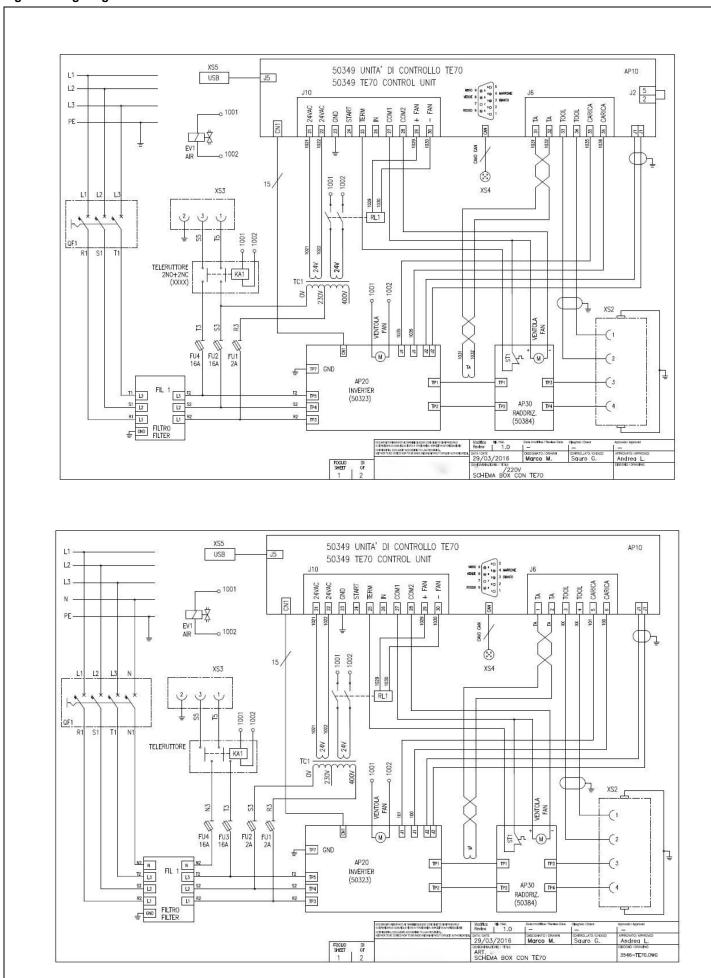
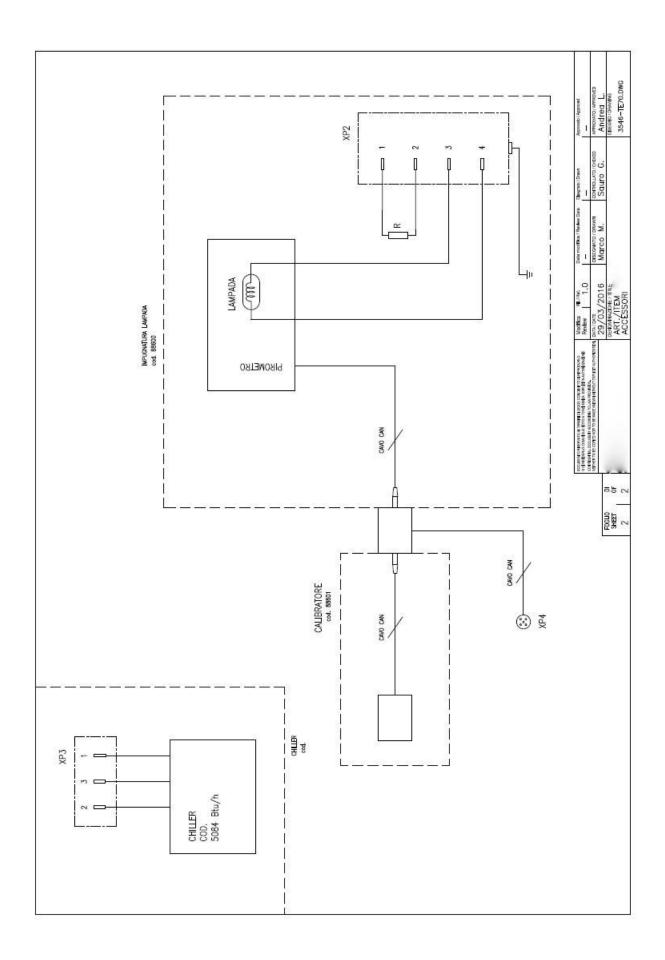


Fig. 4 Wiring Diagram







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