THERMOBILE®

IMAC 4000 OIL US

USER MANUAL

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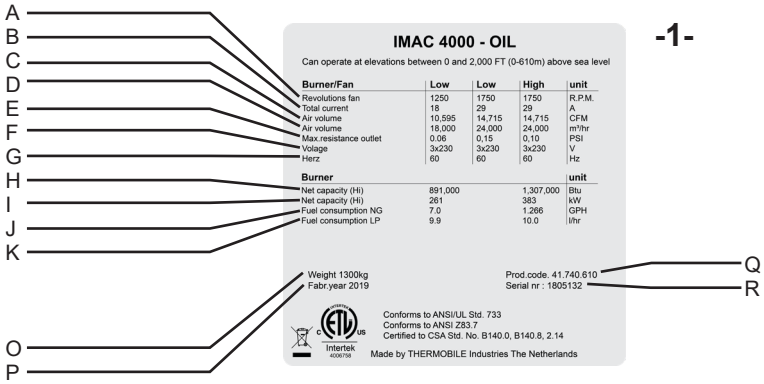
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IMAC 4000 - OIL
Can operate at elevations between 0 and 2,000 FT (0-610m) above sea level
Burner/Fan | Low | Low | High | unit
Revolutions fan | 1250 | 1750 | 1750 | R.P.M.
Total current | 18 | 29 | 29 | A
Air volume | 10,595 | 14,715 | 14,715 | CFM
Air volume | 18,000 | 24,000 | 24,000 | m³/hr
Max.resistance outlet | 0.06 | 0,15 | 0,10 | PSI
Volage | 3x230 | 3x230 | 3x230 | V
Herz | 60 | 60 | 60 | Hz
Burner | | | | unit
Net capacity (Hi) | 891,000 | | 1,307,000 | Btu
Net capacity (Hi) | 261 | | 383 | kW
Fuel consumption NG | 7.0 | | 1.266 | GPH
Fuel consumption LP | 9.9 | | 10.0 | l/hr
Weight 1300kg
Fabr.year 2019
Prod.code. 41.740.610
Serial nr : 1805132
Intertek
4006756
Conforms to ANSI/UL Std. 733
Conforms to ANSI Z83.7
Certified to CSA Std. No. B140.0, B140.8, 2.14
Made by THERMOBILE Industries The Netherlands

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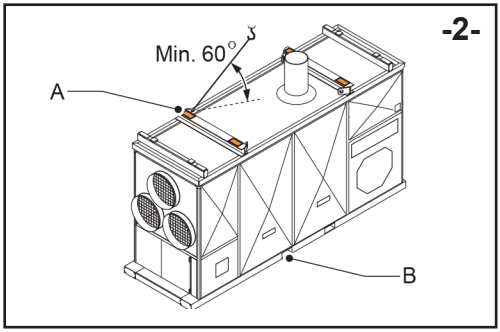
Min. 60°
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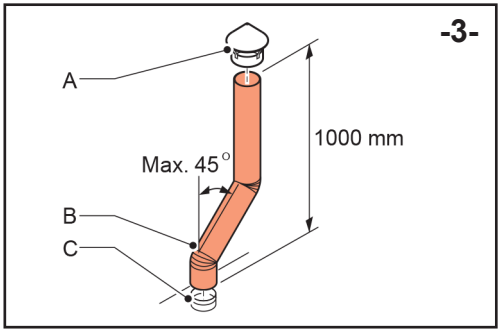
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1000 mm
Max. 45°
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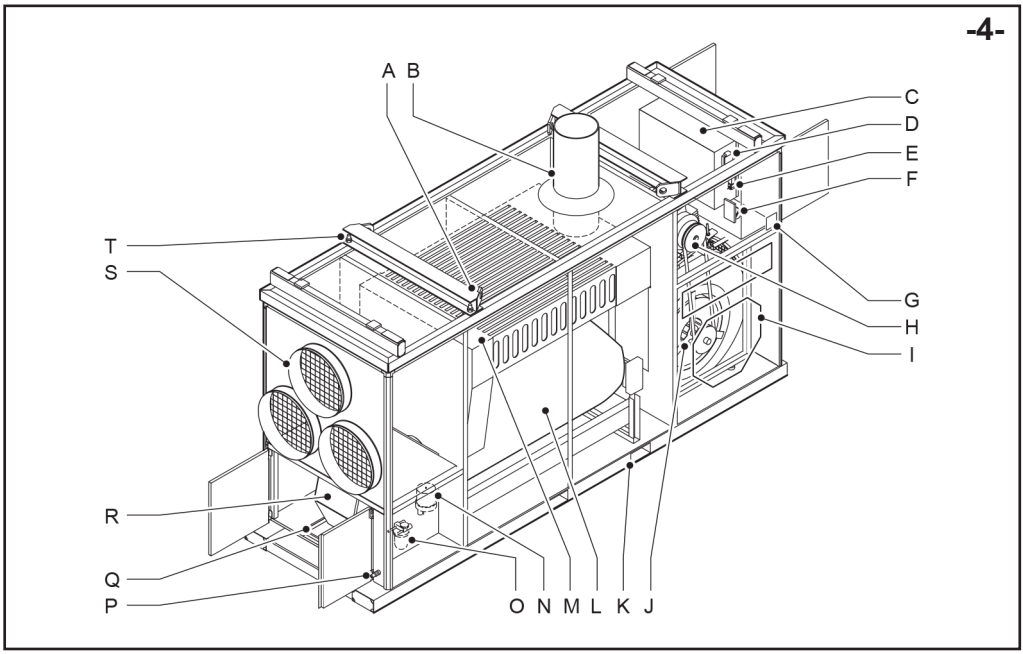
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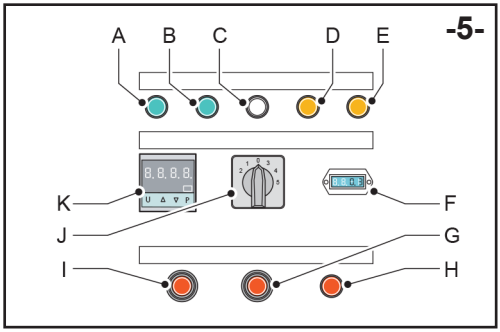
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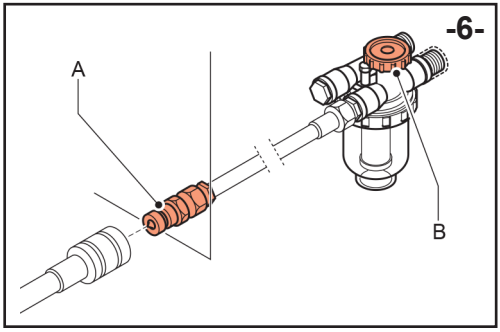
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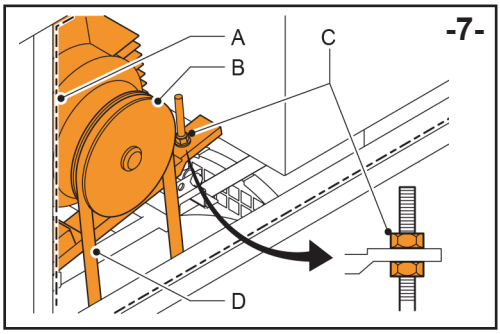
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Language

Contents

Foreword

This manual contains the instructions for use of the convector heaters shown on the cover. The information in this manual is important for the correct and safe operation of the convector heater.

Identification of the product (Fig. 1)

The identification plate is mounted on the side of the convector heater. The identification plate contains the following data:

A	Revolutions fan
B	Total current
C	Air volume
D	Air Volume
E	Max. resistance outlet
F	Voltage
G	Herz
H	Net capacity (Hi)
I	Net capacity (Hi)
J	Fuel consumption
K	Fuel consumption
O	Weight
P	Fabrication year
Q	Product code
R	Serial number

Service and technical support

For information about the convector heater, please contact your dealer of the manufacturer. Make sure you have the following data at hand: type and serial number of the convector heater.

Warranty and liability

For warranty and liability, see general warranty regulations.

Environment

Note

The convector heater is made of various metals and synthetic materials. The heater also contains electronic parts, which must be treated as electronic waste. Please contact your dealer for further information.

Only applicable to the European Union

Waste disposal of electric & electronic equipment for business use.

For further information regarding the disposal of products for business use at the end of their life span, please contact your dealer or distributor in your country. This product may not be disposed of together with commercial waste or as commercial waste.

1 SAFETY INSTRUCTIONS

1.1 Pictograms in this manual

Caution

Indicates risk of damage to the appliance.

Warning

Indicates a dangerous situation, that can lead to death or serious injuries.

Warning

Always switch off power when performing maintenance or repairs on the convector heater!

Hot

Some surfaces may be hot! Wait until these parts have sufficiently cooled down before performing maintenance.

Suggestions and tips to simplify the carrying out of the specified tasks or actions.

1.2 Lifting instructions (Fig. 2)

A Lifting hooks
B Shafts for lifting using a fork-lift truck

Warning

Do not use any unsuitable material for lifting the convector heater.

To find out the weight of the convector heater, refer to table C in the Appendix at the back of this manual.

1.3 Use this product for its intended use

The convector heater was designed for the heating of tents, building sites, showrooms, sports halls, storage sheds, workshops, round-the-clock projects, warehouses, greenhouses, polytunnels, spray arrangements, and for the drying of agricultural produce and bulbs.

1.4 General instructions

Warning

- Read this manual carefully before using the convector heater.
- Keep this document with the convector heater.
- Follow the described procedures.
- Never lean against the convector heater.
- Keep at least 2 metres away from the exhaust opening of the convector heater.
- Make sure there is enough air for good combustion.
- Make sure there is no highly flammable material near the convector heater.
- Only perform repair and maintance work when the convector heater has sufficiently cooled down, and after removing the plug from the socket.

2 INTRODUCTION

2.1 Purpose

These convector heaters are indirectly fired heaters with photocell protection, connections for a room thermostat and a flue with rain cover.
The convector heaters have been tested at sea level at a temperature of 20 °C.

2.2 Working principle

By using the selection switch j (fig. 5) the convector heater can be used in the following ways:

- 0: The convector heater is switched off
- 1: Fan low speed
- 2: Fan high speed
- 3: Fan low speed; burner low
- 4: Fan high speed; burner low
- 5: Fan high speed; burner high

A room thermostat can be connected to the operating panel. This room thermostat can be used for checking the temperature in the heated room. The burner automat ensures safe operation of the burner. As soon as the burner is switched on, the fan will first blow the burner room clean. The fuel pump sucks up the oil from the fuel tank. A spark will develop between the electrodes. The magnet valve will open after some time and the nozzle will spray the oil under high pressure. This will result in a combustible mixture that is ignited by the spark between the electrodes. The light of the flame that is created will activate the photocell. This photocell checks whether a good combustion is brought about. In case of poor or no combustion, the photocell will switch the burner to fault. When the combustion is good, the ignition is switched off after the safety time has elapsed.
The selector switch offers the possibility to choose between high burning, low burning and ventilate. In the high burning position, the heater will always start up in the low position and automatically switch to the high position after some time.
The fan starts up slowly from the moment that the burner is switched on. After switching off the burner, the fan will continue to run. The fan is switched off at the moment that the inside temperature has dropped to a set value.

2.3 Main components of the convector heater (Fig. 4)

A Lifting hook
B Flue connection
C Control panel
D Socket
E Connection for room thermostat
F Socket for power connection
G Identification plate
H Motor
I Air inlet
J Ventilator
K Shaft for lifting purposes
L Combustion chamber
M Heat exchanger
N Tigerloop
O Fuel filter
P Fuel inlet
Q Drip tray
R Burner
S Hot-air outlet
T Armature nut

2.4 Control panel (Fig. 5)

A Indicator light, blue: Fan high speed
B Indicator light, blue: Fan low speed
C Indicator light, white: Panel is live
D Indicator light, orange: Burner low
E Indicator light, orange: Burner high
F Hour counter
G Pushbutton with indicator light, red: Fault frequency controller and reset
H Indicator light, red: Maximum temperature
I Pushbutton with indicator light, red: Fault burner and reset
J Switch for fan and burner settings:
- 0: The convector heater is switched off
- 1: Fan low speed
- 2: Fan high speed
- 3: Fan low speed; burner low
- 4: Fan high speed; burner low
- 5: Fan high speed; burner high

K Digital thermostat

2.5 Digital thermostat/safety temp. limiter

The digital thermostat (K) has three functions:

- Fan thermostat:
  After switching off the convector heater, the ventilator will continue to run. The ventilator will cool down the convector heater to prevent damage by overheating. As soon as the temperature has dropped sufficiently, the thermostat will turn off the fan.
- Burner thermostat:
  The thermostat will stop the burner as soon as the temperature of the hot air has risen too much.
  When the air temperature has dropped sufficiently, the thermostat will turn on the burner again.
- Maximum thermostat:
  The maximum thermostat will switch off the convector heater completely if an overheating problem has occurred in the convector heater.
- The safety thermostat will switch off the header completely if an overheating problem occurred.
  The burner cannot be switched on again until the thermostat has been reset by pressing the U key for two seconds.

2.6 Accessories

- Fuel tank
- Thermostat for room temperature
- Air-supply hose (diameter 500 or 600 mm)
- Air-inlet panels (diameter 500 or 600 mm)
- Hot air outlets (diameter 2 x 600 mm or 3 x 500 mm)

3 PREPARATIONS

3.1 Removing the packaging

1. Remove packaging from the convector heater.
2. Lift the convector heater to transport it to its location of use.

Caution
Lift the convector heater according to the instructions on the labels.

3.2 Installation

1. Make sure the convector heater is level.
2. Connect the fuel supply to the quick coupling (A) of the convector heater, see fig. 6.
3. Fill the tank with fuel.

Warning - Air quality hazard

- Do not use this heater for heating human living quarters.
- Use of direct-fired heaters in the construction environment can result in exposure to levels of CO, CO2 and NO2 considered to be hazardous to health and potentially life threatening.
- Do not use in unventilated areas.
- Know the signs of CO and CO2 poisoning:
  - Headaches, stinging eyes.
  - Dizziness, disorientation.
  - Difficulty breathing, feels of being suffocated.
- Proper ventilation air exchange (OSHA 29 CFR 1926.57) to support combustion and maintain acceptable air quality shall be provided in accordance with OSHA 29 CFR Part 1926.154, ANSI A10 Safety Requirements for Temporary and Portable Space Heating Devices and Equipment used in the Construction Industry or the Natural Gas and Propane Installation Codes CSA B149.1.
- Periodically monitor levels of CO, CO2 and NO2 existing at the construction site - at the minimum at the start of the shift and after 4 hours.
- Provide ventilation air exchange, either natural or mechanical, as required to maintain acceptable indoor air quality.

Caution
Use diesel oil only.

Caution
- Diesel-oil tends to thicken at low temperatures. This may clog the filters. Add max. 15% paraffin oil to the fuel if the temperature has dropped below -5°C, or make sure the fuel is frost-free, or use the (optional) tank-heating device.
- Do not place the tank in the hot-air flow.

4. Make sure there is sufficient distance between the wall and the air inlet.
   Minimum distance is 1 m.
5. Ensure that the heated air is allowed to flow freely. The minimum distance between the outlet and any obstacle is 5 m.
6. Check the ventilation surface: per kW, a surface area of 25 cm2 is required.
7. Check the connection of the room thermostat.
   Do not remove the cap if you do not use a room thermostat.
   To connect the room thermostat, remove the cap.
8. Install the flue (1 m and a rain cap).
9. Make sure the convector heater is switched off. See fig. 5.
10. Check the supply voltage: see identification plate.
11. Connect the convector heater to the socket of the electric power supply.
    The indicator light “Panel live” is on.
12. If necessary, press the reset switch.
13. Reset the thermostat, see fig. 5.

Installation of this appliance at altitudes above 2000 ft (610 m) shall be in accordance with local codes, or in the absence of local codes, the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or National Standard of Canada, Natural Gas and Propane Installation Code, CSA B149.1.

3.3 Start up

To start up the heating:
1. Open the fuel cock (B), see fig. 6.
2. Turn the rotary switch to position 3, 4 or 5, see fig. 5.
   The fan will start up slowly.
   The burner always starts up in the LOW position. When the HIGH position has been selected, the burner will automatically switch to the HIGH position.
   The convector heater will produce heat after some minutes. This depends on the outside temperature.

Caution
Do not switch on the convector heater if there is no fuel, or if the connected fuel tank is empty.

3. Set the room thermostat.
   The convector heater will produce hot air after some seconds.

To start up the ventilation:
1. Turn the rotary switch to position 1 of 2, see fig. 5.
   The fan will start up slowly.

4 USE

4.1 During operation

Hot
Do not touch the flue stack or blower outlet! The flue stack and blower outlet get hot during operation!

4.2 Switch off

Switch off heating:
1. Turn the rotary switch to position “0”.
   The magnet valve(s) close(s) and stop(s) the fuel supply.
   The convector heater stops burning.

Caution
After switching off the convector heater, the ventilator will continue to run. The ventilator will cool down the convector heater to prevent damage by overheating. The ventilator will automatically stop.
The fan can start again without warning.

2. Shut off the fuel supply.

Switch off the cooling:
1. Turn the rotary switch to position “0”.
   The ventilator will automatically stop.

4.3 Transport after use

1. Switch off the convector heater and wait until the fan has stopped completely.
2. Switch off the power supply.
3. Remove the connection from the room thermostat and place the cap on the thermostat connection.
4. Remove the air hoses.
5. Remove the flue.
6. Remove the fuel connection.

5 MAINTENANCE

5.1 Maintenance table

Use the table in this booklet to record performed maintenance after each winter season.

Warning
Switch off power during maintenance!

Hot
Do not touch the flue and air outlet!
Wait until the flue and the air outlet have cooled down sufficiently before carrying out any maintenance.

Description yearly check.	Who
Check the fuel pump for leakage, corrosion and dirt.	User
Check the general condition of the pump, fans, ignition, photocell, burner, electrical installation and heat exchanger.	Dealer
Check the fuel lines for blockages, corrosion and leakage.	User
Check the fan of the burner for corrosion and dirt.	User
Check the fan for corrosion and dirt.	User
Clean the filters of the fuel pump and the magnet valve.	Dealer
Check the photocell for signs of damage. Make sure the photocell is free from dust and deposit.	User
Check the settings of the electrodes.	Dealer
Check the nozzle for dust, etc.	User
Clean the heat exchanger.	Dealer
Clean the inlet/outlet.	User
Check the V-belts.	User
Check the torque of the armatures. The torque value should be 60 Nm.	User

5.2 General

Use the table in this booklet to record performed maintenance after each winter season.

When the convector heater is to be stored for a longer period of time:

1. Switch on the convector heater for three minutes. This will protect the fuel pump against corrosion.
2. Make sure the burner head is free from dust and deposit.
   A dirty heater head will cause insufficient combustion, resulting in the development of soot and carbon monoxide and causing damage to the burner room.
3. Close the valve of the fuel supply.
4. Disconnect the power plug.

5.3 V-belts (Fig. 7)

Impression	V-belt tension
13 mm	32,2 N

1. Remove the upper and lower side panels (A).
2. Lower the motor (B) by turning the adjusting nuts (C).
3. Remove the old V-belts (D).

Install new V-belts in reverse order.

Caution
Tension the V-belts according to the table.

6.0 FAULTS

Make sure the electric power supply is switched off and the fuel tank is full, before you start troubleshooting.

Warning
Switch off power during maintenance!

6.1 Troubleshooting table

Fault	Nr.	Cause	Solution	Who
The convector heater does not start up.	1	The convector heater is not live.	Check the electric connection.	User
	2	The burner relay is not working: the indicator is on.	Press the reset button in the operating panel. See fig. 5 (I).	User
	3	A malfunction has occurred in the burner automat.	Replace the burner automat.	Dealer
	4	The thermostat has not been set correctly.	Correct the settings.	Dealer
	5	The room thermostat is defective.	Replace the thermostat.	User
	6	There is no cap on the thermostat connection.	Replace the cap if the room thermostat is not in use.	User
	7	The fuel pump is stuck.	Replace the fuel pump.	Dealer
	8	The maximum thermostat is stopping the convector heater.	Check (and correct) the air flow. Reset the convector heater.	User
	9	The combination thermostat is defective.	Replace the combination thermostat.	Dealer
	10	The frequency controller is in disorder.	Reset the frequency controller, see fig. 5 (G).	User
	11	The capacitor of the burner motor is defective.	Replace the capacitor.	Dealer
	12	The room thermostat has been placed in the hot-air flow.	Install the room thermostat away from the hot-air flow.	User
The fan is starting up immediately.	13	The fan thermostat has not been set correctly.	Correct the settings. See malfunction 9.	Dealer
The convector heater is starting up, but no flame is forming.	14	The pump coupling is defective.	Replace the pump coupling.	Dealer
	15	The pressure regulator in the fuel pump is stuck.	Check the nozzle. Replace the pump.	Dealer
	16	The pump pressure is incorrect, or the filter inside the pump is clogged.	Adjust the pump pressure using a pressure gauge.	Dealer
	17	The main filter is clogged.	Clean or replace the filter.	User
	18	The shut-off valve of the fuel filter is closed.	Reset the thermostat. See fig. 5 (B).	User
	19	The fuel tank is empty.	Open up the drain tap to drain the condensate and fill the tank.	User

Fault	Nr.	Cause	Solution	Who
The convector heater is starting up, but no flame is forming.	20	The fuel pump has too much vacuum.	Clean or replace the main filter.	User
			Check the suction line for blockage. Check the vacuum using a vacuum gauge.	Dealer
	21	The nozzle is blocked or damaged.	Replace the nozzle.	Dealer
	22	The electrodes are worn or the settings are incorrect.	Clean or replace the electrodes.	Dealer
	23	The magnet valve or valves will not open.	Check the electric connection. You should hear a “click” when the convector	User
			Clean or replace the magnet valve(s).	Dealer
	24	The photocell is dirty or defective.	Check and clean the glass. Clean the photocell. Clean the forcer plate.	User
			Test the photocell and replace if necessary.	Dealer
	25	The air-inlet valve of the burner is not correctly set.	Check the air-inlet valve. Measure the CO2 content and the amount of soot.	Dealer
	26	The settings of the nozzle holder and/or the forcer plate are incorrect or dirty.	Correct the settings of the nozzle holder and the forcer plate. Clean the nozzle and the forcer plate.	Dealer
	27	Exhaust opening or flue connection is in poor condition.	Connect the convector heater to a flue that is in good condition. Correct the connections.	User
	28	The ignition transformer is defective.	Test the insulation in relation to the burner. Replace the ignition transformer if necessary.	Dealer
The burner is starting up poorly (stutters).	29	There is insufficient fresh-air supply.	Open a door or window. Use an outside-air suction device for the burner.	User
	30	There are problems in the burner room or heat exchanger.	Clean, repair or replace the burner room and heat exchanger, if necessary.	Dealer
The convector heater burns intermittently.	31	The burner thermostat has not been set correctly.	Set the burner thermostat according to the manufacturer’s specifications.	Dealer
The burner is producing soot.	32	The air inlet has not been correctly set.	Set the air inlet.	Dealer

Fault	Nr.	Cause	Solution	Who
The burner will start, a flame has been formed but the burner stops.	33	An error has occurred in the burner relay.	Reset the thermostat. See fig. 5	User
			Contact the dealer if the error is repeated.	Dealer
The convector heater cannot be switched off.	34	The magnet valve or valves will not close.	Close the cock, see fig. 8 (B).	User
			Contact your dealer.	Dealer
The convector heater stops.	35	An overheating problem has occurred in the convector heater.	Reduce the resistance at the outlet.	User
			Reset the thermostat.	User
			Contact the dealer if the error is repeated.	Dealer
The convector heater stops burning. The reset button lights up.	36	The fuel-supply line or the fuel filter is leaking.	Check and replace if necessary.	User
	37	The protective grill of the air inlet is dirty or clogged.	Clean the grill.	User
	38	The heat exchanger is blocked.	Clean the heat exchanger.	Dealer
The convector heater is producing white smoke.	39	There is air in the fuel system.	Check the fuel-supply line for leakage.	User
Burner malfunction: the indicator light (red) is on.	40	There is no fuel.	Check whether there is fuel in the tank.	User
		The photocell is dirty.	Clean the photocell.	User
		The photocell is defective.	Replace the photocell.	Dealer
The frequency controller has a fault: the indicator light (red) is on.	41	The motor of the main fan has a problem.	Reset the frequency controller: press the button, see fig. 5 (G).	User
			Contact the dealer if the error is repeated.	Dealer

Record the maintenance details in table A in the appendix of this manual.

7 SPARE PARTS

Before use we advise you to have spare parts in store, see table B in the appendix of this manual.

8 TECHNICAL INFORMATION

See for technical specifications table C in the appendix of this manual.

9 INSTALLING ACCESSORIES

9.1 Flue (Fig. 3)

The convector heater has a flue connection.

1. Slide a flue (B) over the connection (C).

Caution
The flue must be pointed upwards. Do not let the flue point sideways. An angle of 45° is acceptable; the length of the flue should be at least 1000 mm.

2. Place a rain cover (A) on the end of the flue.

9.2 Diameter of the flue

Flue (external)	IMAC 4000
Diameter	300 mm

9.3 Air hose

An air hose may be connected to the exhaust opening of the convector heater in order to blow hot air at a large distance from the convector heater.

Caution
Check the temperature resistance of the hose used.

Contact your dealer for information about the maximum length of the exhaust hoses, bends, manifolds and hose clamps.
The maximum static pressure in the duct is 1000Pa or 4.02” WC.

9.4 Diameters of exhaust hoses

Three-way outlet	IMAC 4000
Diameter	500 mm

Two-way outlet	IMAC 4000
Diameter	600 mm

9.5 Diameters of air-inlet hoses

Inlet	IMAC 4000
Diameter	500 or 600 mm

9.6 Room thermostat

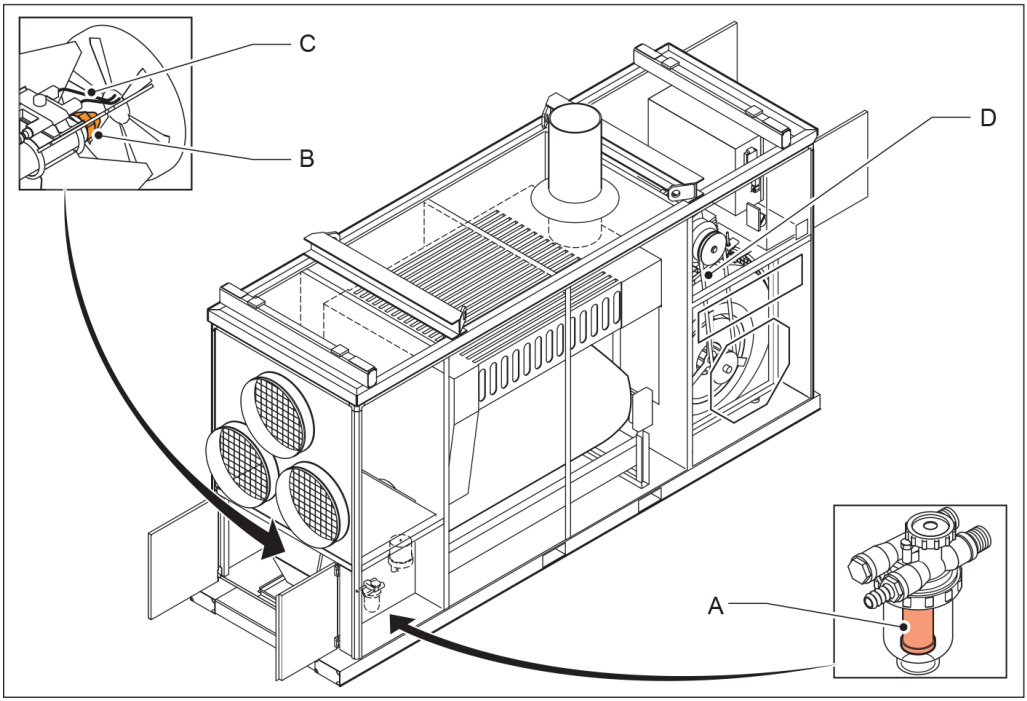
Refer to the instructions of the thermostat.

A

Date	Description: Maintenance or Failure	Action by

Date	Description: Maintenance or Failure	Action by

B



		IMAC 4000	
A	Fuel filter	41.520.031	
B	Nozzle		
C	Electrodes block		
D	Set of V-belts	41.740.318	2xSPA 2240LW

C

Burner	Unit	Low	Low	High
Fan		**Low**	**High**	**High**
Capacity, gross	BTU	891.000	891.000	1.307.000
Capacity, net	kW	820.000	820.000	1.202.000
Fuel consumption	l/hr	26.5	26.5	38
	gallon/hr	7.0	7.0	10
Pump pressure (SLW)	bar	9	9	19
Air capacity	m³/hr	18.000	24.000	24.000
	CFM	10.595	14.715	14.715
Max. pressure	Pa	400	1000	700
Warm air	ΔT (°C)	44	31	43
	°F	111	88	109
Current	A	18	29	29
Nozzle (SLW)	USG/hr	6.00 60°S		
Fan thermostat	°C	35		
	°F	95		
Burner thermostat	°C	100		
	°F	212		
Maximal thermostat	°C	110		
	°F	230		
Power	V	3 phase 230 V		
Frequency	Hz	60		
Fan	kW	7.5		
	HP	10		
Burner		Riello RL 38/2		
Length	FT	12.63		
Width	FT	3.94		
Height	FT	6.61		
Weight	kg	1300		
	LB	2866		

- ρ (15 °C): 0.85 kg/dm3
- Hi = 42.689 MJ/kg
- Hs = 45.5 MJ/kg
- 1 kW = 860 kcal/h
- 1 kW = 3413 Btu/h
- 1 kW = 3.6 MJ/h

THERMOBILE®

Member of the Honing Beheer Group of Companies

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