



342 N. Co. Rd. 400 East
Valparaiso, IN 46383
219-464-8818 • Fax 219-462-7985
www.heatwagon.com

Installation and Maintenance Manual

Please retain this manual for future reference.

VF600A

Construction Heater



For your safety: Do not use this heater in a space where gasoline or other liquids having flammable vapors are stored.

CONSTRUCTION HEATER GENERAL HAZARD WARNING:

Failure to comply with the precautions and instructions provided with this heater, can result in death, serious bodily injury and property loss or damage from hazards of fire, explosion, burn, asphyxiation, carbon monoxide poisoning, and/or electrical shock.

Only persons who can understand and follow the instructions should use or service this heater.

If you need assistance or heater information such as an instruction manual, labels, etc., contact your local Heat Wagon dealer or the manufacturer.

W A R N I N G

Fire, burn, inhalation, and explosion hazard. Keep solid combustibles, such as building materials, paper or cardboard, a safe distance away from the heater as recommended by the instructions. Never use the heater in spaces which do or may contain volatile or airborne combustibles, or products such as gasoline, solvents, paint thinner, dust particles or unknown chemicals.

Never Use The Heater In Spaces Which Are Not Sufficiently Sized Or Ventilated For The Heater Being Utilized.

Not for home or recreational vehicle use!

IMPORTANT INFORMATION! READ FIRST

The heater is designed for use as a construction heater under ANSI Z83.7a-1993. Heater is not intended for use in pest remediation. The primary purpose of construction heaters is to provide temporary heating of buildings under construction, alteration, or repair and to provide emergency heat. Properly used, the heater provides safe, economical heating. Products of combustion are vented into the area being heated.

The heater **IS NOT** designed as an Unvented Gas Fired Room Heater under ANSI-Z21.11.2 and **SHOULD NOT** be used in the home.

ANSI A119.2(NFPA 501C)-1987 Recreational Vehicle Standard prohibits the installation or storage of LP-gas containers even temporarily inside any recreational vehicle. The standard also prohibits the use of Unvented Heaters in such vehicles.

NFPA-58 1989 STANDARD FOR THE STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GASES AND THE NATURAL GAS AND PROPANE INSTALLATION CODE, CSA B149.1

Use of the heater must be in accordance with this Standard and in compliance with all governing state and local codes. Storage and handling of propane gas and propane cylinders must be in accordance with standard for the storage and handling of liquified petroleum gases, ANSI/NFPA 58 and CSA B149.1, natural gas and propane installation code and all local governing codes.

We cannot anticipate every use which may be made for our heaters. **CHECK WITH YOUR LOCAL FIRE SAFETY AUTHORITY IF YOU HAVE QUESTIONS ABOUT LOCAL REGULATIONS.**

Other standards govern the use of fuel gases and heat producing products in specific applications. Your local authority can advise you about these.

FOR YOUR SAFETY

DO NOT USE THIS HEATER IN A SPACE WHERE GASOLINE OR OTHER LIQUIDS HAVING FLAMMABLE VAPORS ARE STORED OR USED.

Installation and Maintenance Manual Model VF600A Construction Heater

Table of Contents:

| | Page |
|-----------------------------------|-------------|
| Control Board/Panel | 4-5 |
| Installation | 7-9 |
| Operating Instructions | 9-10 |
| Maintenance | 11 |
| Troubleshooting | 12 |
| Wiring Diagram | 13 |
| Parts Breakdown | 14-16 |
| Burner Parts & Instructions | 17-19 |
| Chimney Guidelines | 20 |

WARRANTY

All new Heat Wagon and Sure Flame heaters and fans are guaranteed against defective materials and workmanship for one (1) year from invoice date.

Warranty repairs may be made only by an authorized, trained and certified Heat Wagon dealer. Warranty repairs by other entities will not be considered. Warranty claims must include model number and serial number.

LIMITATIONS

Warrant claims for service parts (wear parts) such as spark plugs, igniters, flame rods will not be allowed. Diagnostic parts such as voltage meters and pressure gauges are not warrantable.

Evidence of improper fuel usage, fuel pressures outside of manufacturer's specification, poor fuel quality, and improper electric power, misapplication or evidence of abuse may be cause for rejection of warranty claims.

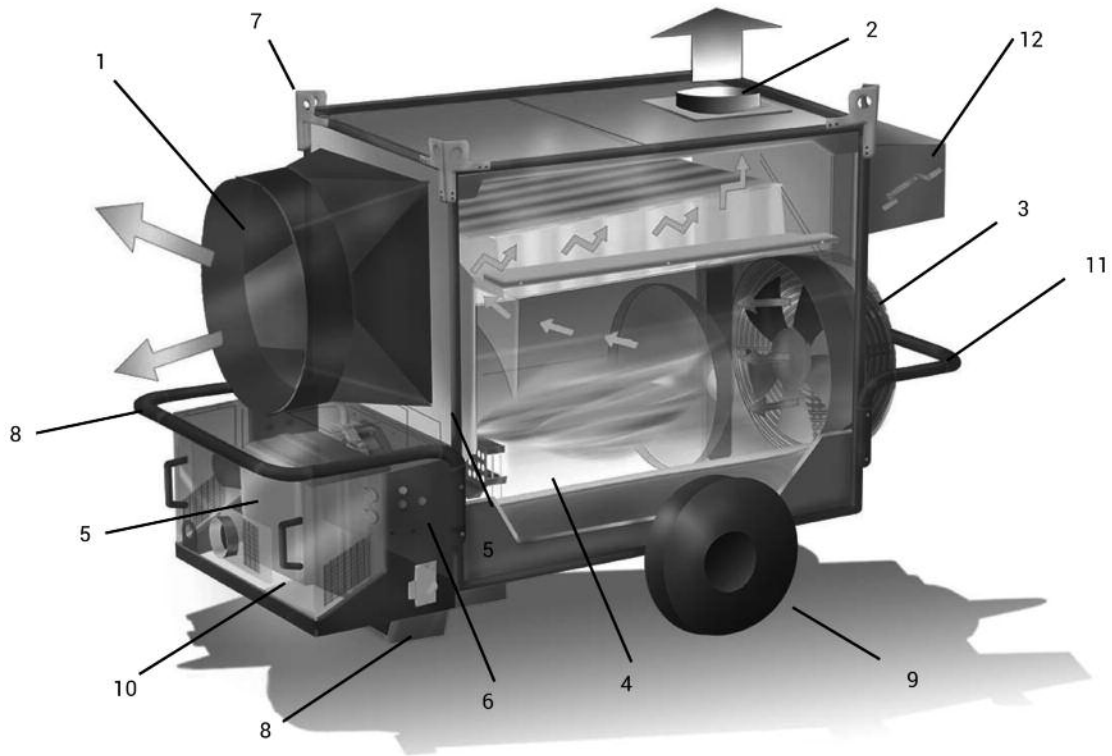
Travel time, mileage and shipping charges will not be allowed. Minor adjustments of heaters are dealers' responsibility. Defective parts must be tagged and held for possible return to the factory for 60 days from date of repair. The factory will provide a return goods authorization, (RGA) for defective parts to be returned.

No warranty will be allowed for parts not purchased from Heat Wagon.



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CONTROL BOARD



1 HOT AIR OUTFLOW

2 CHIMNEY

3 COOLING FAN

4 COMBUSTION CHAMBER

5 BURNER

6 THERMOSTATS L2 BOX

7 HOISTING BRACKETS

8 SUPPORT/HANDLE

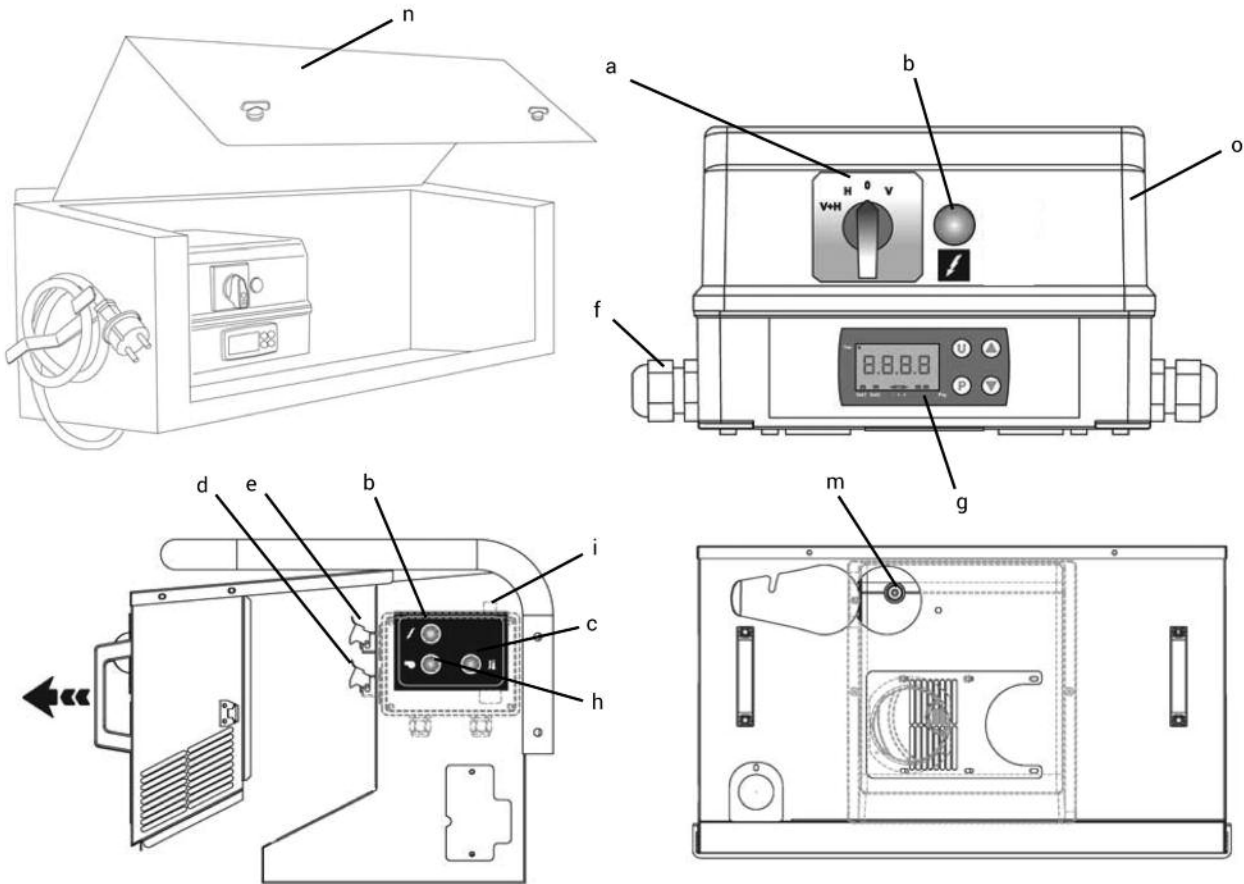
9 WHEEL

10 BURNER BOX

11 BUFFER

12 ELECTRICAL PANEL BOX

CONTROL PANEL



a HEATING-VENTILATION SWITCH

b VOLTAGE LAMP

c OVERHEAT THERMOSTATS CONTROL LAMP, L2

d ROOM THERMOSTAT PLUG

e INTAKE FOR PRE-HEAT FILTER

f CABLE CLAMP FOR POWER CABLE

g TEMPERATURE CONTROLLER

h BURNER LIGHT

i SAFETY THERMOSTAT RESET BUTTON, L2

m BURNER RESET BUTTON / LAMP

n ELECTRICAL PANEL BOX PANEL

o ELECTRICAL PANEL

IMPORTANT

Before using the space heater, carefully read all of the instructions and follow them scrupulously. The manufacturer cannot be held responsible for damage to persons and/or property caused by improper use of the equipment. This instruction manual is an integral part of the equipment and must therefore be stored carefully and passed on with the unit in the event of a change of ownership.

1. DESCRIPTION

Space heaters described in this manual, are designed for use in medium to large-sized rooms and buildings where a fixed or mobile heating system is required.

The air required for combustion is sucked directly by the burner (6) installed on the heater, and can be supplied:

- from the outside by using the flexible connection tube (available as an accessory), which avoids consuming oxygen in the room to be heated, or
- from inside the room to be heated. In this case, the room must be well ventilated to guarantee sufficient exchange of air.

The flow of hot air is moved by the high-efficiency fan (4): air is heated by the thermal energy generated during combustion and heat is transmitted to the fresh air through the metal walls of the sealed combustion chamber and the heat exchanger. After the combustion products are cooled, they are conveyed to a discharge duct and eliminated through a chimney or flue large enough to guarantee their removal.

The space heaters can work with burners having ON-OFF work modes and fuelled by diesel #2 max.

Warning



Only burners approved by the manufacturer and listed in the "TECHNICAL SPECIFICATION TABLE" can be used. The heater's certification and warranty will lapse if the burner is replaced with a non-original model, even if it has similar specifications.

All of the space heaters are fit with an electronic device that controls the flame and with:

- safety devices (safety thermostat with manual reset, flame control, air pressure switch) that trip in case of serious malfunctions and cause a safety stop. In this case the heater stops, button (d) lights with a steady red light (Stop Light) and the heater can resume operation only after the cause of the stop has been identified and eliminated;
- control devices (temperature controller to control temperature of air outflow, complete with hour counter, fan thermostat, burner thermostat, voltage control) that trip in case of minor operating faults or supply faults, causing temporary stop of the space heater. In this case, the heater will restart automatically when the required condition is restored.

The section "TROUBLESHOOTING" describes all possible operating faults and their possible remedies.

2. CONDITIONS OF SUPPLY

The heater is delivered with parts to be assembled and set as described in chapter 4.

- Heater body
- Burner
- Air distribution connector
- Any required accessories (flue pipes, air distribution pipes, etc.)

Warning



Prior to installation, burner adjustment and ignition, the space heater should be assembled in full. All assembly operations should only be performed by professionally qualified personnel only.

The following are also supplied:

- use and maintenance manuals for
 - space heater
 - burner
- manuals with drawings and spare part lists:
 - space heater
 - burner

Warning



All documents provided constitute an integral part of the unit.

The documents should therefore be looked after with care and supplied with the unit in the event of a change in ownership.

Parts are to be transported and moved using either a manual or automatic forklift truck with sufficient load capacity.

Warning



Never try to lift the heater manually. Doing so could cause serious physical injury.

3. GENERAL ADVICE

The space heater must be installed, adjusted, and used in conformity to national and local laws and regulations for its operation.

General guidelines:

- Follow the instructions in this booklet very carefully;
 - THE INSTALLATION OF THE UNIT SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION. Also, as a recommended installation practice reference should be made to the current issue of CSA B139, Installation Code for Oil Burning Equipment in Canada and NFPA 31 Standard for the Installation of Oil-Burning Equipment in the USA;
 - The heater is not installed in an area where there is a high risk of fire or explosions;
 - Minimum clearances from combustible material must be:
 - 1 m (3 feet) from side and rear (air inlet) of heater
 - 1 m (3 feet) on top of heater
 - 3 m (10 feet) on air outlet of heater.
 - Keep inflammable material at a safe distance from the heater (minimum 3 metres);
 - Check that there is no overheating of walls, ceilings or floors made of inflammable materials,
 - All precautions have been taken to prevent fires;
 - The room being heated must be sufficiently ventilated so that the heater has enough air to function properly;
 - The heater must be near a chimney or chimney flue and an electrical panel conforming to declared specifications;
 - Check the heater before switching it on and at regular intervals during its use;
 - After use, make sure the disconnecting switch is off.
- When using any type of space heater it is obligatory:
- not to exceed the maximum heat output level of the furnace ("TECHNICAL SPECIFICATION TABLE");
 - make sure that the air flow is not below the rated level; check that

there are no obstacles or obstructions to the air suction and/or delivery ducts, such as sheets or covers on the equipment, walls or large objects near the heater.

Warning



This unit may not be used by persons (including children) with reduced physical, sensorial or mental capacities or with limited experience and familiarity unless they are under supervision or instructed on how to use the unit by the person responsible for its safety.

4. INSTALLATION INSTRUCTIONS

Warning

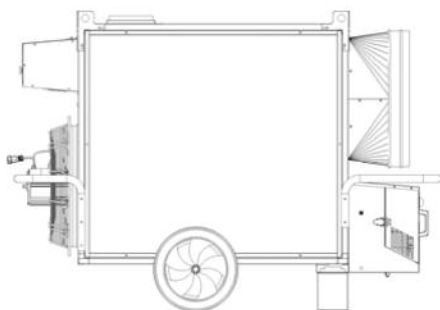


All of the operations described in this section must be performed by professionally qualified personnel only.

4.1. INSTALLATION ON FLOOR OR CEILING

The space heater may be installed:

- on the floor in a stable position

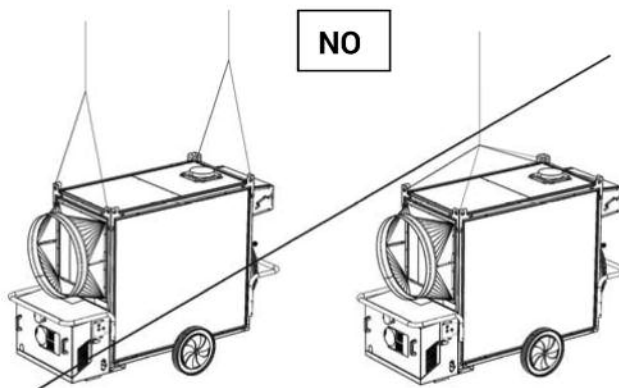
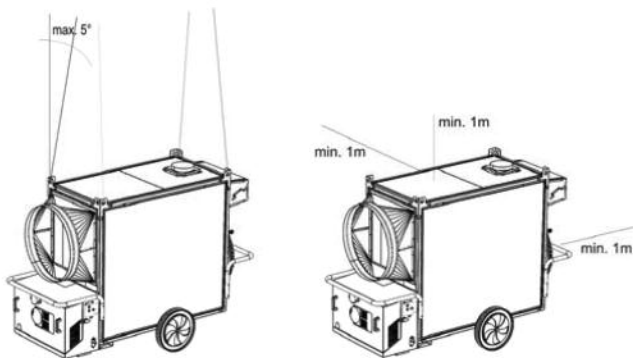


- or suspended by hooking it to the ceiling using cables and/or chains of an appropriate size and length secured to the four suspension points.

Warning



Make sure that the ropes and/or chains form an angle not more than 5° with vertical to the ceiling, that the ropes do not cross, and that a different rope is used for each hook.



The minimum distance from surrounding walls and/or ceiling must always be at least 1 metre.

4.2. POWER CONNECTIONS

Warning



The 120V unit is fitted with a proper power cord.

Warning



The power line of the generator must feature a ground and a residual current circuit breaker. The supply cable must be connected to a switchboard with sectioning switch.

Warning



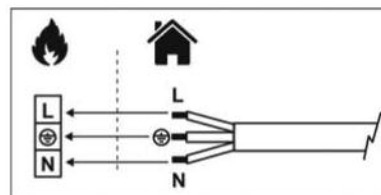
When installed, the appliance must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and/or the CSA C22.1, Canadian Electrical Code, if an external electrical source is utilized.

The electrical power cable must be connected in conformity to the polarity specified on the main terminal board of the electrical panel: phase (L) and neutral (N).

Warning



If polarities L and N are incorrect, the space heater may stop a few seconds after it is switched on for the first time.



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

Never attempt to switch the heater on or off by connecting the room thermostat (or other control devices) to the electrical power line.

The installation and connection of all the other accessories are described in the specific instructions included with each accessory, together with operating instructions.

The electrical diagram shown in this manual refers to the electrical connection only.

4.3. CONNECTION TO HOT AIR DELIVERY DUCTS

The space heater is set to operate with direct distribution of air. Nevertheless, it can be connected to appropriately sized air distribution channels, if required, with maximum diameter and length as shown in the "TECHNICAL SPECIFICATION TABLE."

Warning

Before starting the heater, check that the direction of rotation of the fan matches the direction shown on the fan itself.

The air distribution channels can be connected by using the various accessories supplied, placing the connector head-on to one or more outlets chosen as needed.

| TECHNICAL SPECIFICATIONS | | JUMBO 600 | |
|---------------------------|--------------------------------|-----------------------|------|
| Nominal heat input | [BTU/h] | 600,000 | |
| Heat input | [BTU/h] | 593,367 | |
| Fuel consumption | [USgal/h] | 4.23 | |
| Burner Model | | RIELLO R40-F15TC | |
| Burner Nozzle | [USgal/h] | Danfoss 3.00 - 60° S | |
| Combustion head setting | [N°] | 4 | |
| Pump pressure | [psi] | 174 | |
| Burner air setting | [N°] | 3.7 | |
| Air flow | [cfm] | 7,063 | |
| Fan Thermostat Setting | [°F] | 95 | |
| Burner Thermostat Setting | [°F] | 194 | |
| Power supply | Phase | 1 | |
| | Voltage | [V] | 120 |
| | Frequency | [Hz] | 60 |
| Electric consumption | [W] | 1,350 | |
| | [A] | 12.0 | |
| Flue diameter | [in] | 7.87 | |
| Compulsory flue draft | [in] | 0.05 | |
| Maximum air temperature | [°F] | 250 | |
| Air distribution duct | Max Static pressure | [in] | 0,60 |
| | Max length 1 way - dia 28"/26" | [ft] | 60 |
| | Max length 2 ways - dia 20" | [ft] | 36 |
| | Max length 4 way - dia 14" | [ft] | 30 |
| Inlet flexible duct | Max length 1 way - dia 28" | [ft] | 12 |
| Noise level at 1 m | [dBA] | 68 | |
| Dimensions, L x W x H | [in] | 83.66 x 36.22 x 55.65 | |
| Weight | [lb] | 595.2 | |

4.5. CONNECTION TO FUEL SUPPLY

Warning



The heater must be installed, set up, and used in compliance with all applicable regulations.

Connection to the diesel supply pipe can be made by connecting the fuel tank to the burner pump:

- directly, i.e., by using the burner's diesel pump, in conformity to the dimensions and lengths specified in the burner instruction manual attached hereto.
- indirectly, i.e., by using an auxiliary return diesel pump. In this case, contact a Customer Service Centre to ensure correct sizing of the fuel system.

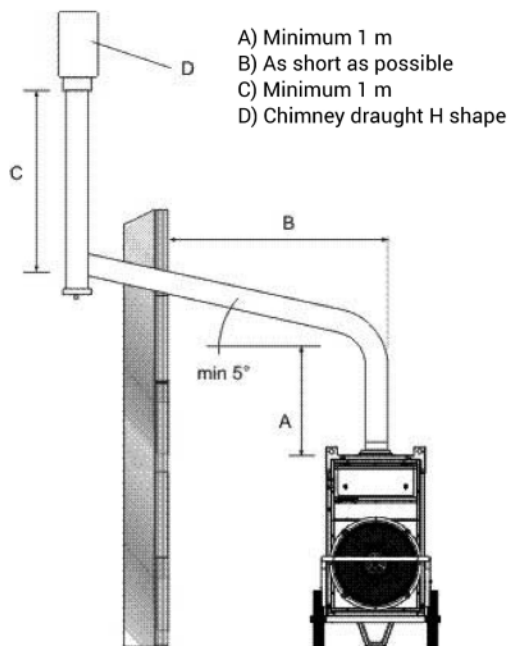
4.6. CONNECTION TO EXHAUST DUCT

Exhaust ducts must be in steel and conform to local/national rules. Efficient combustion and trouble-free working of the burner depend on efficient flue draft.

The unit must be connected to the chimney flue in compliance with current legal regulations and in line with the following guidelines:

- The path of the flue pipe smoke should be as short as possible and should slant upwards (minimum height 1 m);
- There should be no sharp curves in the pipes, and the diameter of the pipes must never be reduced;
- there must always be a wind deflector to prevent the entrance of rain and to prevent smoke from being blocked by the wind;
- flue draft must at least equal the level in the Technical Specifications.
- When the heater is connected to a flue pipe, the flue pipe shall terminate in a vertical section at least two feet long and sufficient draft shall be created to assure safe and proper operation of the heater;
- every heater must have its own chimney;

The following diagrams show possible flue positions:



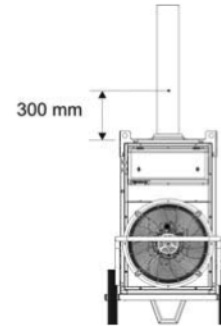
4.7. FIRST START-UP AND COMBUSTION ADJUSTMENT

Warning



The first start-up should always be carried out by a specialised technician checking the correctness of the combustion parameters.

The adjustment values (burner diesel pressure, combustion head position, air adjustment) for each of the burners approved for these units are indicated in the "TECHNICAL CHARACTERISTICS TABLE". The probe used to periodically check combustion and flue smoke temperatures is to be inserted as indicated:



Combustion is clean and stable when combustion values are as follows:

Bacharach index: 0 (white)
CO₂: 11 ÷ 12,5 %
Oxygen (O₂): 4,5 ÷ 6 %
CO_{max}: 500 ppm

You may have to change the burner settings due to the fuel used and/or installation conditions (high altitude, air suction pipe with or without Snorkel, etc.) if combustion parameters are not correct. When inspection tests are completed, the hole drilled for the probe must be sealed with a material that is resistant to high temperatures and that ensures the tube remains airtight.

5. OPERATING INSTRUCTIONS

5.1. START

To start the heater:

- Raise panel (n) on the electrical panel box;
- Make sure the switch (a) is set to "0";
- Supply electrical power to the space heater by pulling up the disconnecting switch on the electric power panel: the green lamp (b) will light up indicating that power is being supplied to the panel;
- Turn switch to V and confirm correct rotation of fan.
- Turn switch (a) to position H or H+V: the burner will begin the start-up and pre-wash cycle, after which the flame will ignite; after the combustion chamber has been heating for a few minutes, the main fan will start up;

Warning



The fan runs continuously in H+V mode, even when the desired room temperature has been reached, and the burner turns off.

Warning



In H mode, the fan only runs when the combustion chamber is sufficiently hot. Therefore, when the desired room temperature has been reached, the burner turns off and the fan keeps running only until the combustion chamber has cooled completely.

- If the heater does not work during the start cycle or work cycle, consult "TROUBLESHOOTING" to find the cause of the malfunction.

Warning



If the burner goes into safety stop (lamp m) push reset button (d) for 3 seconds to restart the heater.

Warning



If the safety thermostat goes into safety stop (lamp h), push reset button (i) for 3 seconds to restart the heater.

Warning



NEVER do more than two restarts in a row: unburned fuel can accumulate in the combustion chamber and suddenly flare up at the next restart.

5.2. STOP

Stop the heater by turning switch (a) to "0" position or, if the heater is in automatic mode, by setting the room thermostat to a lower temperature: the burner shuts off and lamp (f) goes out. The fan keeps working, starting and stopping several times until the combustion chamber has cooled completely.

Warning



Never stop the heater by pulling the plug.

The electrical supply must be disconnected **ONLY** when the fan has come to a complete stop.

5.3. VENTILATION

To run the heater only in continuous ventilation mode, turn switch (a) to the position with the symbol V.

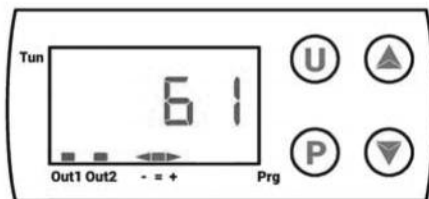
5.4. TEMPERATURE CONTROLLER

The heater is equipped with a temperature controller (g) with LCD screen, which displays and controls the following parameters:

- Display of air outflow temperature
- Display of hours of operation
- Control of trip temperature of fan thermostat
- Control of trip temperature of burner thermostat

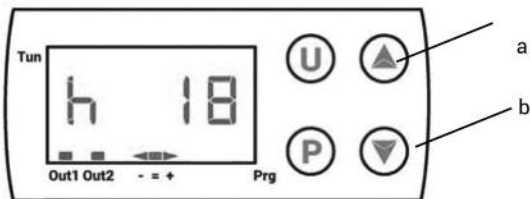
Display of air outflow temperature

The screen displays the measured temperature in [°C]:



Display of hours of operation

Press key (a) twice: the screen shows the operating time in hours [h]:



Warning

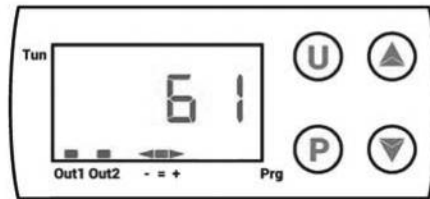


The time shown is not actual heating time, but connection time to the electrical power supply line.

Reset the counter as follows:

- Turn the heater's main switch to position "0" (OFF)
- Press button P on the temperature controller for at least 3 seconds: the word "PASS" will flash for 5 seconds
- Enter code "-481" by pressing key (b) several times until obtaining the number required; press key P to confirm and go to the next number
- Lastly, press key U: the display again shows the air outflow temperature

Control of trip temperature of fan thermostat



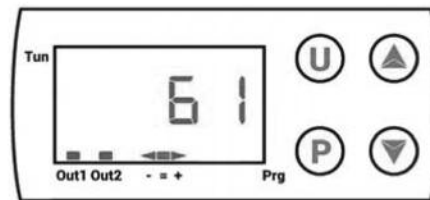
The temperature controller is programmed to start and stop the main fan automatically when the combustion chamber reaches the set temperature. This prevents cold air from blowing when the burner starts and the combustion chamber is not yet hot enough, and ensures that residual heat in the heater is dissipated when the burner stops.

The temperature is factory-set to 95°F, with hysteresis of 5°F.

Red LED "OUT 1" shows the operating state of the fan thermostat:

- LED ON: the fan is on
- LED OFF: the fan is off

Control of trip temperature of burner thermostat



The temperature controller is programmed to start and stop the burner automatically when the combustion chamber reaches the set over-temperature. This prevents excessive overheating of the combustion chamber and subsequent tripping of safety thermostat L2, which blocks operation of the heater (see chapter 7 for details on operating problems that cause tripping of safety thermostat L2).

The temperature is factory-set to 200°F, with hysteresis of 5°F.

Red LED "OUT 2" shows the operating state of the burner thermostat, while the LED group "- = +" indicates the current temperature compared to the set temperature:

- if the red arrow at the symbol "-" is ON, it means that the temperature is below the set value and, therefore, the thermostat is ON, i.e., the burner is ON.
- if the green LED at the symbol "=1" is ON, it means that the temperature is at the set value.
- if the red arrow at the symbol "+" is ON, it means that the temperature is above the set value and, therefore, the thermostat is OFF, i.e., the burner is OFF.

Warning



The trip temperatures of the fan thermostat and burner thermostat should be changed only if absolutely necessary. Contact the manufacturer for information needed to reprogram the temperature controller.

6. MAINTENANCE

Warning



All of the operations described in this section must be performed by professionally qualified personnel only.

The following procedures must be done at regular intervals to ensure efficient operation of the heater. Make sure you have detached the electrical power line from the heater before starting any work.

Warning



Before doing any maintenance:

- Stop the heater as indicated in the "STOP" paragraph;
- Switch off the power supply by means of the cut-off on the electrical panel;
- Wait until the heater cools.

| Procedure | Periodic maintenance | | | |
|----------------------------------|----------------------|------------|------------------|------------|
| | Every day | Every week | Every six months | Every year |
| Check heater | X | | | |
| Check diesel supply line /filter | X | | | |
| Clean exterior of heater | X | | | |
| Clean motor and fan | | X | | |
| Check electrical connections | | | X | |
| Check and test burner | | | X | |
| Check thermostats | | | X | |
| Clean interior of heater | | | X | |
| Inspect and clean chamber | | | | X |

6.1. CHECKING THE HEATER AND THE DIESEL SUPPLY LINE

Perform the following checks:

- Make sure the heater is not installed where there may be a risk of fire or explosion
- Make sure that flammable materials are kept a safe distance away
- If you find diesel leaks:
 - Close the diesel stopcock
 - Find and repair the source of the diesel leak
- Do not use the heater if any removed panels have not been remounted
- Make sure the room to be heated is sufficiently ventilated
- Make sure that the air intake and outlet are completely unobstructed
- Make sure that the heater is not covered by any sheets or covers
- Check that the heater is in a fixed and stable position;
- Make sure the heater is constantly monitored during operation and checked before being started; and checked before being started

6.2 CLEANING THE EXTERIOR OF THE HEATER

To ensure efficient operation, clean the following parts:

- Burner:
 - Remove all external dirt and debris
 - Make sure the air inlet is not obstructed.

- Pipes, connectors and joints:
 - Clean with a cloth.
- External body:
 - Clean with a cloth.
- Air inlet/outlet:
 - Remove all dirt and debris
 - Make sure the air inlet is not obstructed.

6.3 Cleaning the motor and the fan

Clean the fan blades and the motor as follows:

- Remove the fan group fixing screws and then remove the fan group.
- Clean the motor with compressed air.
- Clean the fan blades with a hard brush.
- Reinstall the fan group.

6.4 CHECKING THE ELECTRICAL CONNECTIONS

After detaching the power cable, check all electrical connections as follows:

- Make sure that all connections are complete and tight.
- If there are traces of dirt or corrosion, clean or replace the connections if necessary.
- Replace any damaged wires or connectors if necessary.

6.5 CHECKING AND TESTING THE BURNER

To reach the burner:

- Remove the burner fixing screw.
- Remove the burner and follow the checking and cleaning instructions in the burner manual.
- Reinstall the burner.
- Run the procedures described in paragraphs 4.7 and 4.8 to measure combustion parameters and check that combustion is stable and clean.

6.6 CHECKING THE THERMOSTATS

Inspect the thermostats as follows:

- Remove any air outlet connection ducts
- Find the thermostats fixed to the internal panel of the space heater.
- Clean with a dry cloth, taking care not to cut or bend the capillary tube.

6.7 CLEANING THE INTERIOR OF THE HEATER

For thorough cleaning, the heater can be cleaned and washed inside and outside with water. It is however necessary to ensure that:

- the electrical cable is disconnected and unplugged from the socket
- completely close all access panels
- do not use water jets at a pressure exceeding 70 bar at a distance less than 30 cm
- completely dry all parts before reconnecting the electrical cable.

6.8 CLEANING THE COMBUSTION CHAMBER

To maintain the burner's high efficiency and prolong its life, the procedure described in this paragraph must be done at least once at the end of the work season or more frequently if there is an excessive build-up of soot. Excessive soot may be caused by poor chimney draught, poor fuel quality, poor regulation of the burner, or more or less frequent alternation of burner starts and stops.

Pay attention during operation: pulsations at start may be due to excessive amounts of soot.

To access the heat exchanger (1), take off the rear panel (3), remove the smoke box inspection panel (2), and then remove baffle plates (7).

To access the combustion chamber (4) remove the burner (5).

Clean with compressed air or, if necessary, with a metal brush to

remove any deposited soot and combustion residues.

Warning



After any technical work, always check that the heater works correctly.

7. TROUBLESHOOTING

In the event of serious anomalies, various safety devices are able to block the machine's operation and signal the same:

- on the electrical panel



the blocking signal following intervention by safety thermostat L2: the reset button is located inside the burner box.

- on the burner



the blocking signal following intervention by the burner's flame control box.

Warning

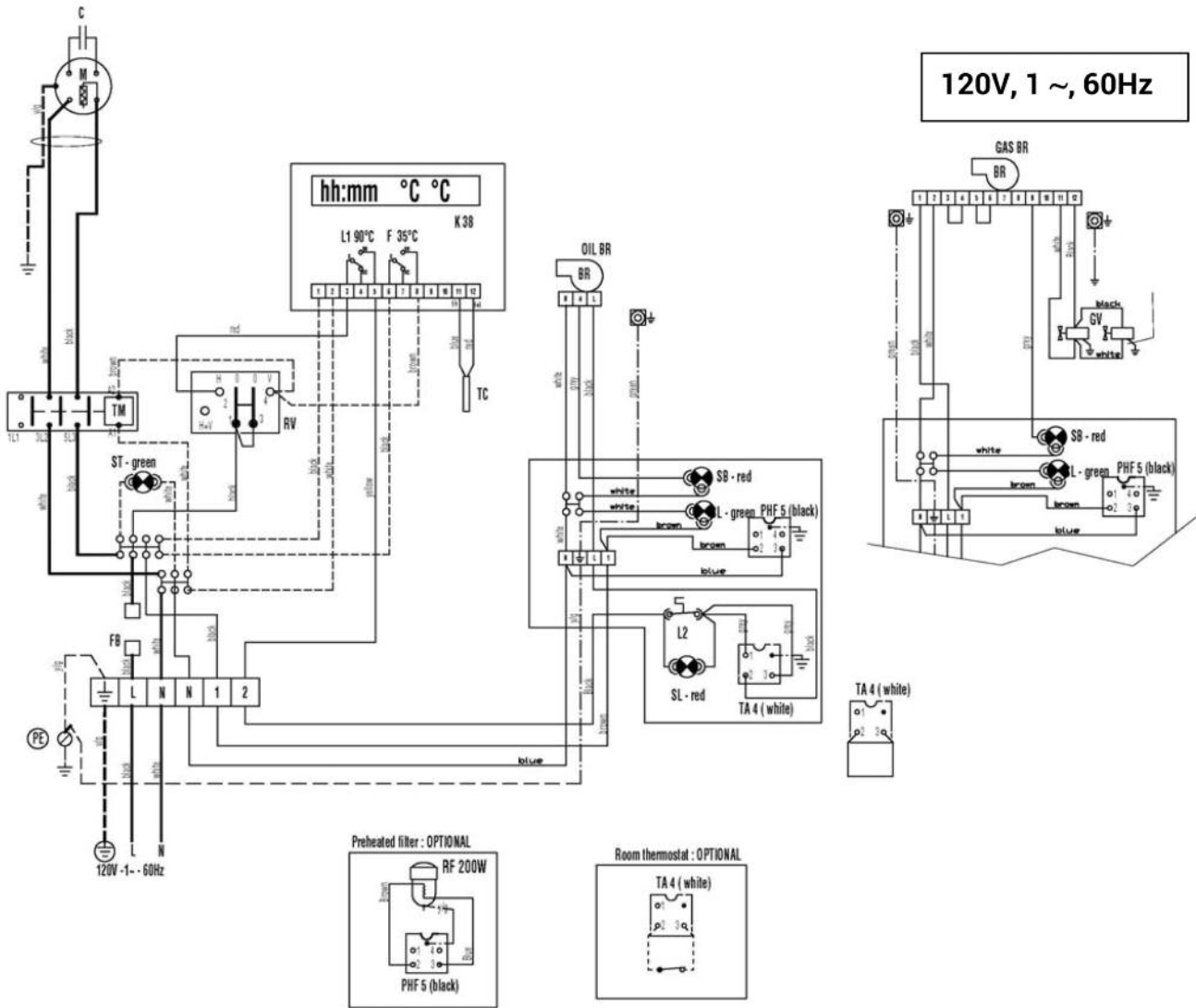


NEVER do more than two restarts in a row: unburned fuel can accumulate in the combustion chamber and suddenly flare up at the next restart.

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

| FAULT | CAUSE | REMEDY |
|--|---|---|
| <ul style="list-style-type: none"> • The heater does not start: lamp is off | <ul style="list-style-type: none"> • No power supply | <ul style="list-style-type: none"> • Check functioning and position of switch • Check the mains • Check power connections • Check fuse |
| <ul style="list-style-type: none"> • The heater does not start: lamp is on | <ul style="list-style-type: none"> • Switch (a) in wrong position • Incorrect functioning of the room thermostat | <ul style="list-style-type: none"> • Select correct position • Check that thermostat connection plug is inserted • Check thermostat electrical connection • Check thermostat setting and correct it • Check functioning of thermostat |
| <ul style="list-style-type: none"> • The heater works erratically and the burner goes on and off alternately: | <ul style="list-style-type: none"> • Insufficient or no fuel at burner • Burner thermostat has tripped due to overheating | <ul style="list-style-type: none"> • Check condition of pump-motor coupling • Check for air infiltrations in fuel circuit by checking air-tightness of pipes and filter seal • Clean nozzle or replace if necessary • Check correct position of air distribution channels and opening of any flaps, openings, etc. • Remove any foreign bodies trapped in the air ducts or ventilation grilles |
| <ul style="list-style-type: none"> • The heater does not work: the lamp on the electrical panel is on | <ul style="list-style-type: none"> • Manual reset safety thermostat has tripped due to excessive overheating of combustion chamber | <ul style="list-style-type: none"> • Check that the fan motor starts correctly and is not obstructed • Check that the fan motor is not burned out or that the motor condenser is not broke • Check burner calibration • Check the path and correct discharge of fumes |
| <ul style="list-style-type: none"> • The heater does not work: the lamp on the burner is steady on | <ul style="list-style-type: none"> • Burner's safety equipment has tripped | <ul style="list-style-type: none"> • Refer to the burner manual for diagnosis and causes |
| <ul style="list-style-type: none"> • Fan noise or vibrations | <ul style="list-style-type: none"> • Foreign bodies on fan blades • Insufficient air circulation | <ul style="list-style-type: none"> • Remove foreign bodies • Eliminate all possible obstacles to proper air flow |
| <ul style="list-style-type: none"> • Insufficient heating | <ul style="list-style-type: none"> • Insufficient burner capacity | <ul style="list-style-type: none"> • Contact Customer Service |

WIRING DIAGRAM



M FAN MOTOR

F FAN THERMOSTAT (setting: 30°C)

FB FUSE

ST POWER LAMP

L2 LIMIT THERMOSTAT WITH MANUAL RESTART

RV HEATING-STOP-VENTILATION SWITCH

SL OVERHEAT THERMOSTATS CONTROL LAMP

L1 BURNER THERMOSTAT (setting: 90°C)

TA ROOM THERMOSTAT PLUG

RE2 DELAYED IGNITION RELAY

R ANTI-CONDENSATION RESISTANCE

TM FANS TELE-CONTACTOR

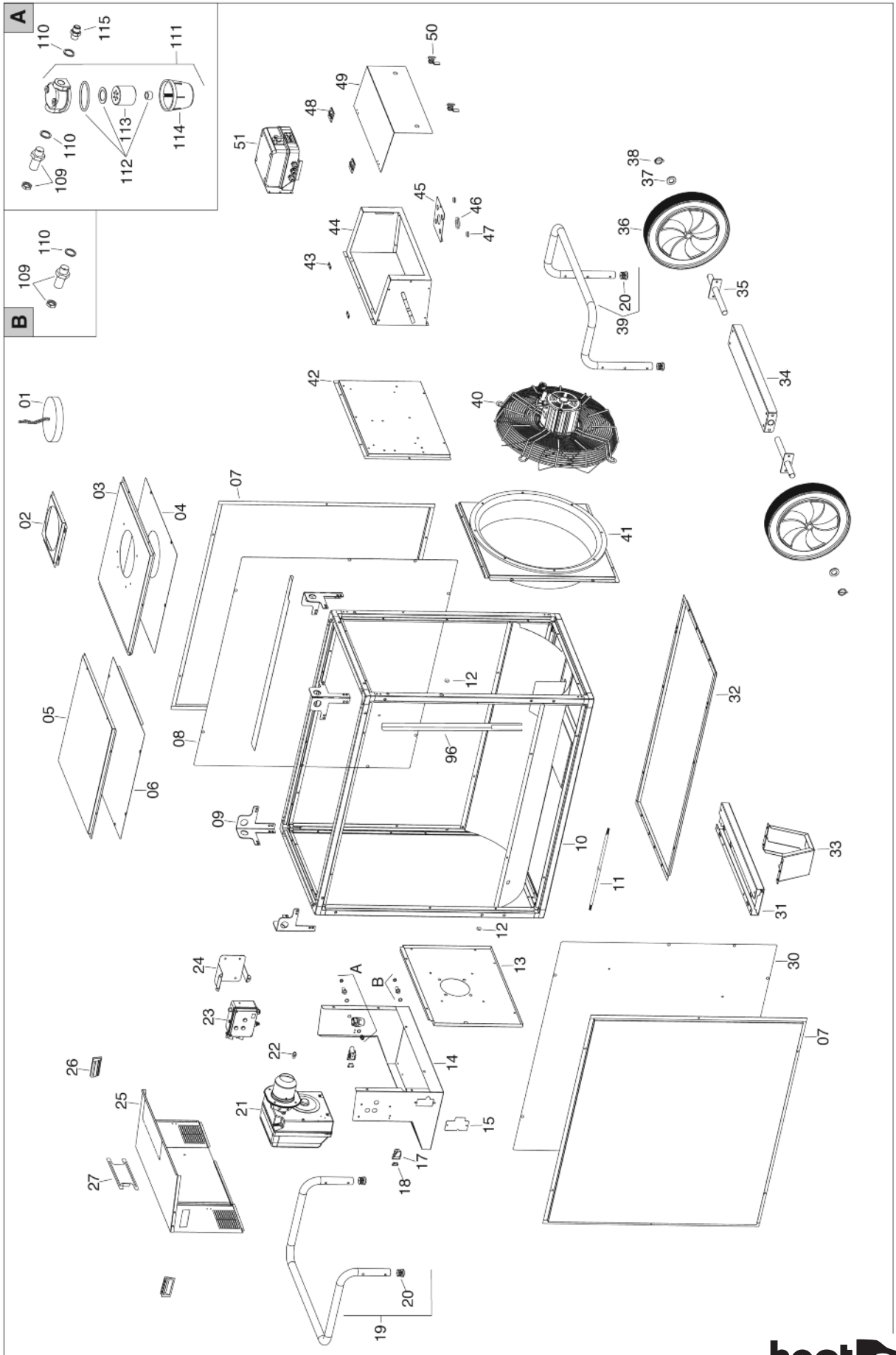
RM FANS THERMAL RELAY

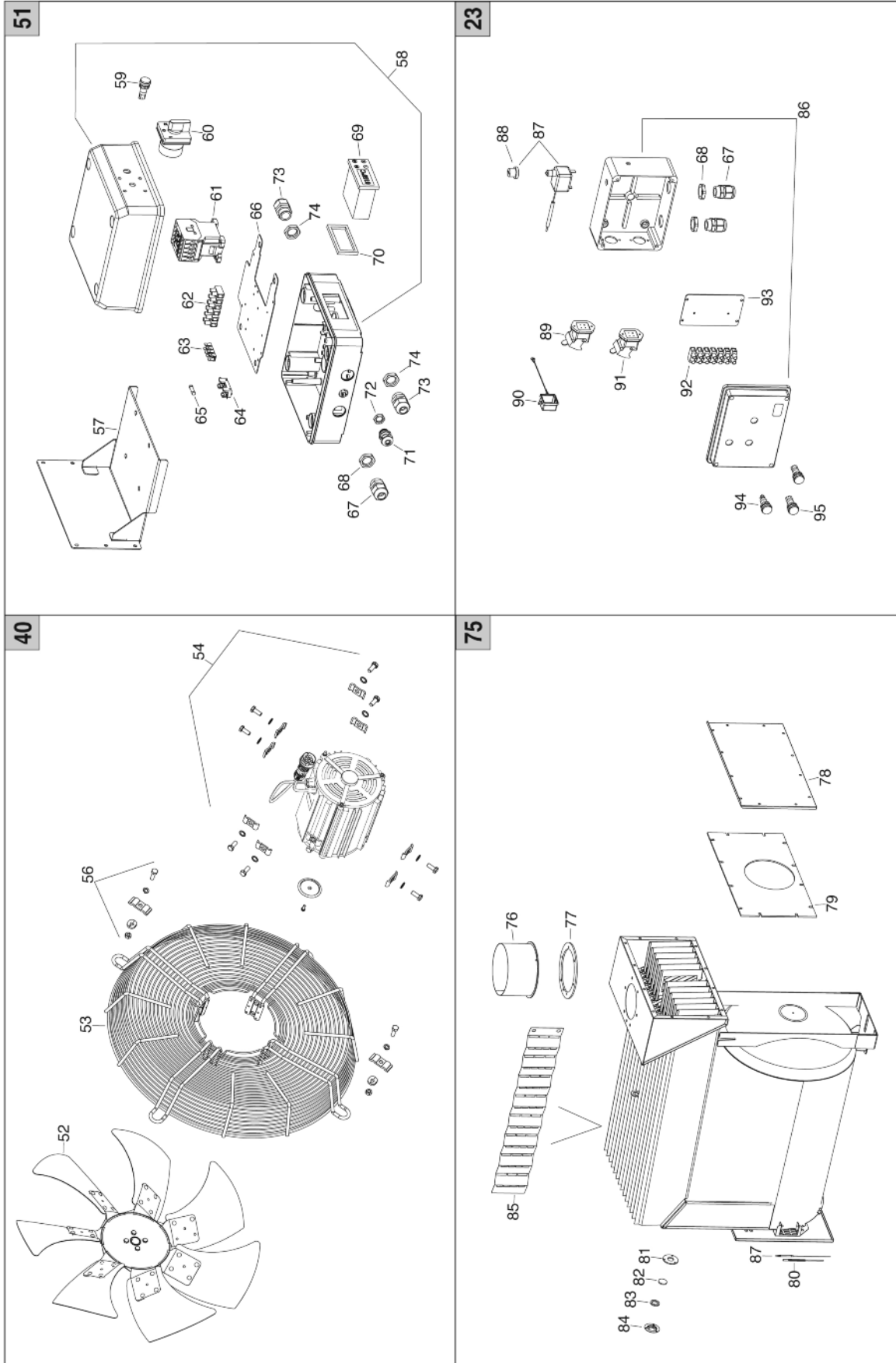
ST POWER LAMP

SM FAN STOP LAMP

BR BURNER

PB7 BURNER PLUG

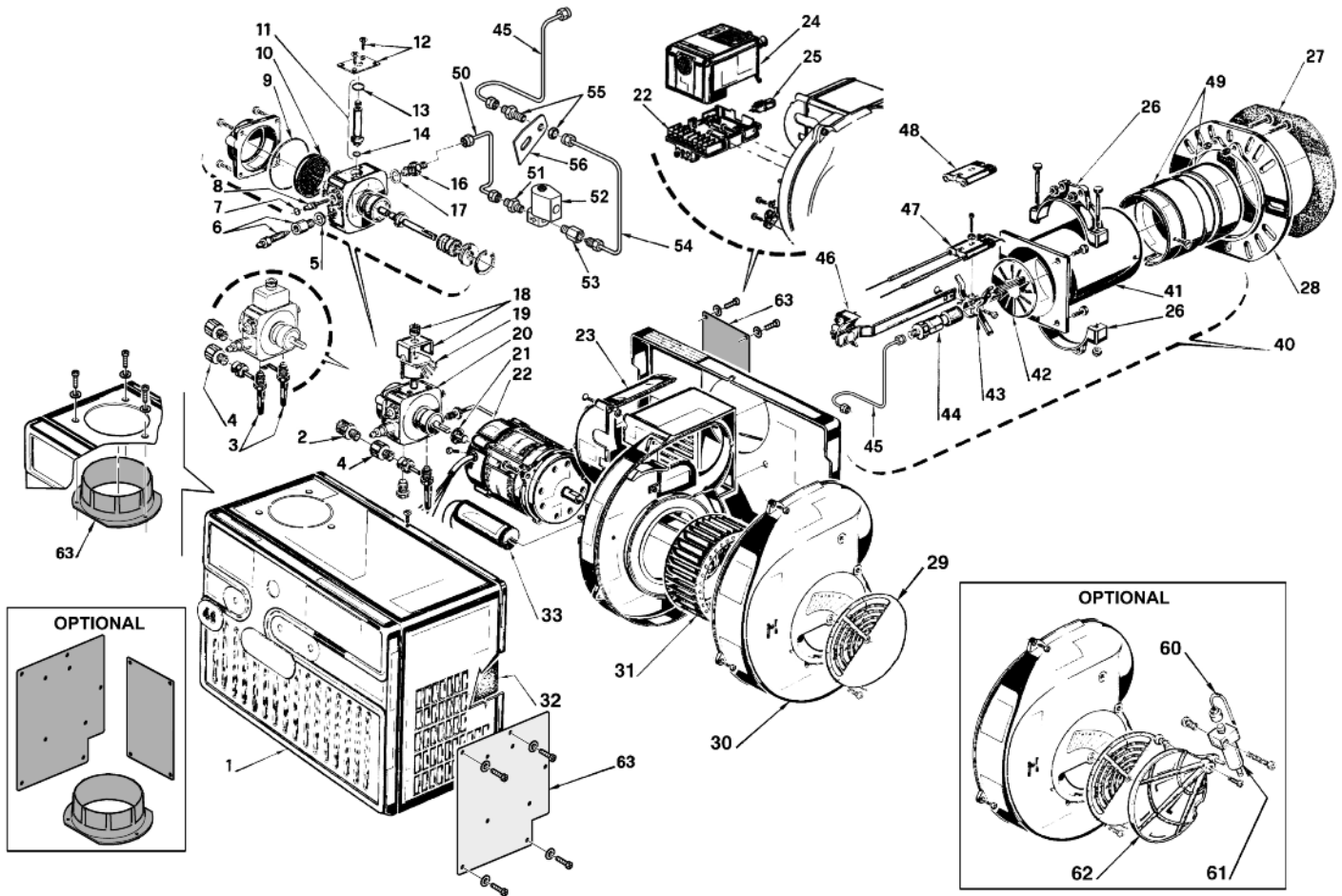




| POS | P/N | DESCRIPTION |
|-----|--------------|-----------------------------|
| 01 | C30400-10 | Cap |
| 02 | G04360 | Panel |
| 03 | G04393-3001 | Panel |
| 04 | G04394 | Panel |
| 05 | G04395-3001 | Panel |
| 06 | G04396 | Panel |
| 07 | G04397-3001 | Panel |
| 08 | G04398 | Panel |
| 09 | G04289 | Stirrup |
| 10 | G04399-9005 | Frame |
| 11 | E30482-2 | Power cord |
| 12 | C30301 | Cable protection |
| 13 | G04400-9005 | Panel |
| 14 | G04568-9005 | Base |
| 15 | G04370-9005 | Panel |
| 17 | M20430 | Toggle latch |
| 18 | M20431 | Catch |
| 19 | P20318-9005 | Handle |
| 20 | C30398 | Cap |
| 21 | 076B202 | Oil burner |
| 22 | T20327 | Nozzle |
| 23 | G00522 | El. control box |
| 24 | G04371-9005 | Thermostat support bracket |
| 25 | G04569-3001 | Panel |
| 26 | C10209 | Handle |
| 27 | G04563-9005 | Panel |
| 30 | G04404 | Panel |
| 31 | G04405-9005 | Support bracket |
| 32 | G04406-9005 | Panel |
| 33 | G04378-9005 | Support |
| 34 | G04407-9005 | Wheels axle support bracket |
| 35 | G04380 | Wheel axle |
| 36 | C10566 | Wheel |
| 37 | M20111 | Washer |
| 38 | M20505 | Latched pin |
| 39 | P20312-9005 | Bumper |
| 40 | E10799-60-TR | Air fan assembly |
| 41 | G04408-9005 | Panel |
| 42 | G04409-9005 | Support bracket |
| 43 | G04383 | Spacer |

| POS | P/N | DESCRIPTION |
|-----|--------------|------------------------------------|
| 44 | G04410-9005 | Electrical panel box |
| 45 | G04385-9005 | Support plate |
| 46 | C30376 | Cable protection |
| 47 | C30389 | Cable protection |
| 48 | M20432 | Hinge |
| 49 | G04411-9005 | Panel |
| 50 | M20418 | Lock |
| 51 | G00519 | El. control box |
| 52 | E10799-60-01 | Fan |
| 53 | E10799-60-02 | Inlet grill |
| 54 | E10796-TR | Motor |
| 55 | E10796-1 | Capacitor |
| 56 | E10777-05 | Hardware kit (screws/nuts/washers) |
| 57 | G04387-9005 | Stirrup |
| 58 | E20725-04 | El. components box |
| 59 | E11033 | Lamp |
| 60 | E10141 | Switch |
| 61 | E10455 | Contactora |
| 62 | E20301 | Terminal board |
| 63 | E20319 | Ground terminal board |
| 64 | E20508 | Fuse holder |
| 65 | E10313 | Fuse |
| 66 | G04388 | Support plate |
| 67 | E20959 | Cable fastener |
| 68 | E20960 | Cable fastener nut |
| 69 | E50794 | Thermoregulator |
| 70 | E50794-1 | Seal |
| 71 | E20933 | Cable fastener |
| 72 | E20956 | Cable fastener nut |
| 73 | E20970 | Cable fastener |
| 74 | E20971 | Cable fastener nut |
| 75 | G04570 | Combustion chamber |
| 76 | G04413 | Chimney fitting |
| 77 | T10805 | Seal |
| 78 | G04414 | Panel |
| 79 | T10694 | Insulating gasket |
| 80 | E50794-2 | Thermocouple |
| 81 | T10691 | Insulating gasket |
| 82 | T10405 | Tempered glass |
| 83 | T10692 | Insulating gasket |
| 84 | G04298 | Disc |
| 85 | G04304 | Turbulence-generating grid |
| 86 | E20706-02 | El. components box |
| 87 | E50749 | Safety thermostat |
| 88 | E50750 | Safety thermostat plastic profile |
| 89 | E20688 | Plug |
| 90 | E20665 | Thermostat plug cover |
| 91 | E20640 | Thermostat plug |
| 92 | E20301 | Terminal board |
| 93 | G04392 | Support plate |
| 94 | E11033 | Lamp |
| 95 | E11030 | Lamp |
| 96 | G04485 | Protective panel |
| 109 | I20337 | Fitting |
| 110 | M20123 | Aluminium washer |
| 111 | T20201 | Diesel filter |
| 112 | T20206 | Filter cartridge |
| 113 | T20234 | Filter seal kit |
| 114 | T20212 | Filter container |
| 115 | I20104 | Iron fitting |

EXPLODED SPARE PARTS LIST

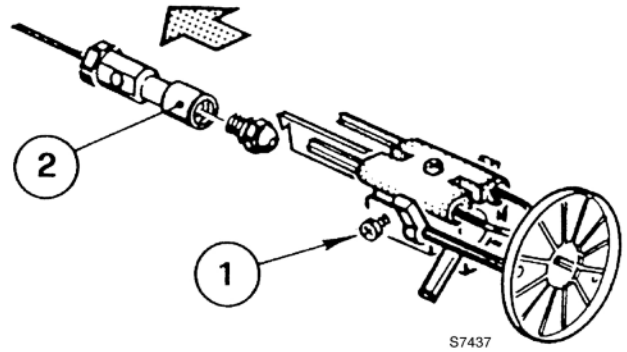


SPARE PARTS LIST

| No. | CODE | DESCRIPTION | No. | CODE | DESCRIPTION |
|-----|----------|------------------------------------|-----|---------|----------------------------------|
| 1 | 3020510 | BURNER BACK COVER | 40 | 3949171 | SHORT COMBUSTION HEAD 5" (274T1) |
| 2 | 3006571 | 3/8" NPT/METRIC ADAPTER - MALE | 41 | 3005892 | SHORT AIR TUBE |
| 3 | 3006994 | PIPE CONNECTOR - SUPPLY AND RETURN | 42 | 3005897 | TURBULATOR DISC |
| 4 | 3005847 | 1/4" NPT/ METRIC ADAPTER - FEMALE | 43 | 3005896 | CROSS - CASTING |
| 5 | 3007077 | CRUSHABLE METAL WASHER | 44 | 3006965 | NOZZLE ADAPTER |
| 6 | 3007568 | BLEEDER | 45 | 3006987 | NOZZLE OIL TUBE - SHORT |
| 7 | 3007028 | O-RING - PUMP PRESSURE REGULATOR | 46 | 3005900 | REGULATOR ASSEMBLY - SHORT |
| 8 | 3007202 | REGULATOR SCREW | 47 | 3005902 | ELECTRODE ASSEMBLY - SHORT |
| 9 | 3007162 | C7010002 O-RING - PUMP COVER | 48 | 3005869 | ELECTRODE PORCELAIN |
| 10 | 3005719 | PUMP SCREEN | 49 | 3005895 | END CONE |
| 11 | 3006925 | VALVE STEM | | | |
| 12 | 3007203 | VALVE STEM PLATE | 40 | 3949172 | LONG COMBUSTION HEAD 10" (274T2) |
| 13 | 3007029 | O-RING - VALVE STEM UPPER | 41 | 3005893 | LONG AIR TUBE |
| 14 | 3007156 | O-RING - VALVE STEM LOWER | 42 | 3005897 | TURBULATOR DISC |
| 15 | 3002278 | PRIMARY CONTROL SUB BASE | 43 | 3005896 | CROSS - CASTING |
| 16 | 3007268 | NOZZLE OUTLET FITTING | 44 | 3006965 | NOZZLE ADAPTER |
| 17 | 3007087 | CRUSHABLE METAL WASHER | 45 | 3006988 | NOZZLE OIL TUBE - LONG |
| 18 | 3006553 | COIL U-BRACKET AND KNURLED NUT | 46 | 3005901 | REGULATOR ASSEMBLY - LONG |
| 19 | 3002279 | COIL | 47 | 3005903 | ELECTRODE ASSEMBLY - LONG |
| 20 | 3007802 | C7001010 PUMP | 48 | 3005869 | ELECTRODE PORCELAIN |
| 21 | 3000443 | PUMP DRIVE KEY | 49 | 3005895 | END CONE |
| 22 | 3005845 | MOTOR | | | |
| 23 | 3007318 | AIR TUBE COVER | | | |
| 24 | 3002280 | PHOTO-CELL | 60 | 3007816 | OPTIONAL CAPILLARY TUBE |
| 25 | 3001157 | PRIMARY CONTROL 530SE/C | 61 | 3006911 | HYDRAULIC JACK |
| 26 | 3005849 | SEMI FLANGE | 62 | 3000880 | HYDRAULIC AIR SHUTTER |
| 27 | 3005852 | MOUNTING GASKET | 63 | 3002762 | DUCTED COMBUSTION AIR INTAKE KIT |
| 28 | 3005851 | UNIVERSAL MOUNTING FLANGE | | | |
| 29 | 3007206 | MANUAL AIR SHUTTER | | | |
| 30 | 3007211 | AIR INTAKE HOUSING | | | |
| 31 | 3005799 | FAN | | | |
| 32 | 3007358 | ACOUSTIC LINER | | | |
| 33 | 20087024 | CAPACITOR 16 µF | | | |
| 50 | 3020300 | OIL LINE | | | |
| 51 | 3020307 | MALE ADAPTOR | | | |
| 52 | 3020299 | SOLENOID VALVE | | | |
| 53 | 3020304 | ADAPTOR | | | |
| 54 | 3020301 | OIL LINE | | | |
| 55 | 3020303 | ADAPTOR AND NUT | | | |
| 56 | 3020302 | BRACKET | | | |

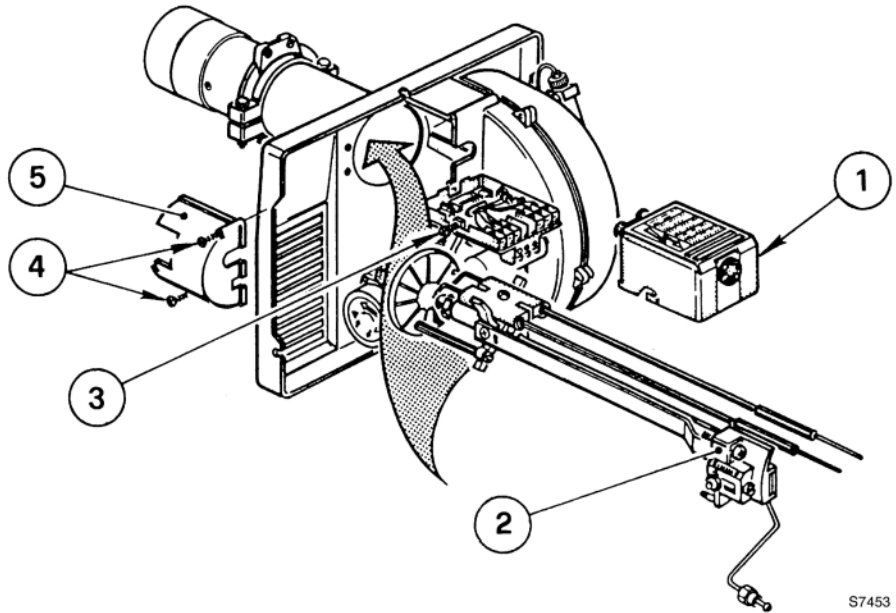
NOZZLE PLACEMENT

- Determine the proper firing rate for the boiler or furnace unit, considering the specific application, then use the Burner Set-up chart to select the proper nozzle and pump pressure to obtain the required input from the burner.
- Remove the NOZZLE ADAPTER (2) from the DRAWER ASSEMBLY by loosening the SCREW (1).
- Insert the proper NOZZLE into the NOZZLE ADAPTER and tighten securely (Do not overtighten).
- Replace adapter, with nozzle installed, into drawer assembly and secure with screw (1).



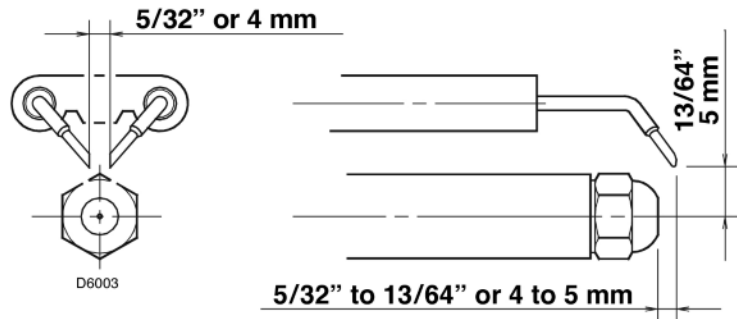
INSTALLATION/REMOVAL OF DRAWER ASSEMBLY

- To remove drawer assembly, loosen SCREW (3), then unplug CONTROL BOX (1) by carefully pulling it back and then up.
- Remove the AIR TUBE COVER PLATE (5) by loosening the two retaining SCREWS (4).
- Loosen SCREW (2), then slide the complete drawer assembly out of the combustion head as shown.
- To insert drawer assembly, reverse the procedure in items A to C above, then attach fuel line to the pump.



ELECTRODE SETTING

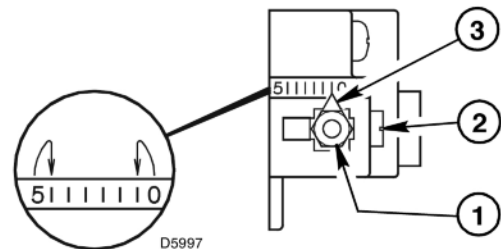
IMPORTANT:
These dimensions must be observed and verified.



TURBULATOR SETTING

- Loosen NUT (1), then turn SCREW (2) until the INDEX MARKER (3) is aligned with the correct index number as per the Burner Set-up chart.
- Retighten the RETAINING NUT (1).

NOTE:
Zero and five are scale indicators only.
From left to right, the first line is 5 and the last line 0.



OIL LINE CONNECTIONS

This burner is shipped with the oil pump set to operate on a **single** line system.

To operate on a **two** line system the by-pass plug **must** be installed.

Warning: Do not operate a **single** line system with the by-pass plug installed.

Operating a **single** line system with the by-pass plug installed will result in damage to the pump shaft seal.

Note: Pump pressure must be set at time of burner start-up.

A pressure gauge is attached to the **PRESSURE PORT** (8) for pressure readings.

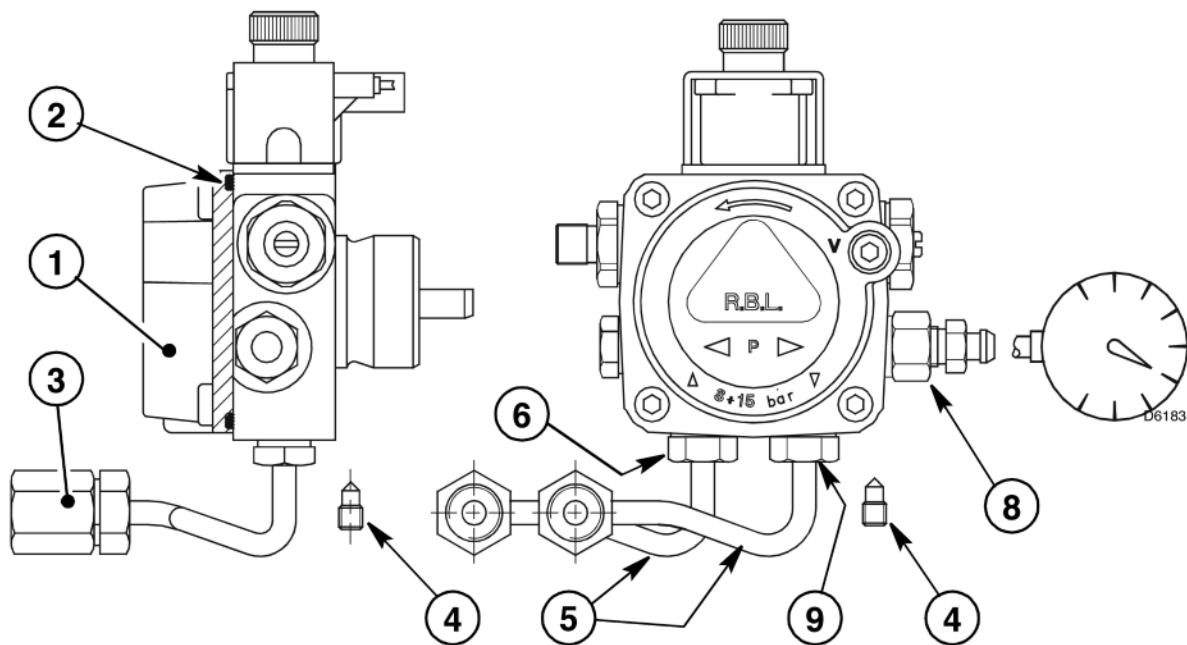
Two **PIPE CONNECTORS** (5) are supplied with the burner for connection to either a single or a two-pipe system.

Also supplied are two **ADAPTORS** (3), two female 1/4" NPT, to adapt oil lines to burner pipe connectors.

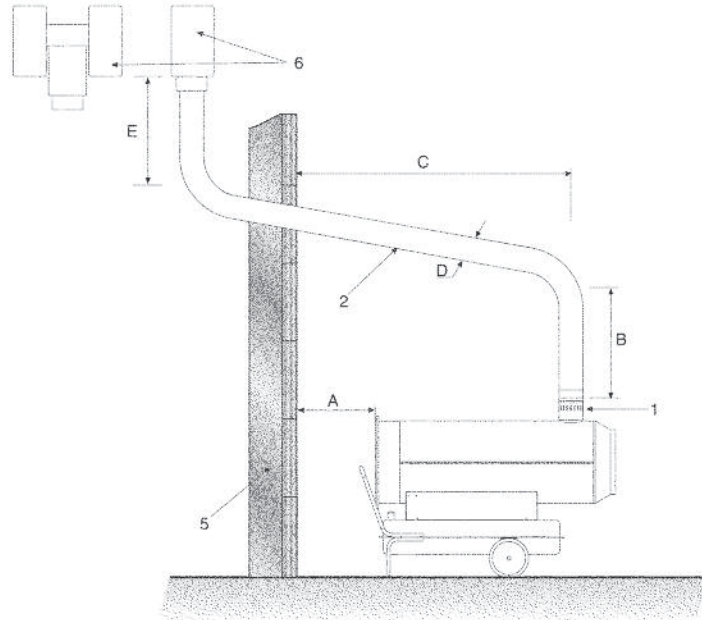
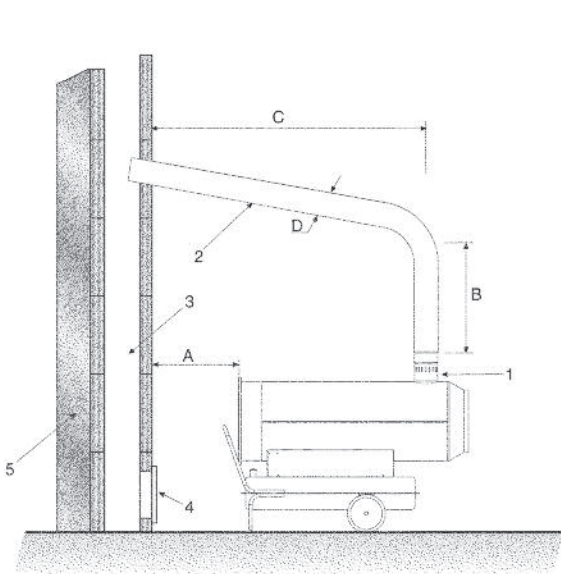
All pump port threads are **British Parallel Thread** design.

Direct connection of NPT threads to the pump **will damage** the pump body.

Riello manometers and vacuum gauges do **not** require any adaptors, and can be safely connected to the pump ports. An NPT (metric) adapter **must** be used when connecting other gauge models.



CHIMNEY LAY-OUT SUGGESTED RECOMMENDATIONS



**DESCRIPTION
ENGLISH**

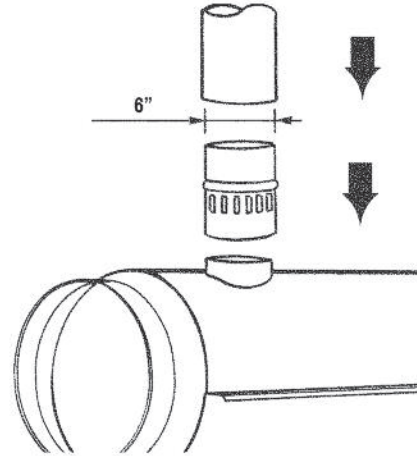
- A) Minimal 3 ft
- B) Minimal 3 ft
- C) The shortest
- D) The same or bigger than the outlet collar diameter of heater
- E) Minimal 3 ft
- 1) Anti-wind device provided with the heater
- 2) Horizontal crossing with minimal upside angle pitch of 5°
- 3) Chimney 8" x 8" minimal
- 4) Chimney anti-explosion flap door
- 5) External seating wall
- 6) Chimney ending H shape

Have your installation checked by local authority.

MINIMUM CLEARANCES TO COMBUSTIBLES

Heater; outlet 10 ft, front 3 ft, rear 3 ft, side 1 ft, ceiling 6 ft, flue 1 ft

FLUE CONNECTIONS DIAGRAM



| Fuel Blend Guide | |
|-------------------|-----------------|
| Temperature Range | Fuel Blend |
| 15° to 30°F | 80% #2 : 20% #1 |
| 0° to 15°F | 70% #2 : 30% #1 |
| -15° to 0°F | 50% #2 : 50% #1 |
| below -15°F | 30% #2 : 70% #1 |

**Runs on: #2 diesel (winter blend)
#1 kerosene**