ORIGINAL INSTRUCTIONS

OPERATING & MAINTENANCE MANUAL

JETFIRE

SPACE HEATERS

DI 45

Infrared Ray Heat Generator

Not for domestic use - Space Heating Only

Made in Italy for:
Spitwater Australia Pty Ltd T/A Ottico Equipment
953 Metry Street, Albury NSW 2640 Australia
spitwater.com.au

WARNING: Read and understand this instruction manual before operating this unit and retain for future reference. Failure to follow operating, safety and maintenance instructions outlined in this manual releases the manufacturer from any responsibility for any accidents or damage incurred and may render any warranty void.

INTRODUCTION

Spitwater Australia is proudly Australian owned and operated since 1982. Our promise is to provide our customers with superior quality portable industrial heaters built to the highest of standards that will see many years of reliable service.
The JETFIRE range of portable industrial heaters are designed to give safe, efficient, and reliable service when the correct operating and safety instructions are followed, and proper attention is given to all required maintenance procedures in order to maintain the unit in peak operating condition.
This manual provides the up-to-date information necessary for the user to operate the unit and carry out regular inspection and maintenance.
Please note that the information given within this manual may be subject to revision in compliance with Spitwater Australia's policy of continual improvement.

The JETFIRE range of heaters should only be used in the manner and purpose for which theywere intended
and in accordance with the recommendations and safety precautions detailed in this manualand in operating instructions and stickers on the unit itself.

All JETFIRE heaters undergo rigorous safety and operational tests before being dispatched into the marketplace; however it is still imperative that prior to use, all operators have read and understood all information and instructions provided and are aware of possible hazards.

GENERAL DESCRIPTION & INTENDED USE

JETFIRE Heaters are specifically designed to solve all problems relating to heating drying and desiccating in commercial and industrial applications. Some examples of applications are in warehouse and factory heating, animal husbandry and greenhouse applications.

SPARE PARTS, ACCESSORIES & SERVICE

Spitwater has an extensive range of spare parts and accessories to suit all your heating needs. For spare parts, accessories and service please refer to the contact section on www.spitwater.com.au or contact **1800 SPITWATER (1800 774 892)**.

TECHNICAL SPECIFICATIONS				1 1 SPEED	1 DV 1 SPEED DV	2 2 SPEED
Max heating output	I S	Hi	[kW]	- - -		34,4
			[kcal/h]	- - -		29.574
		Hs	[kW]	- - -		36,7
			[BTU/h]	- - -		125.455
Max heating output	II S	Hi	[kW]	42,7		42,7
			[kcal/h]	36.713		36.713
		Hs	[kW]	45,5		45,5
			[BTU/h]	155.737		155.737
Fuel consumption	I S		[kg/h]	-		2,90
	II S			3,60		3,60
Power supply	Phase			1		1
	Voltage		[V]	230	110 - 240	230
	Frequency		[Hz]	50		50
Power consumption			[W]	370	380	370
Electric current			[A]	2,0	4,3 – 2,2	2,0
Nozzle			[USgal/h]	Delavan 0,85-80° W		Delavan 0,75-80° W
Pump pressure	I S		[bar]	-		11
	II S			12		17,5
Adjustment of combustion air flap			[N°]	A = 2		A = 2
Tank capacity			[l]	65		65
Noise level at 1 m			[dBA]	72		72
L x D x H - Dimensions			[mm]	1410x712x1053		1410x712x1053
Weight			[kg]	73		73
Fuse			[A]	-	6	6

DESCRIPTION OF SYMBOLS

The following symbols are used throughout this instruction booklet in order to mark important paragraphs or sections that are due particular attention. Their meaning is listed next to them foryour attention.

	WARNING Failure to follow instruction could result in injury or death		WARNING Failure to follow instruction could result in damage to machine		These are tips and instructions to ensure safe and proper operation

The following symbols are used on the machine in order to warn user of potential injury if not cautious. Their meaning is listed next to them for your attention.

	WARNING Hot surface Do not touch, will result in injury		WARNING Electric shock Disconnect power before removing cover

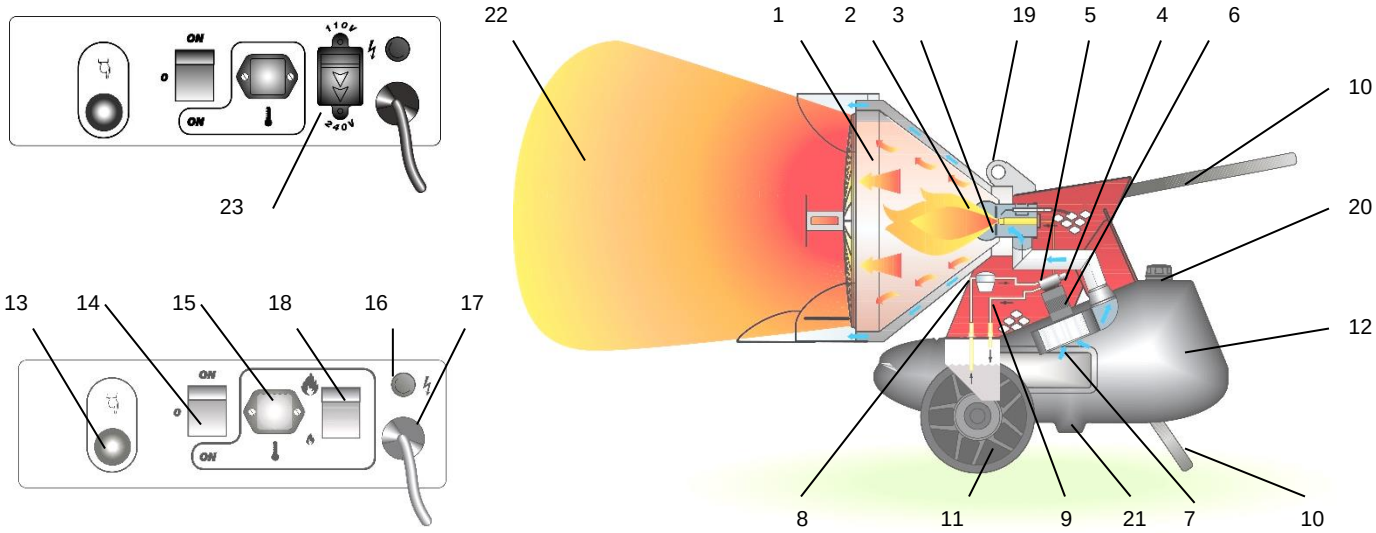
IMPORTANT SAFETY INSTRUCTIONS AND PRECAUTIONSWARNING:

This heater shall only be used by persons instructed in its use and who have been authorized to do so. Before using this heater, please pay attention to thefollowing safety warnings as failure to do so could result in serious injury or even death.

SAFETY LABELS

Always pay attention to the safety instructions provided on each label. Do not alter orremove safety labels

OPERATING DIAGRAM



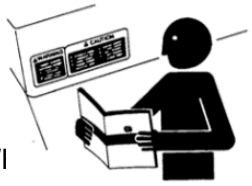
1 COMBUSTION CHAMBER
2 BURNER
3 NOZZLE
4 SOLENOID VALVE
5 DIESEL PUMP
6 MOTOR
7 FAN
8 FUEL FILTER
9 FUEL CIRCUIT
10 SUPPORT/HANDLE
11 WHEEL
12 FUEL TANK
13 RESET BUTTON
14 MAIN SWITCH
15 ROOM THERMOSTAT PLUG
16 ELECTRIC PILOT
17 POWER CORD
18 THERMAL POWER SWITCH (-2 OR -2 SPEED)
19 HOISTING HOOK
20 FUEL CAP
21 DRAIN PLUG
22 HEAT FLOW
23 INPUT VOLTAGE

IMPORTANT

Before using the space heater, carefully read all 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.

IMPORTANT SAFETY INSTRUCTIONS AND PRECAUTIONS

GENERAL

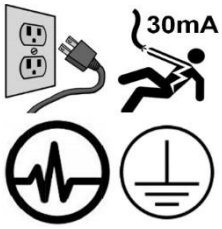


- This heater must only be operated by authorized persons.
- THIS HEATER IS APPROVED FOR INDUSTRIAL USE ONLY.
- NOT FOR DOMESTIC USE. Space heating only.
- DO NOT SPRAY AEROSOLS IN THE VICINITY OF THIS APPLIANCE WI OPERATION
- DO NOT USE OR STORE FLAMMABLE MATERIALS IN OR NEAR THIS APPLIANCE
- DO NOT MODIFY THIS APPLIANCE
- DO NOT PLACE ARTICLES ON OR AGAINST THIS APPLIANCE
- USE IN A WELL-VENTILATED SPACE.
- Do not operate the heater if it is damaged.
- This heater must be positioned and operated on flat stable ground, not exposed to the elements (rain, hail etc.) and must be operated in an upright position.
- Never leave the heater unattended while operating.
- Make sure you have read and understood the whole instruction manual before installing, operating, or carrying out any maintenance on the unit.
- Warnings and data plates on the unit provide important directions and information on safe use of the unit.
- In addition to these operating and safety instructions, all accident prevention regulations as well as any standards relating to the installation and operation of heaters applicable in your country must be strictly followed.
- This unit is not intended for use by children. Children must always be supervised when in the vicinity and ensure that they DO NOT play with the unit. Further, it is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge
- The heater is not to be installed in an area where there is a risk of fire or explosions;
- Never operate this heater in basements or below ground level because of gas stagnation.
- Do not use the heater on floors made with flammable materials.
- Do not store flammable materials in the vicinity of the heater (minimum distance: 3m);
- Ensure no overheating of walls, or ceilings made of flammable materials,
- Ensure all precautions have been taken to prevent fires;
- Ensure the premises in which the heater is installed are sufficiently ventilated for the burner requirements; in particular, limits regarding air quality in the room to be heatedmust conform to applicable laws;
- Ensure nothing is obstructing the aspiration and expulsion of air; movement of air maybe obstructed in various ways including placing covers or other objects on the heater or positioning the heater too near a wall or other large object;
- Never direct the hot air flow from the heater towards the gas cylinder
- Ensure the heater is regularly monitored during operation and checked before being started;
- Ensure at the beginning of each use, a check is made that the fan moves freely before plugging the heater into the electrical power supply;
- Ensure at the end of each use, the mains switch is disengaged and supply power cord removed, main gas stop cock is closed and gas tube disengaged and sealed.

1. GENERAL ADVICE

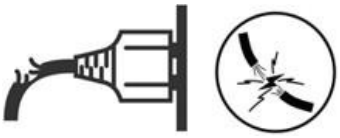
The heater must be installed, set up and used in accordance with the applicable regulations and relating to the use of such equipment. Minimum distance from surrounding walls and/or ceiling: 2M.

2. ELECTRICAL CONNECTION



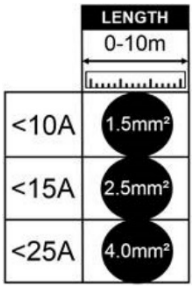
- The voltage, hertz rating and number of phases on the data plate must correspond to that of the electrical mains outlet that the unit isbeing connected to.
- Only connect the unit to electrical installations made by **certified electricians and in keeping with local electrical regulations and requirements.**
- It's recommended that the electrical supply to this unit should include either a residual current device that will interrupt the supply if the leakage current to earth **exceeds 30mA for 30 ms** or a device that will prove the earth circuit.
- This Class 1 Appliance must only be connected to an earthed power supply fitted with an appropriately sized fuse.
- The heater may be connected to a room thermostat by connecting to the thermostat plug(10). Other accessories such as a timer may also be connected.

3. POWER CORD



- Make sure before every use that the power cord assembly is not damaged or cut. If it is, DO NOT connect the unit, have it replaced by an electrician or authorized service technician. **(Type Y attachment)**
- DO NOT pull on the power cord in order to unplug the unit, remove the plug from thepower outlet.

4. TENSION CORD



- If using an extension cord, make sure it is a maximum length of 10 metre and sized according to cross section requirements as shown to the right.
- Inadequate extension cords can be dangerous. If an extension cord is used, it must be suitable for outdoor use and the connection must be kept dry and off ground.
- Make sure the extension cord is fully unrolled, kept dry, away fromtraffic, sharp edges, and heat to avoid damage or cuts.
- If using an extension cord, make sure it is not connected to mains voltage when connecting / disconnecting to the unit's power cord.

5. TRIP HAZARD

- Loose extension cords and power cables provide a potential trip hazard,especially when they cross pathways.
- Take safety measures like placing traffic cones along the cord or tape thecord to the floor with duct tape.

6. FIRE PREVENTION AND HOT SURFACE CAUTION

- Use only in areas free from flammable materials (flammable vapours,high dust concentrations etc.)
- Keep combustible materials a safe distance from this unit (minimum 3m)
- An external guard should be placed 1m away from the heater outlet toprevent the approach of combustible material.
- Make sure firefighting equipment is readily available

- To avoid burns, be cautious of hot components like the chimney or the Hot Air outlet and its vicinity.
- Do not under any circumstances restrict the air inlet or outlet of the unit. Always allowa clearance of 3m in front (air outlet), 1 m above and behind (air inlet) and 600mm onthe sides.
- Do not operate this heater with the top cover removed.

7. EXHAUST & FLUE GASES

- Unit exhaust fumes (which contain carbon monoxide) can lead to death if allowed to build up. Make sure the unit is operated in an area where permanent ventilation to the outside atmosphere is provided. Mandatoryminimum room size: 350 Meters Squared (M3)
- Allow a minimum room size as listed in the technical specifications.
- Ensure that any exhaust emissions are not in the vicinity of air intakes.

8. FUEL AND LUBRICANTS

- DO NOT smoke or allow flames or sparks in your work area. LPG is extremelyflammable and explosive under certain conditions.

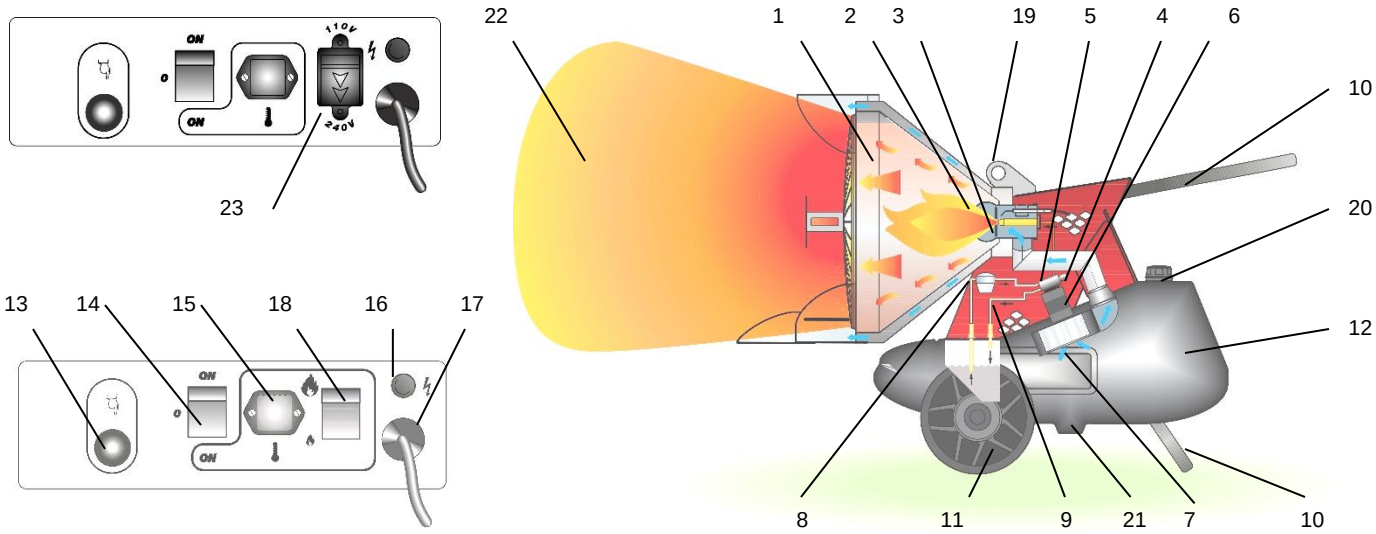
9. TRANSPORT

- Disconnect the unit from the power supply and allow it to cool off before moving between work areas.
- Always use the handle to lift and move the unit.
- If transporting the unit make sure it is appropriately strapped to avoid hazards.

10. MAINTENANCE AND SERVICE

- The heater must be checked that it is safe and in proper working order before putting it into service and before every use. If the unit is damaged do not use it.
- Always disconnect the unit from the power supply and allow it to cool off before carrying out any inspection, service task or disassembling any part of the heater.
- Never carry out any maintenance work not expressly outlined in this booklet and never make any modifications to this unit.
- Never tamper with any settings of the unit (sealed or unsealed) and make sure that a Spitwater authorized service agent carries out all servicing as required as this usually includes checking the correct functioning and setting of all safety devices as well as the correct combustion of the unit.
- Always use original Spitwater spare parts when parts replacements are required.
- Inspect the unit each day before use. Follow “Daily inspection checklist” guide *Table-B* in the Maintenance section.
- Service the unit regularly based on its usage. Follow “Usage vs Service frequency” Table *(Table-A)* in the MAINTENANCE section. Always use a Spitwater authorized service agent where requested to.
- Failure to follow the maintenance guidelines in this booklet releases Spitwater from any responsibility in reference to injuries and damages to both persons and goods and may also render any warranty given with the unit void.

OPERATING DIAGRAM



1	COMBUSTION CHAMBER
2	BURNER
3	NOZZLE
4	SOLENOID VALVE
5	DIESEL PUMP
6	MOTOR
7	FAN
8	FUEL FILTER
9	FUEL CIRCUIT
10	SUPPORT/HANDLE
11	WHEEL
12	FUEL TANK
13	RESET BUTTON
14	MAIN SWITCH
15	ROOM THERMOSTAT PLUG
16	ELECTRIC PILOT
17	POWER CORD
18	THERMAL POWER SWITCH (-2 OR -2 SPEED)
19	HOISTING HOOK
20	FUEL CAP
21	DRAIN PLUG
22	HEAT FLOW
23	INPUT VOLTAGE

IMPORTANT

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GENERAL RECOMMENDATIONS

The generator described in this manual is a portable oil-fuelled infrared heat generator.
Its easy handling and large fuel tank allow it to be used locally and temporarily with complete standalone operation. The area to be heated is therefore hit by an even and uniform flow of heat, as can be seen by the shape of the irradiation cone (22), without air movement. The unit is a direct combustion hot generator that works by sending both hot air and combustion products in the room you wish to heat: all the necessary precautions must therefore be taken to guarantee a sufficient exchange of air discharge the fumes through the chimney.

Warning
THIS HEATER IS FOR PROFESSIONAL USE. IT HAS BEEN CAREFULLY DESIGNED FOR MOBILE AND TEMPORARY PROFESSIONAL APPLICATIONS.
IT HAS NOT BEEN DESIGNED FOR DOMESTIC USE NOR FOR COMFORT HEATING AND SHOULD NEVER BE USED TO HEAT CLOSED ROOMS WITHOUT ADEQUATE VENTILATION.

Always follow local ordinances and codes when using this heater:

- Follow the instructions in this booklet very carefully;
- Use only in places free of flammable vapours or high dust content;
- Keep inflammable material at a safe distance from the heater (minimum 3 metres);
- Make sure firefighting equipment is readily available;
- Ensure that the machine resting surface or ground is not made of flammable material;
- Make sure sufficient fresh outside air is provided according to the heater requirements. Direct combustion heaters should only be used in well vented areas in order to avoid carbon monoxide poisoning;
- nothing is obstructing the aspiration and expulsion of air; movement of air may be obstructed in various ways including placing covers or other objects on the heater or positioning the heater too near a wall or other large object;
- In case of very low temperatures add kerosene to the heating oil;
- Make sure heater is always under surveillance and keep children and animals away from it;
- Before starting the heater always check free rotation of ventilator;
- Unplug the heater when not in use.

SAFETY DEVICES

The heater is fitted with an electronic device that controls the flame and the maximum safe temperature by means of a photocell and an overheat thermostat.
The electronic device controls start/stop times and trips the safety in case of malfunctions. It has reset button (13) that can assume different colours (Function Light) depending on the function mode:

- off: heater is in idle mode or in “stand-by” mode, waiting for heating request;
- steady green: heater functioning normally;
- steady red: heater in safety stop;
- flashing orange: heating interrupted due to excessive variations in voltage supply (T<175V or T>265V); heating will resume automatically when voltage returns in range from 190 V and 250 V.

Warning
To restart heating after a safety stop, push reset button (13) for 2 seconds.

Warning
NEVER do more than two restarts in a row: uncombusted diesel fuel may accumulate in the combustion chamber and suddenly flare up at the next restart.

If the safety stop persists, you have to find and eliminate the cause of the stop before you restart the heater. Push button (13) for at least 5 seconds to launch a self-diagnosis programme, after which the button will assume different colours (Self-diagnosis light) depending on the type of safety that tripped:

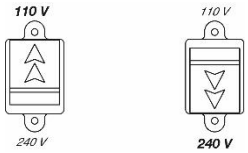
- flashing orange: false flame detected during restart cycle.
- flashing red: no flame during restart cycle.
- flashing red/green: no flame during work cycle.
- steady orange: internal error of electronic device.

Warning
See “TROUBLESHOOTING” to identify the cause of the malfunction.

OPERATION

Before switching on the heater and, therefore, before plugging it into the electrical power supply, check that the power supply specifications are the same as those stated on the identification plate.

Warning
For models “DV” check that the arrows on the voltage supply selector key cover are pointing to the voltage value required.



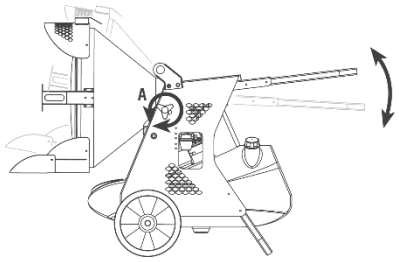
If necessary:

- **remove the cover;**
- **press deflector (23) to the position required;**
- **replace the protective cover.**

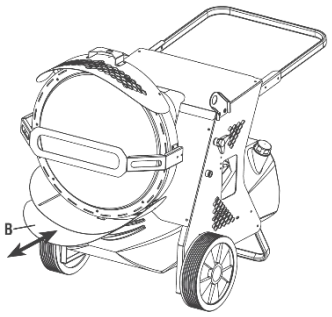
Warning
The power line must be earthed and fitted with a residual current circuit breaker.
The heater plug must be inserted into a socket equipped with a mains switch.

The heater must be placed on a flat, stable, and levelled surface in order to prevent it from overturning and/or diesel leaks from the tank filler cap.

The flow of heat can be directed upward with an approximately 10° angle: loosen the two locking knobs (A) and tilt the combustion unit by pressing on the handle until the desired angle is reached, then lock the knobs (A) by screwing them.



Warning
Before start-up, always ensure the guard (B) has been completely pulled out, so as to guarantee maximum protection of the machine resting surface.



You can run the generator in manual by setting switch (14) to ON.
The generator can only work automatically when a control device, such as for example a thermostat or a timer, is connected to the heater.
Connection to the heater is made by removing the socket cover (15) and inserting the thermostat plug.
To start the machine, you must:

- if connected to the thermostat, turn the switch to (ON + 🌡);
- if not connected to the thermostat, turn the switch to (ON);

Warning
At the end of the start cycle, the electronic control device causes button (13) to flash briefly to confirm completion of the heater start cycle.

When the unit is started for the first time or is started after the oil tank has been totally emptied, the diesel flow to the burner may be impaired by air in the circuit. In this case the control box will cut out the heater and it might be necessary to renew the starting procedure once by depressing the reset button (13).
If the heater does not function, the first things to do are:

1. Check that the tank still contains some diesel;
2. Push reset button (13);
3. If the heater still does not function, see TROUBLESHOOTING" to identify the cause of the malfunction.

Warning
Never stop the machine by unplugging the electrical plug: this could cause overheating.

STOPPING THE HEATER

Set main switch (14) on "0" position or turn thermostat or other control device on lowest setting.
The flame goes out and the fan continues to work for approximately 90 sec. cooling the combustion chamber.

TRANSPORT

Warning
Before moving the heater:

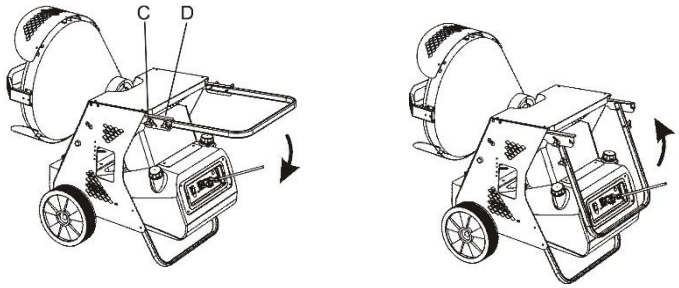
- **Stop the heater as indicated in the "STOP" paragraph;**
- **Cut electrical power by removing the plug from the electrical socket;**
- **Wait until the heater cools.**

Before moving the heater, make sure the oil tank cap is securely attached.

Warning
Diesel may leak during handling and transport: the fuel tank cap is not sealed. This allows air to enter and allows the tank to be emptied while the heater is running.

For handling in short to medium distances, it is enough to grab the generator by the handle and roll it on its wheels. In case of need, the generator can be lifted using ropes or chains secured to the hooks (19) provided on the machine.

In this case, make sure that the ropes and/or chains are securely attached and that they are in perfect condition before you start to move the heater.
If the heater is stored or shipped on a truck, the handle can be folded to reduce the heater's size. To do this, loosen knobs C and D, free the handle from connection D and rotate it downward as shown in the following figure:

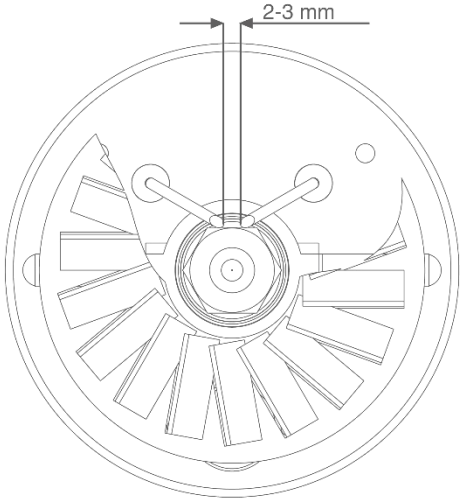


To return the handle to its original position, rotate it upward, make sure it is connected to connection D, and then fully tighten knobs C and D.

MAINTENANCE
To ensure correct heater function, you have to clean the combustion chamber, burner, and fan at regular intervals.

Warning
Before starting any maintenance procedure, ALWAYS:
- **Stop the heater as indicated in the "STOP" paragraph;**
- **Cut electrical power by removing the plug from the electrical socket;**
- **Wait until the heater cools.**

Every 50 hours of operation:
- Disassemble the filter cartridge, remove it, and clean it with clean diesel fuel;
- Disassemble the external cylindrical fairing and clean the inside and the fan blades;
- Check the condition of the leads and of the high-voltage connections to the electrodes;
- Disassemble the burner and clean all of its parts. Clean the electrodes and set the gap to the value specified in the paragraph "SETTING THE ELECTRODES".



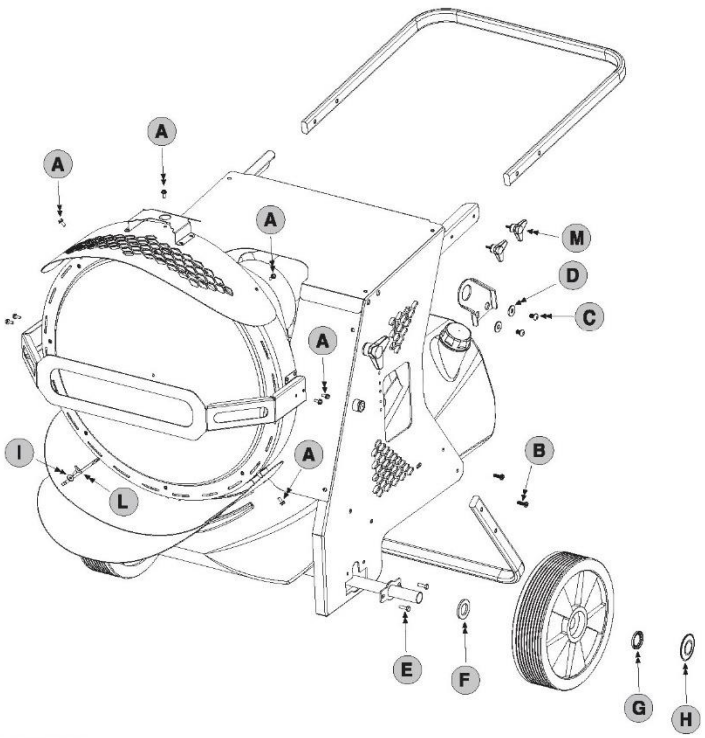
ELECTRODES SETTING DIAGRAM

TROUBLESHOOTING

PROBLEM	RESET BUTTON (13)			CAUSE	REMEDY
	FUNCTION LIGHT	SELF-DIAGNOSIS LIGHT			
Motor does not start, no ignition	Off	-		• Wrong setting of room thermostat or other control	• Check the correct setting of heater control. If thermostat, make sure selected temperature is higher than room temperature
				• Defective thermostat or other control	• Replace control device
Fan does not start or stops during start-up or heating	Flashing orange	-		• No electrical current	• Check mains
					• Check proper positioning and functioning of switch
					• Check fuse
				• Voltage below 175V	• Check supply voltage: heater will restart automatically when voltage exceeds 190 V
				• Voltage above 265V	• Check supply voltage: heater will restart automatically when voltage is below 250 V
Fan stops during start-up or heating	Steady red	Flashing orange		• Presence of flame before transformer ignites	• Clean and eliminate diesel residue in combustion chamber
				• Defective photocell	• Replace photocell
		Flashing red or flashing red/green		• Defective electrical motor	• Replace electrical motor
				• Defective electrical motor bearings	• Replace electrical motor bearings
				• Burned out condenser	• Replace condenser
				• • Defective electric ignitor	• Check connection of H.T. wires to electrodes and transformer
					• Check electrodes setting (see scheme “SETTING THE ELECTRODES”)
					• Check electrodes for cleanliness
					• Replace H.T. transformer
				• Defective flame control box	• Replace control box
				• Defective photocell	• Clean or replace photocell
				• Insufficient or no fuel at burner	• Check state of motor-pump plastic coupling
					• Check for any air infiltrations in the fuel line by checking the air-tightness of the pipes and of the filter seal.
					• Clean or replace oil nozzle
				• Defective solenoid • Defective electric ignitor	• Check electrical connection
					• Check thermostat LI
					• Clean solenoid valve and replace it if necessary
		Flashing orange		• Internal error of electronic device	• Reset the device and attempt at least two starts. If the problem persists, replace the device
Fan starts and flame lights, generating fumes	Steady green			• Insufficient combustion air	• Make sure air inlet and outlet are free
					• Check the position of the air regulation ring
					• Clean burner disc
				• Excess combustion air	• Check the position of the air regulation ring
				• Fuel contaminated or contains water	• Drain fuel in tank and load with clean fuel
					• Clean oil filter
				• Air leaks in fuel circuit	Check the seals on the ducts and the diesel filter
				• Insufficient fuel at burner	• Check pump pressure
					• Clean or replace fuel nozzle
				• Excess fuel at burner	• Check pump pressure
					• Replace nozzle
• Heater does not stop	Steady green	-		• Defective solenoid seal	• Replace complete solenoid

If the heater is still not working properly, please contact your nearest authorized dealer.

FOOT / HANDLE ASSEMBLY INSTRUCTION



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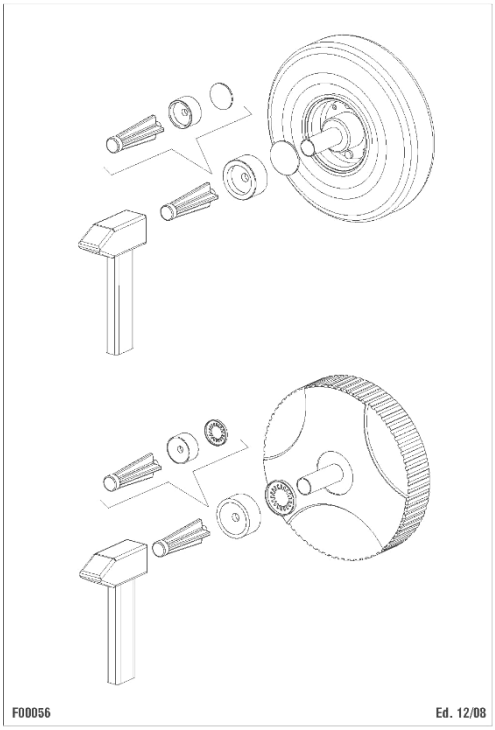
			N°
A		TE M5x12	10
B		TC M6x20	4
C		TBEI M8x25	4
D		Ø8 x Ø24 x 2	4
E		TE M6x20	4
F		Ø26 x Ø44 x 4	2
G		Metal wheel holder Ø25	2
H		Plastic plug	2
I		Ø5 x Ø15 x 1,5	2
L		Knob M5x16	2
M		M6x30	4



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NOTES: