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Valparaiso, IN 46383  
888-432-8924 • Fax 219-462-7985  
[www.heatwagon.com](http://www.heatwagon.com)

## Installation and Maintenance Manual

Please retain this manual for future reference.

***VF750***  
***VF1100***

***Construction***  
***Heater***



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

# **IMPORTANT INFORMATION! READ FIRST**

The heater is designed for use as a construction heater under ANSI Z83.7a-2000. 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 outside 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**

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 NFPA 58 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.

## **CAUTION**

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

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## **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.

**Not for home or recreational vehicle use!**

**If you have read this entire manual and you still have questions, please call us at 219-464-8818**

# Installation and Maintenance Manual

## Model VF750-VFI 100

### Construction Heater

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#### WARRANTY

This heater is guaranteed against defective materials and workmanship for one (1) year from Heat Wagon 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. Components are guaranteed to the extent of the component manufacturer's warranty.

#### LIMITATIONS

Warranty claims for service parts (wear parts) such as spark plugs, igniters, and 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, improper electric power, misapplication and/or evidence of abuse may be cause for rejection of warranty claims.

Labor, travel time, mileage and shipping charges will not be allowed. Minor adjustments to heaters are the responsibility of the dealer. 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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### **WARNING**

BEFORE USING THE HEATER, READ AND UNDERSTAND ALL INSTRUCTIONS AND FOLLOW THEM CAREFULLY.  
THE MANUFACTURER IS NOT RESPONSIBLE FOR DAMAGES TO GOODS OR PERSONS DUE TO IMPROPER USE OF THE UNITS.

### **GENERAL HAZARD WARNING**

FAILURE TO COMPLY WITH THE PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER, CAN RESULT IN DEATH, SERIOUS 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, LABEL, ETC., CONTACT THE MANUFACTURER.

### **WARNING: FIRE, BURN, INHALATION AND EXPLOSION HAZARD**

KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIALS, PAPER OR CARDBOARD, AT 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.

### **WARNING**

NOT FOR HOME OR RECREATIONAL VEHICLE USE. INSTALLATION OF THIS HEATER IN A HOME OR RECREATIONAL VEHICLE MAY RESULT IN A FIRE OR EXPLOSION, PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF FIRE.

### **WARNING**

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE INJURY OR DEATH.  
READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

### **FOR YOUR SAFETY**

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPOURS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

**WARNING**

The heater is designed and approved for use as a construction heater in accordance with Standard ANSI Z83,7 CGA 2.14.

CHECK WITH YOUR LOCAL FIRE SAFETY AUTHORITY IF YOU HAVE QUESTIONS ABOUT APPLICATIONS.

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

**WARNING**

This heater can be washed, provided that:

- A. The heater is disconnected from the electrical supply.
- B. All access panels are securely closed.
- C. Water spray nozzle shall not discharge within 6 feet of the heater.
- D. The heater is not reconnected to electrical supply until thoroughly dried.

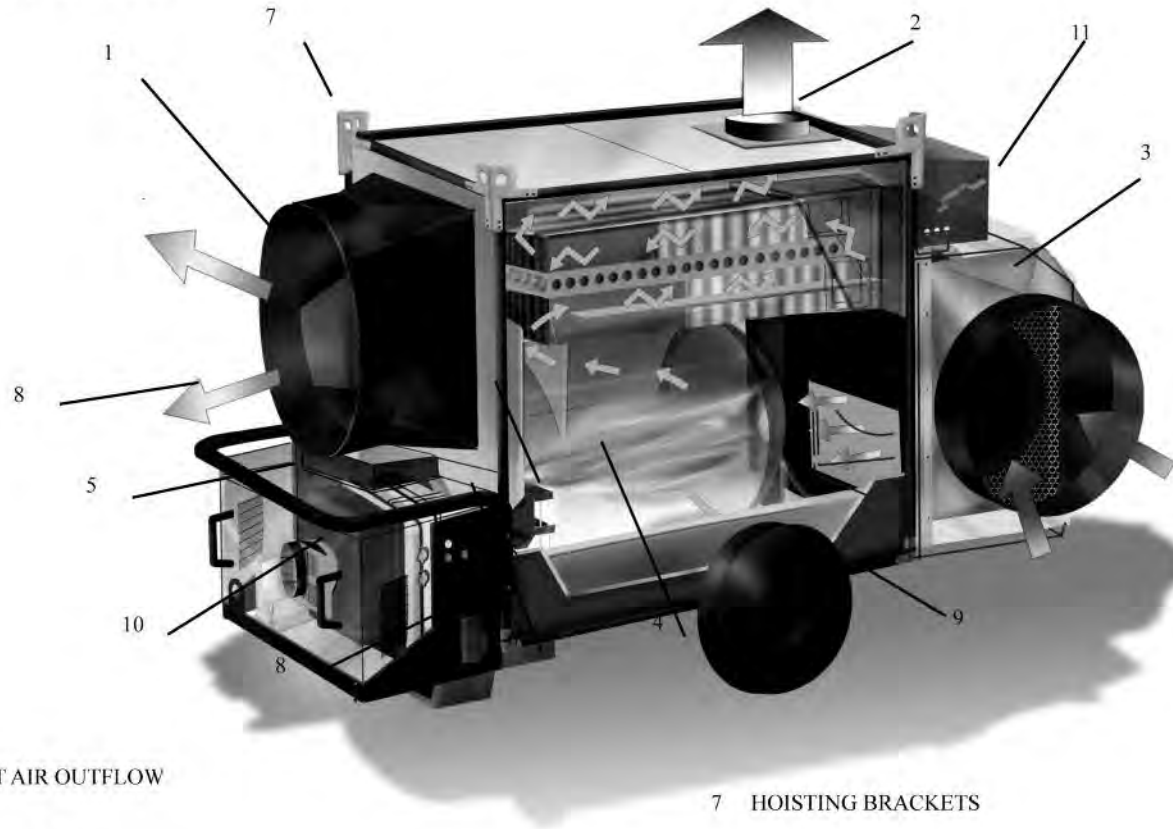
Improper cleaning of the heater can cause severe personal injury or property damage due to water and/or cleaning solutions:

- A. In electrical components, connections and wires causing electrical shocks or component failure.
- B. On gas control components causing corrosion which can result in gas leaks and fire or explosion from the leak. The hose assembly must be protected from the traffic, building materials and contact with hot surfaces both during use and while in storage.

**WARNING**

RETAIN THIS INSTRUCTION FOR FUTURE REFERENCE..

## CONTROL BOARD



1 HOT AIR OUTFLOW

2 CHIMNEY

3 COOLING FAN

4 COMBUSTION CHAMBER

5 BURNER

6 THERMOSTATS L2 BOX

7 HOISTING BRACKETS

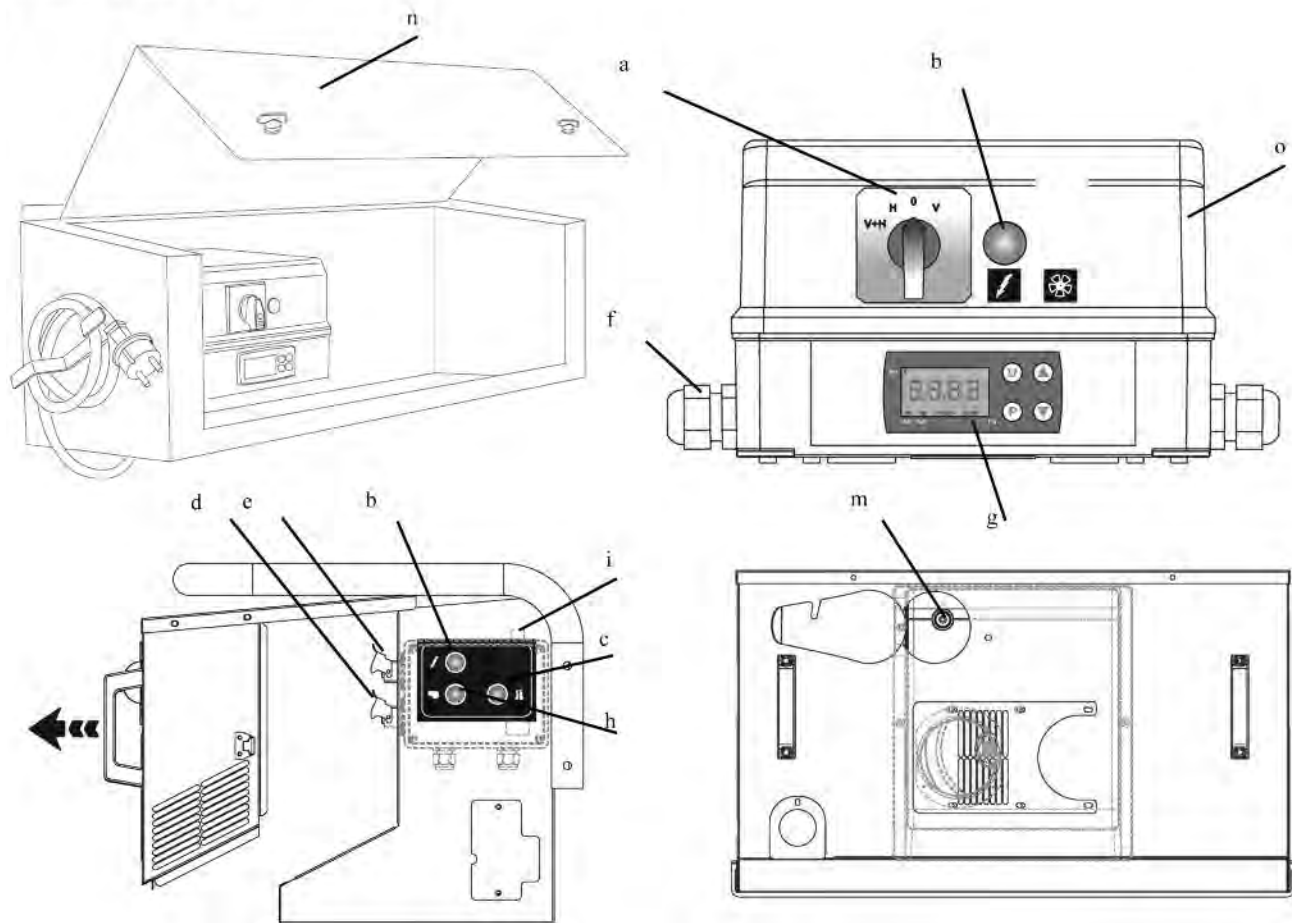
8 SUPPORT/HANDLE

9 WHEEL

10 BURNER BOX

11 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 the combustion and heat from the smoke 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) 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

#### 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

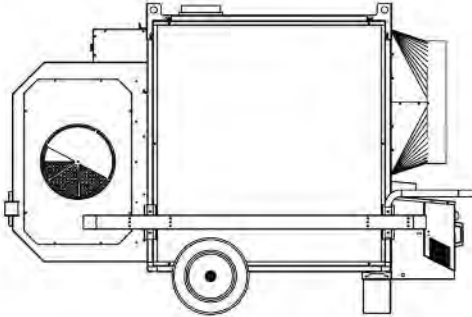


All of the operations described in this section must be performed by professionally qualified personnel only.

### 4.1. INSTALLATION ON FLOOR OR CEILING

The space heater may be installed:

- on the floor in a stable position

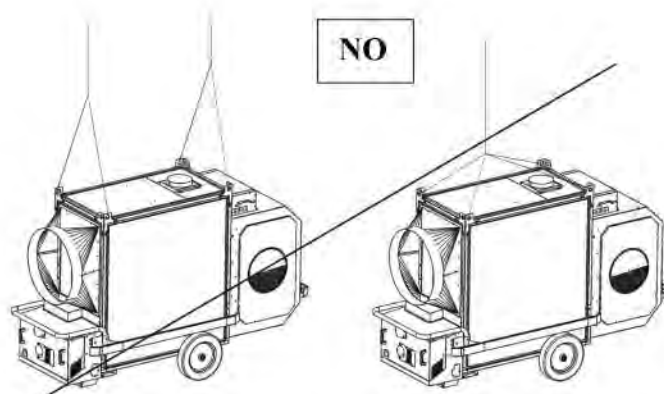
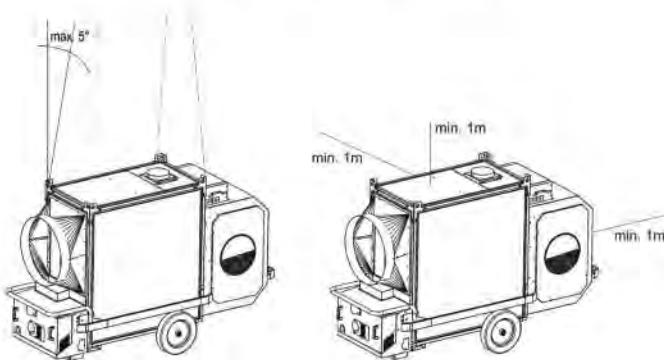


- or suspended by hooking it to the ceiling using cables and/or chains of an appropriate size and length secured to the four suspension points.

### Warning

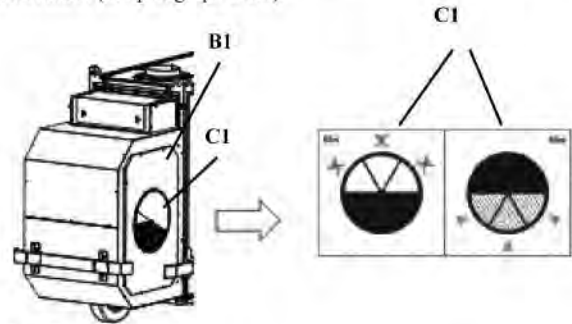


Make sure that the ropes and/or chains form an angle not more than 5° with vertical to the ceiling, that the ropes do not cross, and that a different rope is used for each hook.



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

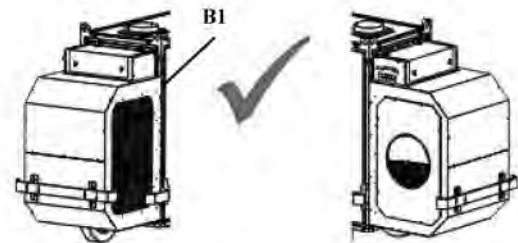
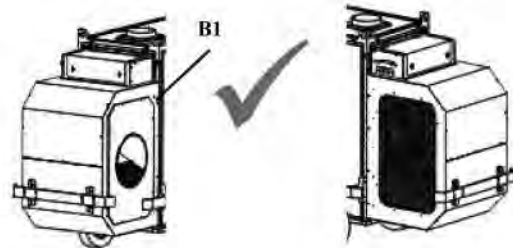
The centrifugal fan has a panel (B1) with a sliding shutter (C1) to emit fresh air for ventilation. The shutter should be set ONLY if connected to air suction ducts (see paragraph 4.4.2).



### Warning



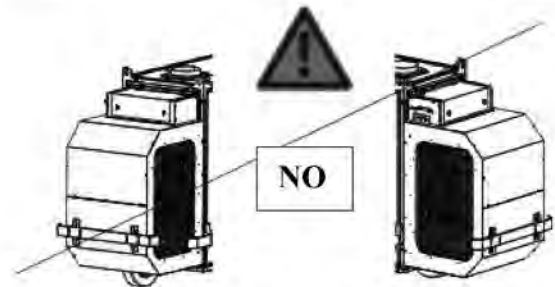
Accessory (A1) (see paragraph 4.3.2), for connecting the air suction duct and panel (B1) with pair flow adjustment shutter (C1) can be assembled on either the right or left side of the fan casing.



### Warning



Accessory (A1) for connecting the air suction duct and panel (B1) with pair flow adjustment shutter (C) must NEVER be removed, even if air suction ducts are not connected: the absence of these panels may cause damage to the fan motor.



## 4.2. POWER CONNECTIONS

### Warning



The 120V unit is fitted with a proper power cord.  
The 220V equipment is fitted with a grounded plug. Power cord must be sized in accordance with national rules.

### Warning



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

### Warning



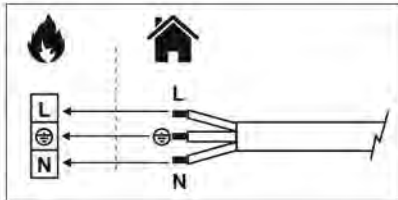
When installed, the appliance must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and/or the CSA C22.1, Canadian Electrical Code, if an external electrical source is utilized.

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.

Any room thermostat or other accessories (such as a timer) are connected to the system by connecting the electrical cable to the thermostat plug (c):

- Take the plug (c) out of the electrical panel, open the plug and remove the jumper between terminals 2 and 3.
- Connect the thermostat electrical cable to terminals 2 and 3 of the thermostat plug (c).
- Close the plug again and plug it back into the panel.

### 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 DUCTS

### 4.3.1. 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.

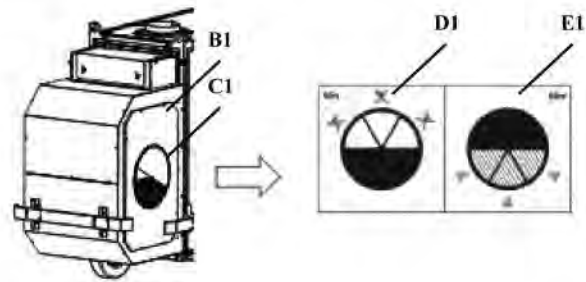
distribution channels can be connected by using the various accessories supplied, placing the connector head-on to one or more outlets chosen as needed.

## 4.3.2. AIR SUCTION DUCTS

The heater can be connected to suction ducts to distribute air from the room to be heated. These ducts must comply with the maximum diameter and length specified in the "TECHNICAL SPECIFICATION TABLE" and must be connected with accessory (A1) (provided), to be assembled on the centrifugal fan casing.



The centrifugal fan has a panel (B1) with a sliding shutter (C1) to emit fresh air for ventilation. The shutter can be set from a minimum value (position D1) to a maximum value (position E1).



### Warning



Accessory (A1) for connecting the air suction duct and panel (B1) with pair flow adjustment shutter (C1) can be assembled on either the right or left side of the fan casing.

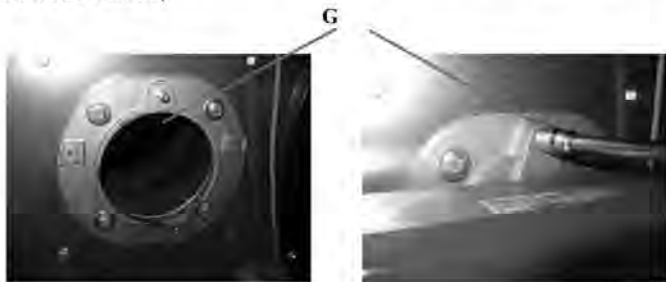
## 4.4. MOUNTING THE DIESEL BURNER

### 4.4.1. RIELLO BURNER

- Open the box containing the diesel burner, remove it and keep the two stickers with lot number for later use;
- Consult the user manual of the burner; and fit the burner fixing screw onto the burner plate according to the instructions



- Secure the burner plate to the machine by using the 4xM8 screws and the D8 x D24 washers;



- Insert the burner and fix it to the plate by tightening the nut supplied onto the screw G;
- Locate the black cable with 7-pin Wieland plug running out of the electrical panel and insert the plug into the socket H on the burner;



- Remove the burner cover and secure the two hoses to the fittings of the fuel pump already in place;

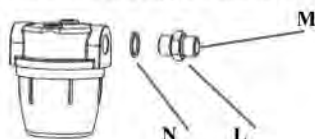
**Warning**



The diesel burner is factory-set according to the parameters shown on the “TECHNICAL SPECIFICATIONS TABLE” for 50Hz models.  
For 60Hz models, you have to change the combustion air setting as shown on the Table.

**4.4.2. DIESEL FILTER**

- Take the diesel filter and nipple L. Place aluminium washer N between the connection and nipple L and screw the nipple fully down.

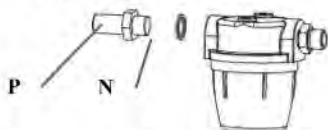


**Warning**



The threaded portion with internal conical chamfer M must protrude in order to allow seal tightening with the hose.

- Remove the through nipple and secure it to the diesel filter by inserting the shorter threaded part into the filter, taking care to place aluminum seal N between them.



- On the top left side of the burner box, secure the diesel filter unit and secure it to the metal panel by tightening with the 1/4” nut.
- On the bottom left side of the burner box, secure second through nipple and secure it to the metal panel by tightening with the 1/4” nut.



**Warning**



The threaded portion with internal conical chamfer M must protrude in order to allow seal tightening with the hose.

- Screw the flexible suction hose of the pump onto fitting M on the diesel filter unit.
- Screw the flexible supply pipe of the pump onto the second through nipple.
- Close the burner cover;

**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.

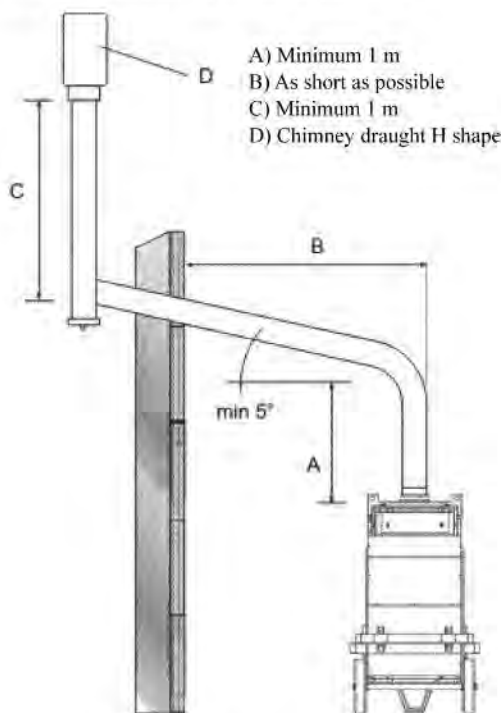
**4.6. CONNECTION TO EXHAUST DUCT**

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:



See page 31 for additional details

#### 4.8. 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.

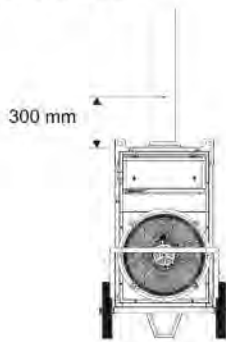
##### Warning



The burner settings are pre-set at the factory and may not comply with those required, therefore, the settings need to be checked and, where necessary, corrected.

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)
- CO<sub>2</sub>: 11 ÷ 12,5 %
- Oxygen (O<sub>2</sub>): 4,5 ÷ 6 %
- CO<sub>max</sub>: 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 (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 simply turning off the disconnecting switch on the panel. 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.

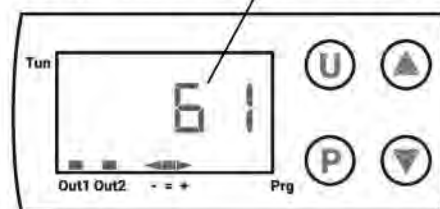
### 5.4. TEMPERATURE CONTROLLER

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

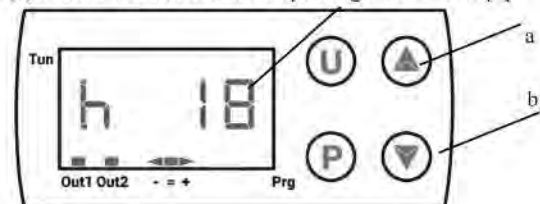
#### Display of air outflow temperature

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

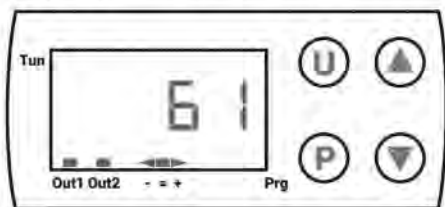


The time shown is not actual heating time, but connection time to the electrical power supply line.

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



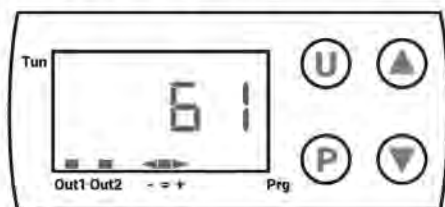
The temperature controller is programmed to start and stop the main fan automatically when the combustion chamber reaches the set temperature. This prevents cold air from blowing when the burner starts and the combustion chamber is not yet hot enough, and ensures that residual heat in the heater is dissipated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

The temperature is factory-set to 35°C, with hysteresis of 5°C.

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 95 °C, with hysteresis of 5°C.

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	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 GAS 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 smell:
  - Open the windows immediately
  - Do not touch electrical switches
  - Close the gas stopcock
  - Find and repair the source of the gas 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

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

#### Warning



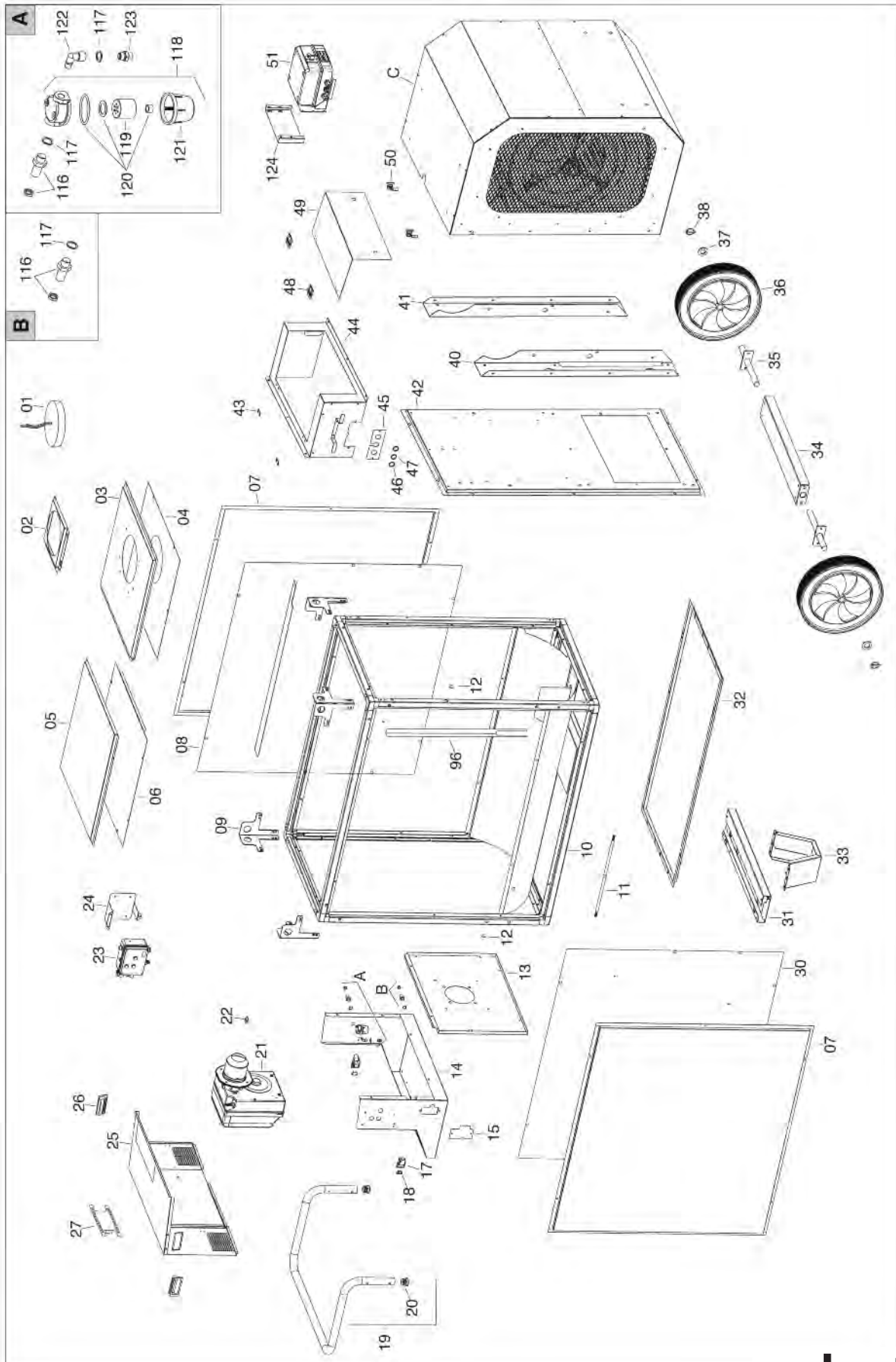
NEVER do more than two restarts in a row: unburned fuel can accumulate in the combustion chamber and suddenly flare up at the next restart.

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

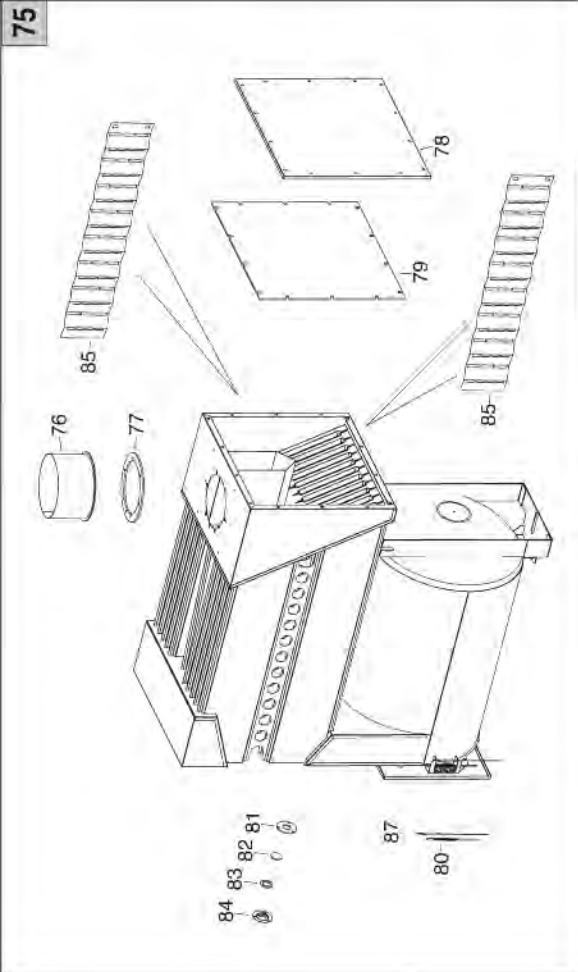
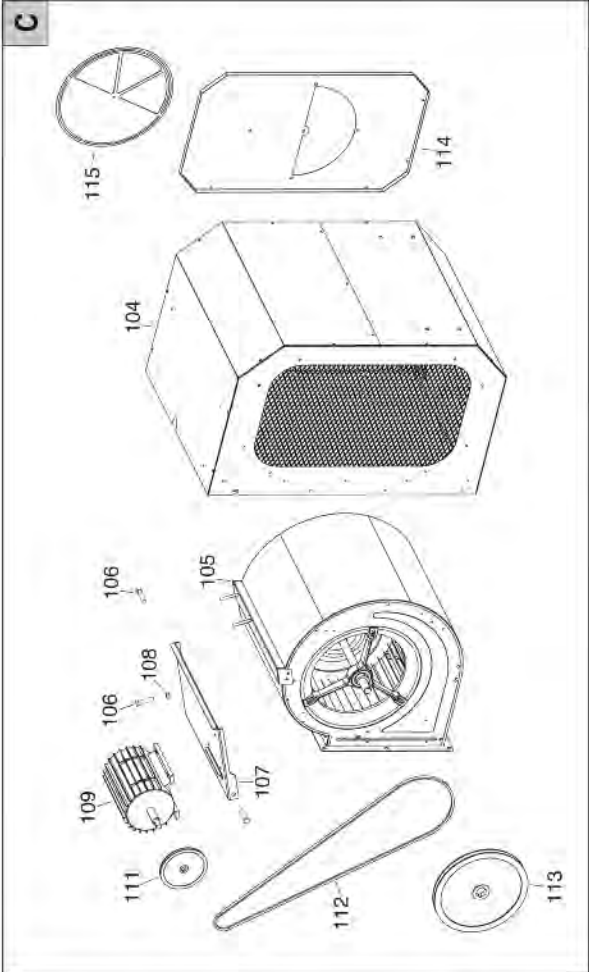
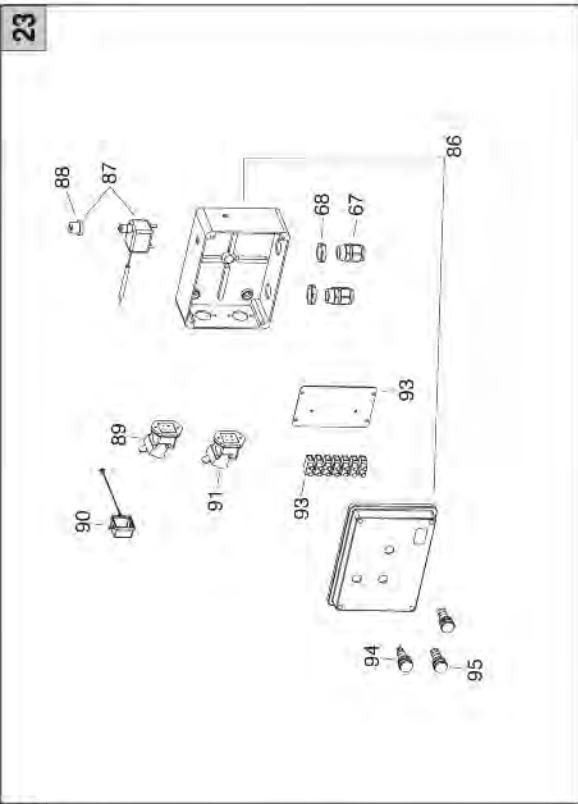
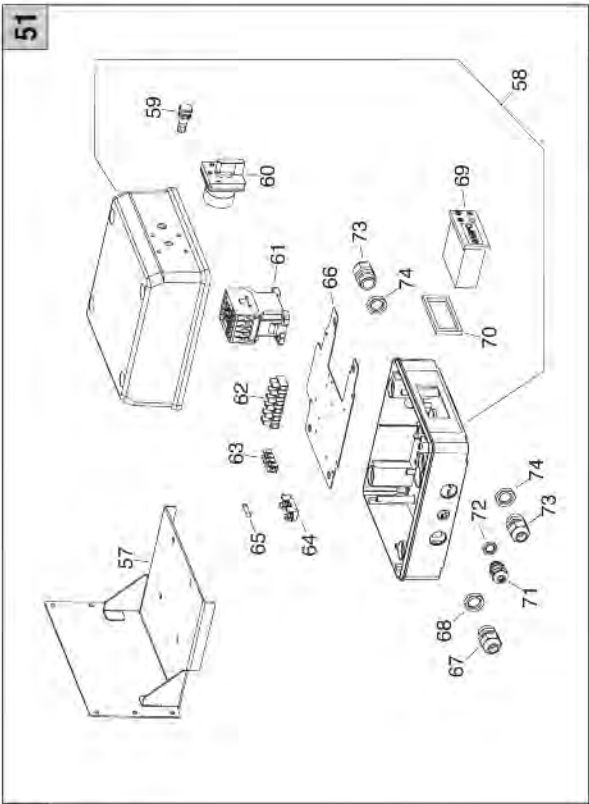
FAULT	CAUSE	REMEDY
<ul style="list-style-type: none"> <li>• The heater does not start:</li> </ul>  is off	<ul style="list-style-type: none"> <li>• No power supply</li> </ul>	<ul style="list-style-type: none"> <li>• Check functioning and position of switch</li> <li>• Check the mains</li> <li>• Check power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



# VF750 PARTS BREAKDOWN







# VF750 PARTS BREAKDOWN

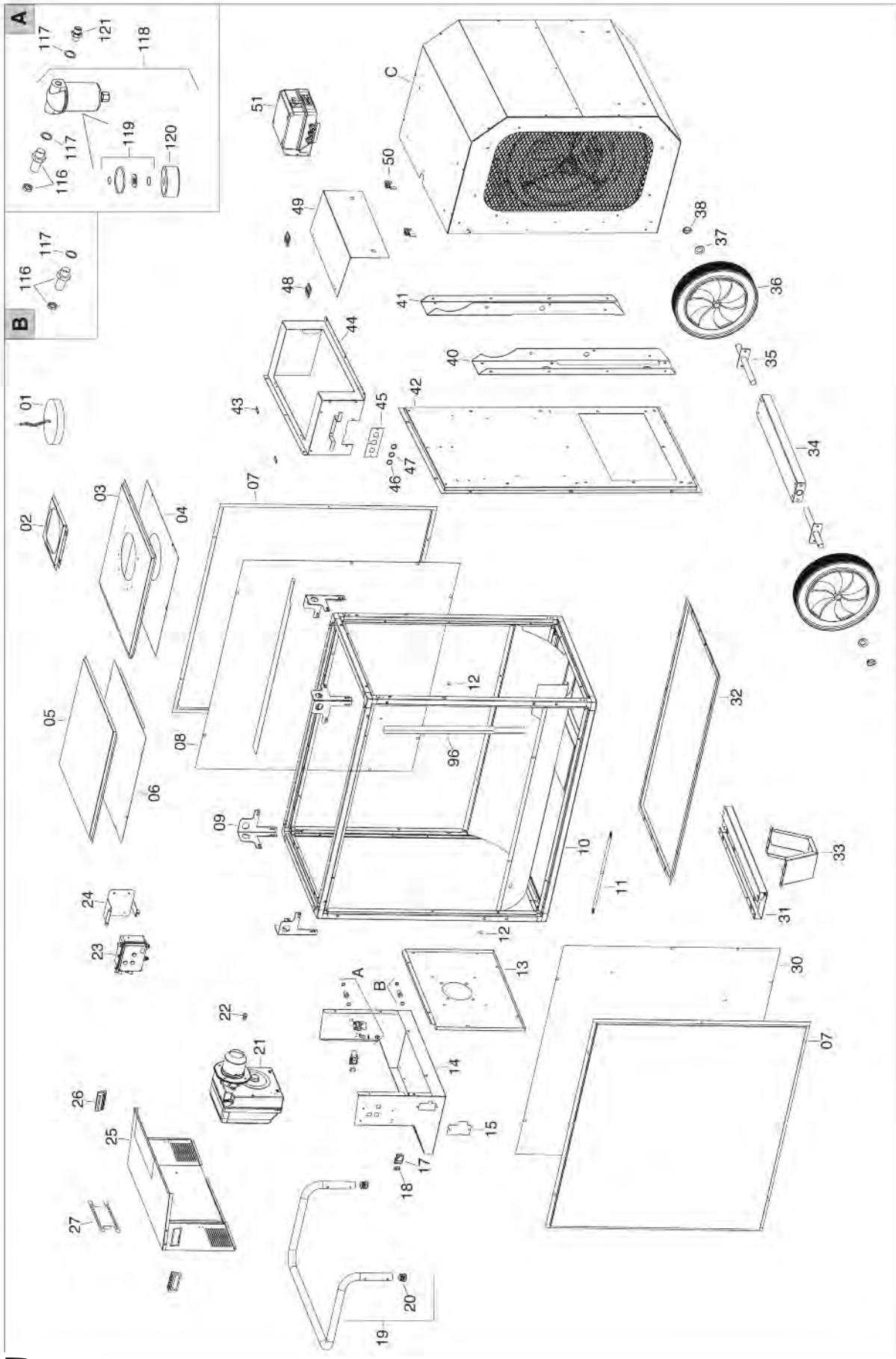
POS	P/N	DESCRIPTION
01	C30400-10	Cap
02	G04360	Panel
03	G04514-9010	Panel
04	G04415	Panel
05	G04516-9010	Panel
06	G04517	Panel
07	G04518-9010	Panel
08	G04519	Panel
09	G04289	Stirrup
10	G04520-9005	Frame
11	E30482-2	Power cord
12	C30301	Cable protection
13	G04521-9005	Panel
14	G04568-9005	Base
15	G04370-9005	Panel
17	M20430	Toggle latch
18	M20431	Catch
19	P20318-9005	Handle
20	C30388	Cap
21	076B203	Oil burner
22	T20376	Nozzle
23	G00522	El. control box
24	G04371-9005	Thermostat support bracket
25	G04569-9010	Panel
26	C10209	Handle
27	G04563-9005	Panel
28	M30001	Spring
29	G04403-9005	Panel
30	G04523	Panel
31	G04405-9005	Support bracket
32	G04545-9005	Panel
33	G04378-9005	Support
34	G04407-9005	Wheels axle support bracket
35	G04380	Wheel axle
36	C10562	Wheel
37	M20111	Washer
38	M20505	Latched pin
40	G04524-9005	Support bracket
41	G04525-9005	Support bracket
42	G04526-9005	Panel
43	G04383	Spacer

POS	P/N	DESCRIPTION
44	G04527-9005	Electrical panel box
45	G04505-9005	Support plate
46	C30316	Hole cap
47	C30389	Cable protection
48	M20432	Hinge
49	G04528-9005	Panel
50	M20418	Lock
51	G00521	El. control box
57	G04387-9005	Stirrup
58	E20725-03	El. components box
59	E11033	Lamp
60	E10141	Switch
61	E10455	Contact
62	E20301	Terminal board
63	E20319	Ground terminal board
64	E20508	Fuse holder
65	E10307	Fuse
66	G04388	Support plate
67	E20959	Cable fastener
68	E20960	Cable fastener nut
69	E50794	Thermoregulator
70	E50794-1	Seal
71	E20983	Cable fastener
72	E20956	Cable fastener nut
73	E20970	Cable fastener
74	E20971	Cable fastener nut
75	G04562	Combustion chamber
76	G04413	Chimney fitting
77	T10905	Seal
78	G04530	Panel
79	T10802	Seal
80	E50794-2	Thermocouple
81	T10691	Insulating gasket
82	T10405	Tempered glass
83	T10692	Insulating gasket
84	G04298	Disc
85	G01759	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

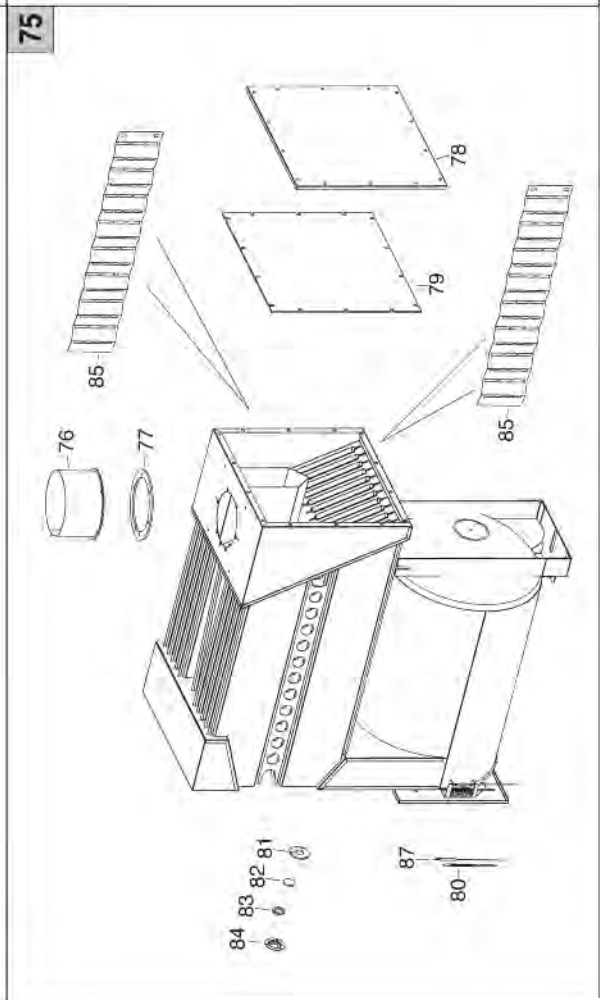
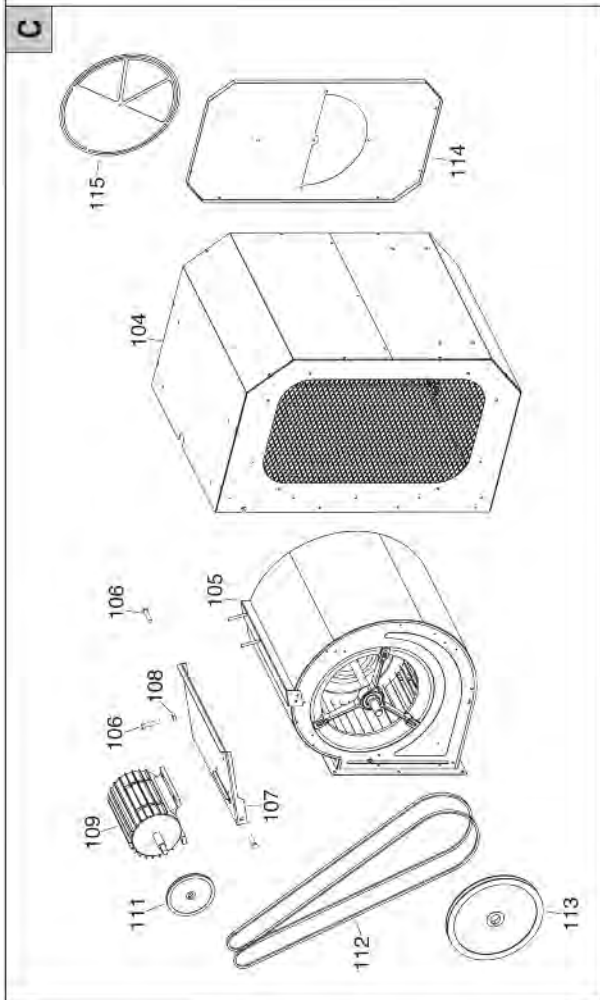
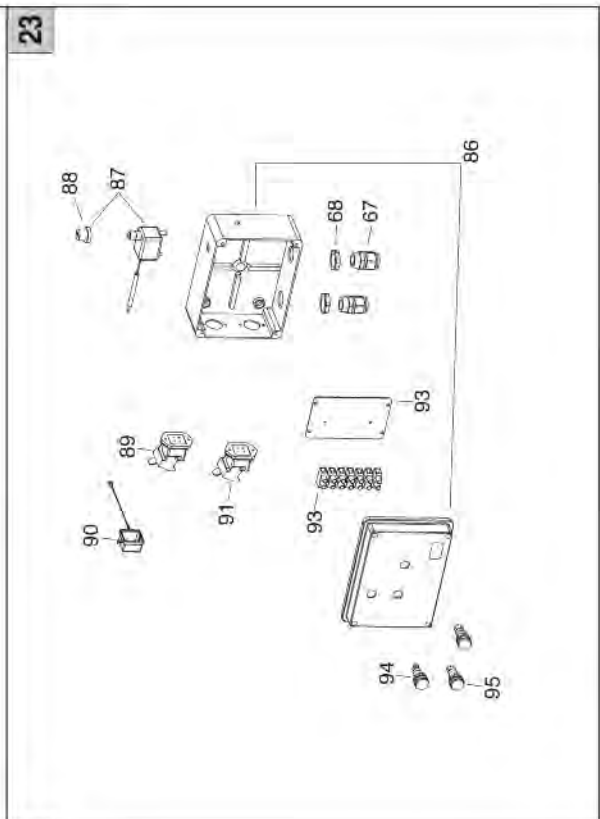
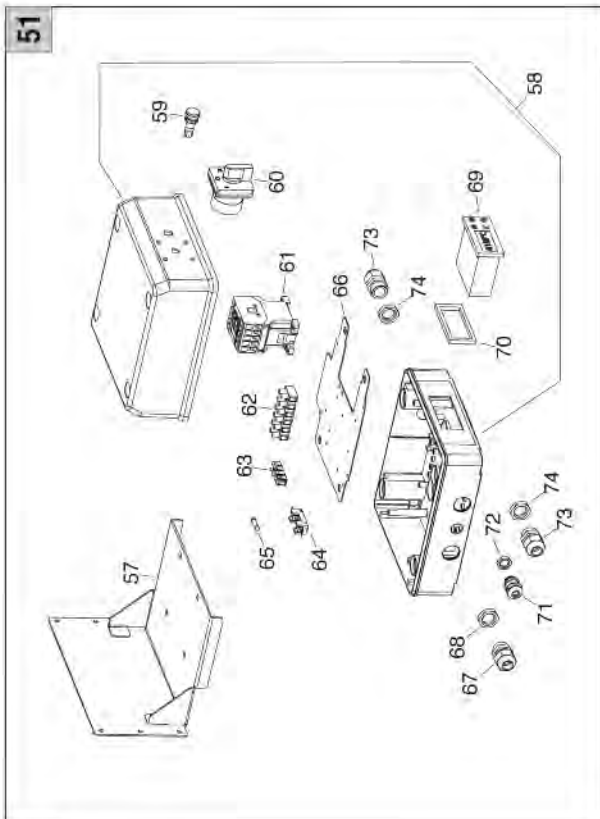
POS	P/N	DESCRIPTION
94	E11033	Lamp
95	E11030	Lamp
96	G04531	Protective panel
104	G04532-9010	Fan box
105	T10704	Fan
106	M10234	Screw
107	G04533-9005	Support plate
108	M10714	Nut
109	E10683-220	Motor
111	C10943-28	Sheave
112	C10947	Belt
113	C10945-25	Sheave
114	G04534-9005	Panel
115	G04513-9005	Air adjustment shutter
116	I20337	Fitting
117	M20123	Aluminium washer
118	T20238	Diesel filter
119	T20206	Filter cartridge
120	T20254	Filter seal kit
121	T20212	Filter container
122	I20301	Fitting
123	I20104	Iron fitting
124	G04586	Stirrup

**Not Shown:**  
 BIE AR614 Fork Lift Pockets (set)  
 BIE HC650 Casters (set)  
 ACC THIDF Thermostat





# VF1100 PARTS BREAKDOWN



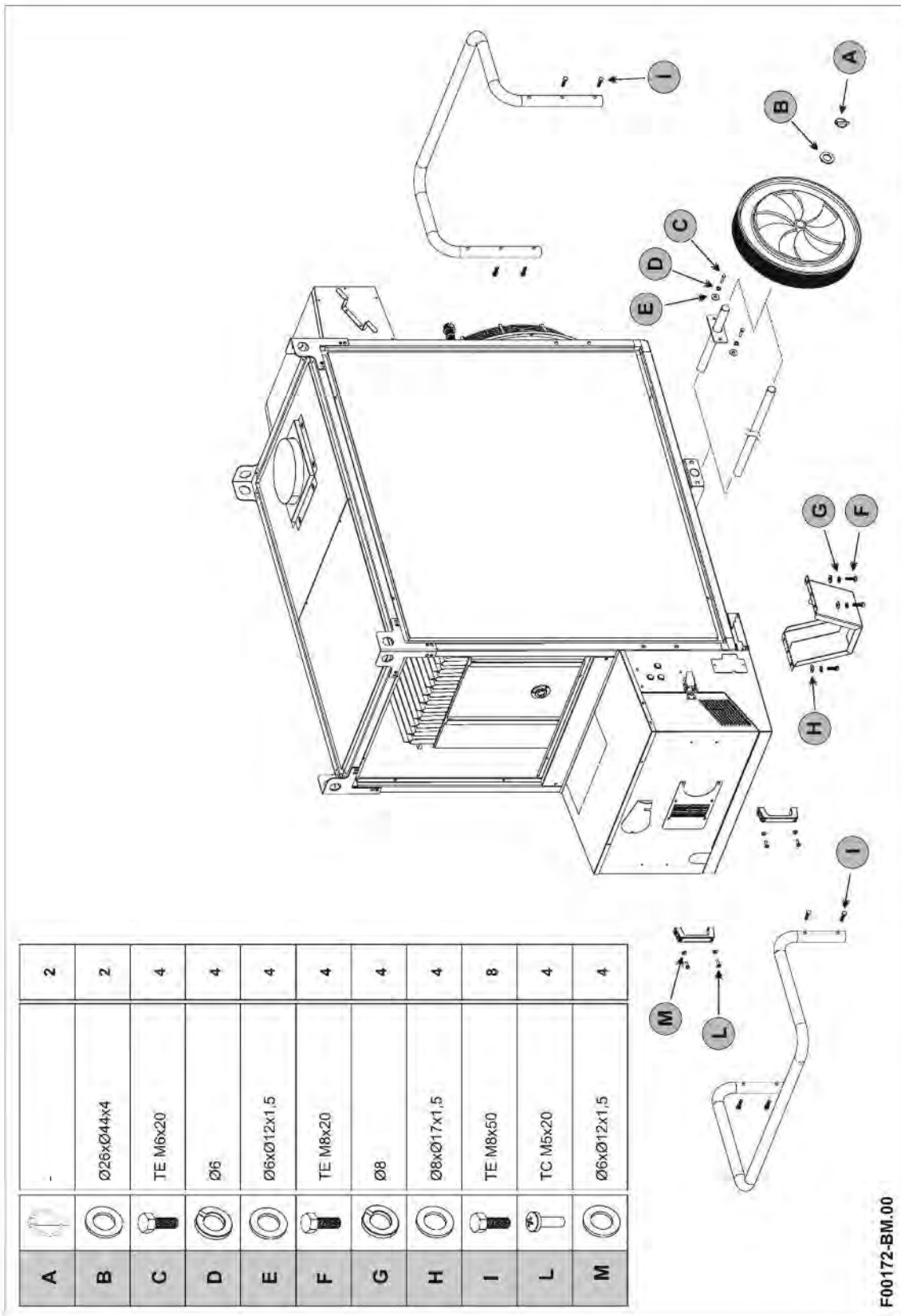
POS	P/N	DESCRIPTION
44	G04552-9005	Electrical panel box
45	G04385-9005	Support plate
46	C-30316	Idle cap
47	C-30389	Cable protection
48	M20432	Hinge
49	G04553-9005	Panel
50	M20418	Lock
51	G00521	El. control box
57	G04387-9005	Stirrup
58	E20725-03	El. components box
59	E11033	Lamp
60	E10141	Switch
61	E10455	Contacto
62	E20301	Terminal board
63	E20319	Ground terminal board
64	E20508	Fuse holder
65	E10308	Fuse
66	G04388	Support plate
67	E20958	Cable fastener
68	E20960	Cable fastener nut
69	E50794	Thermoregulator
70	E50794-1	Seal
71	E20953	Cable fastener
72	E20956	Cable fastener nut
73	E20970	Cable fastener
74	E20971	Cable fastener nut
75	G04581	Combustion chamber
76	G04413	Chimney fitting
77	T10805	Seal
78	G04555	Panel
79	T10803	Seal
80	E50794-2	Thermocouple
81	T10691	Insulating gasket
82	T10405	Tempered glass
83	T10692	Insulating gasket
84	G04298	Disc
85	G01673	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	G04382	Support plate

POS	P/N	DESCRIPTION
01	C30400-1D	Cap
02	G04360	Panel
03	G04535-9010	Panel
04	G04536	Panel
05	G04537-9010	Panel
06	G04538	Panel
07	G04539-9010	Panel
08	G04540	Panel
09	G04288	Stirrup
10	G04541-9005	Frame
11	E30482-2	Power cord
12	C-30301	Cable protector
13	G04560-9005	Panel
14	G04561-9005	Base
15	G04370-9005	Panel
17	M20430	Toggle latch
18	M20431	Catch
19	P20319-9005	Handle
20	C30398	Cap
21	0768204	Oil burner
22	T20467	Nozzle
23	G00522	El. control box
24	G04371-9005	Thermostat support bracket
25	G04562-3001	Panel
26	C10209	Handle
27	G04373-9005	Panel
30	G04544	Panel
31	G04376-9005	Support bracket
32	G04546-9005	Panel
33	G04547-9005	Support
34	G04379-9005	Wheels axle support bracket
35	G04548	Wheel axle
36	C10572	Wheel
37	M20111	Washer
38	M20505	Latched pin
40	G04549-9005	Support bracket
41	G04550-9005	Support bracket
42	G04551-9005	Panel
43	G04383	Spacer

POS	P/N	DESCRIPTION
94	E11033	Lamp
95	E11030	Lamp
96	G04556	Protective panel
104	G04557-9010	Fan box
105	T10707	Fan
106	M10234	Screw
107	G04558-9005	Support plate
108	M10714	Nut
109	E10684-220	Motor
111	C10944-28	Sheave
112	C10948	Belt
113	C10946-25	Sheave
114	G04559-9005	Panel
115	G04513-9005	Air adjustment shutter
116	I20337	Fitting
117	M20123	Aluminium washer
118	T20239-1	Diesel pre-heated filter
119	T20241	Filter seal kit
120	T20242	Filter cartridge
121	I20104	Iron fitting

**Not Shown:**  
 BIE 02AC866 Fork Lift Pockets (set)  
 BIE 02AC817 Casters (set)  
 ACC THIDF Thermostat





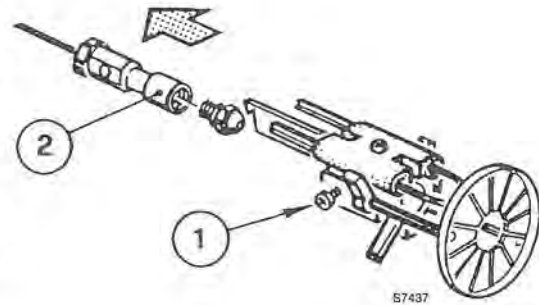
F00172-BM.00

TECHNICAL SPECIFICATIONS			VF750
Heat input		[BTU/h]	748769
Fuel consumption		[USgal/h]	5,33
Burner Model			RIELLO R40-F20TC
Burner Nozzle		[USgal/h]	Delavan 4,00 - 60° B
Combustion head setting		[N°]	5
Diesel pressure	I Stage	[psi]	116
	II Stage	[psi]	174
Burner air setting	I Stage	[N°]	3,5
	II Stage	[N°]	4,5
Air flow		[cfm]	9417,2
Fan Thermostat Setting		[°F]	95
Burner Thermostat Setting		[°F]	194
Power supply	Phase		1
	Voltage	[V]	240
	Frequency	[Hz]	60
Electric consumption		[W]	4000
		[A]	19,5
Flue diameter		[in]	7,87
Compulsory flue draft		[in]	0,05
Maximum air temperature		[°F]	250
Air distribution duct	Max Static pressure	[in]	1,12
	Max length 1 way - dia 28"/26"	[ft]	150
	Max length 2 ways - dia 20"	[ft]	90
	Max length 4 way - dia 14"	[ft]	75
Inlet flexible duct	Max length 1 way - dia 28"	[ft]	30
Noise level at 1 m		[dBA]	70
Dimensions, L x W x H		[in]	98,78 x 36,22 x 63,78
Weight		[lb]	948

TECHNICAL SPECIFICATIONS			VF1100
Heat input		[BTU/h]	1094778
Fuel consumption		[USgal/h]	7,16
Burner Model			RIELLO R40-F22
Burner Nozzle		[USgal/h]	Delavan 5,00 - 60° B
Combustion head setting		[N°]	5
Diesel pressure	I Stage	[psi]	116
	II Stage	[psi]	174
Burner air setting	I Stage	[N°]	3,5
	II Stage	[N°]	8
Air flow		[cfm]	11182,9
Fan Thermostat Setting		[°F]	95
Burner Thermostat Setting		[°F]	194
Power supply	Phase		1
	Voltage	240	240
	Frequency	60	60
Electric consumption		[W]	4300
		[A]	19,0
Flue diameter		[in]	7,87
Compulsory flue draft		[in]	0,05
Maximum air temperature		[°F]	250
Air distribution duct	Max Static pressure	[in]	1,20
	Max length 1 way - dia 28"/26"	[ft]	150
	Max length 2 ways - dia 24"	[ft]	90
	Max length 4 way - dia 16"	[ft]	75
	Max length 5 way - dia 14"	[ft]	45
Inlet flexible duct	Max length 1 way - dia 29,5"	[ft]	30
Noise level at 1 m		[dBA]	70
Dimensions, L x W x H		[in]	103,54 x 41,02 x 72,40
Weight		[lb]	1159,6

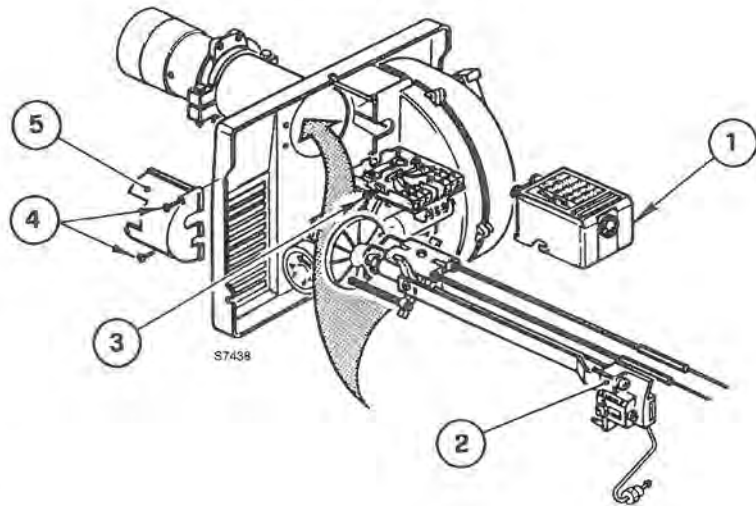
## NOZZLE PLACEMENT

- Determine the proper firing rate for the boiler or furnace units, considering the specific application, and then use the Burner Setup Charts 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 over tighten).
- Replace adapter, with nozzle installed, into drawer assembly and secure with screw (1).



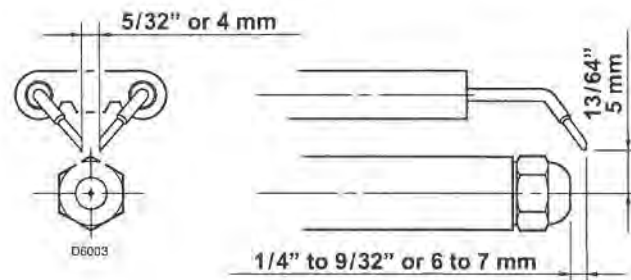
## INSTALLATION/REMOVAL OF DRAWER ASSEMBLY

- 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.

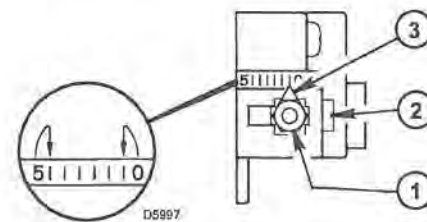


## TURBULATOR SETTING

- 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.





## AIR SHUTTER SETTING

### LOW FIRE SETTING

- A) Loosen PRESSURE RELEASING SCREW (1). (One turn is sufficient). This permits the fuel pressure to bleed off to the pump return port and the burner to operate continuously at the low fire rate.
- B) Loosen RETAINING NUT (2).
- C) Turn the ADJUSTING SCREW (3) until the top of the air shutter (9) is correctly positioned according to the Burner Set-up Chart, column 5, on page 12.
- D) Use instruments to establish the proper settings for maximum CO<sub>2</sub> and a smoke reading of zero.
- E) Hold ADJUSTING SCREW (3) in position and secure by tightening RETAINING NUT (2).
- F) Retighten PRESSURE RELEASE SCREW (1).

#### Note:

The low fire pressure regulator is pre-set at the factory to 100 PSI (7 bar).

To vary or regulate this pressure it is necessary to attach a pressure gauge to the PRESSURE PORT (6).

Loosen the PRESSURE RELEASE SCREW (1) as in step A above. Regulate the pressure by turning the PRESSURE REGULATING SCREW (5).

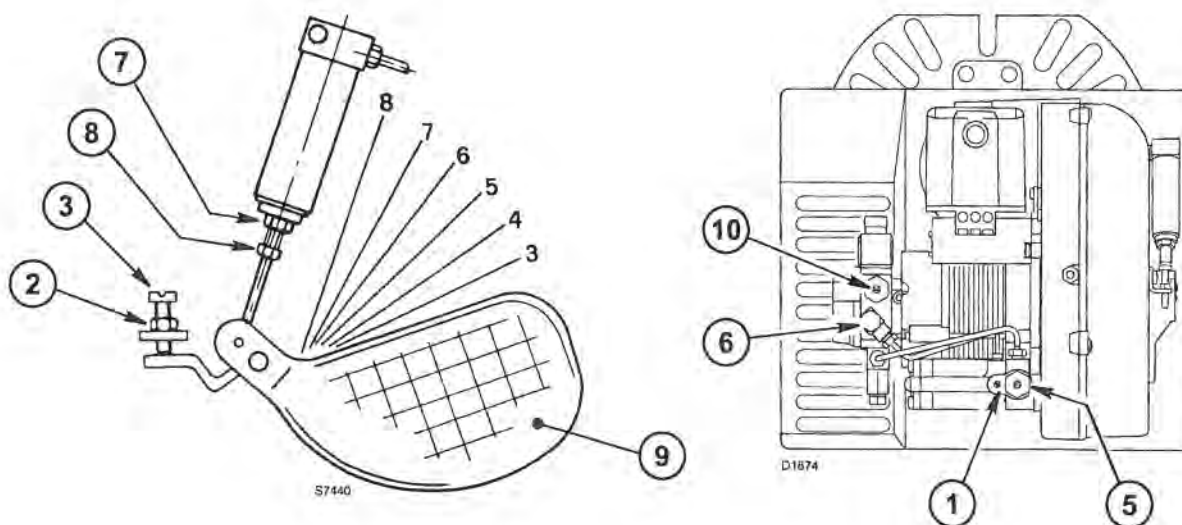
The corresponding pressure can be read on the pressure gauge attached to the PUMP PRESSURE PORT (6).

### MAIN FLAME SETTING

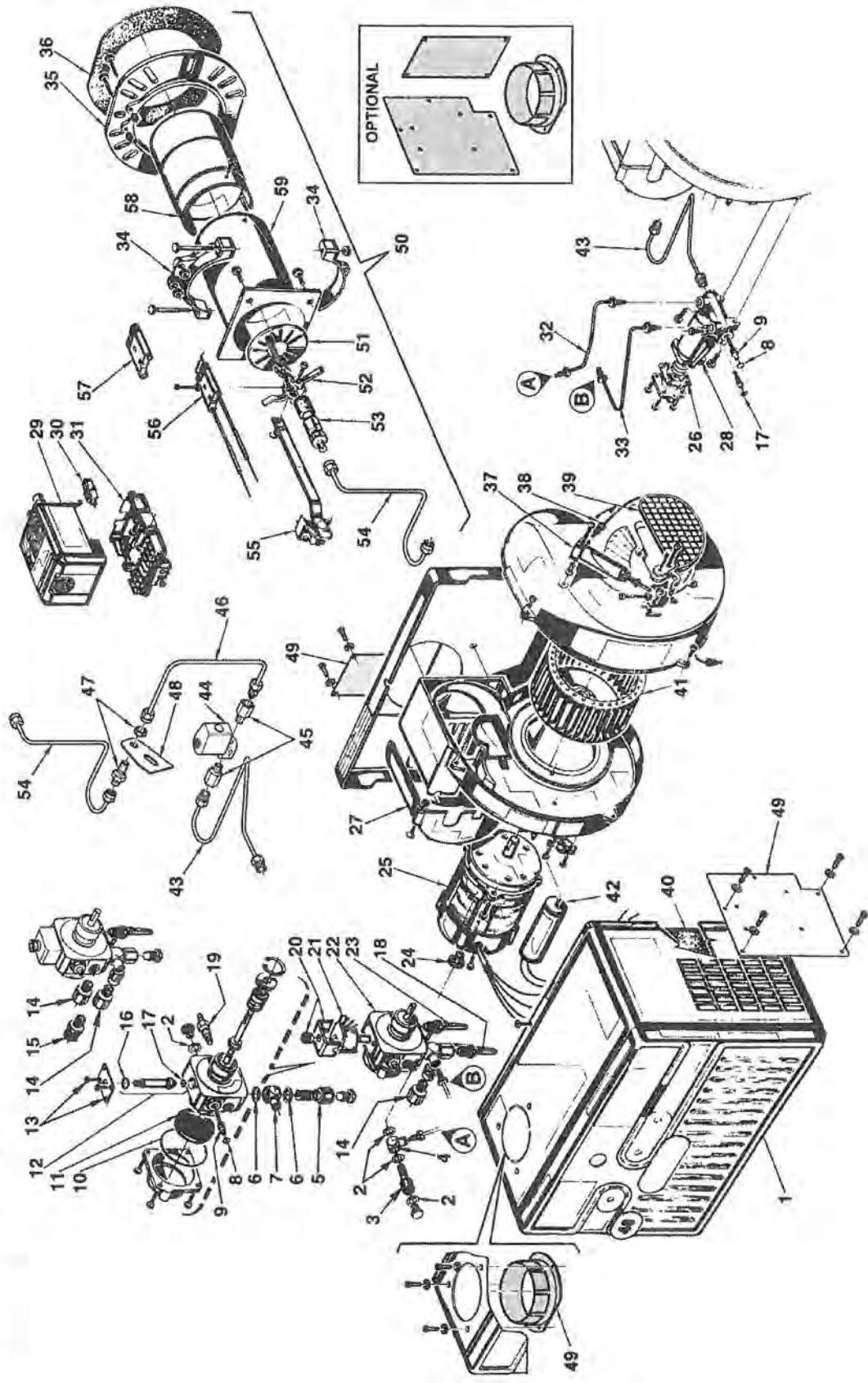
- A) Be sure that the burner is operating at high fire.
- B) Set the pump pressure by attaching a pressure gauge to the Pressure port (6) and adjust the pressure by turning the pressure regulator adjustment screw (10).  
Loosen the RETAINING NUT (7), and turn the BOLT (8) in a counterclockwise direction until about 3/4 of an inch of thread is visible. Using the setting taken from the Burner Set-up Chart, column 5, position the air shutter (9) so that the top of the shutter is aligned with the proper index line indicated on the air intake side of the burner housing. Holding the shutter in this position, turn ADJUSTING BOLT (8) in a clockwise direction until a resistance is met.
- C) The final position of the air adjustment plate will vary on each installation. Use instruments to establish the proper settings for maximum CO<sub>2</sub> and a smoke reading of zero.

#### NOTE:

Variations in flue gas, smoke, CO<sub>2</sub> and temperature readings may be experienced when the burner cover is put in place. Therefore, the burner cover **must** be in place when making the final combustion instrument readings, to ensure proper test results.



## EXPLODED SPARE PARTS LIST



## SPARE PARTS LIST

No.	CODE	DESCRIPTION	No.	CODE	DESCRIPTION
1	3020510	BURNER BACK COVER	43	3020313	OIL LINE
2	3007077	CRUSHABLE METAL WASHER	44	3020299	SOLENOID VALVE
3	3005771	BANJO CORE ADAPTER - PRESSURE PORT	45	3020304	ADAPTOR
4	3005803	BANJO FITTING - PRESSURE PORT	46	3020301	OIL LINE
5	3005804	BANJO CORE ADAPTER - RETURN LINE	47	3020303	ADAPTOR AND NUT
6	3007079	CRUSHABLE METAL WASHER	48	3020302	BRACKET
7	3005805	BANJO FITTING - RETURN			<b>OPTIONAL</b>
8	3007028	O-RING - PUMP PRESSURE REGULATOR			DUCTED COMBUSTION AIR INTAKE KIT
9	3007202	REGULATOR SCREW	49	3002762	
10	3007162	O-RING - PUMP COVER			
11	3005719	PUMP SCREEN			
12	3006925	VALVE STEM	50	3949271	<b>SHORT COMBUSTION HEAD 5" (275T1)</b>
13	3007203	VALVE STEM PLATE	51	3005897	TURBULATOR DISC
14	3005847	1/4" NPT/METRIC ADAPTER - FEMALE	52	3005896	CROSS - CASTING
15	3006671	3/8" NPT/METRIC ADAPTER - MALE	53	3006965	NOZZLE ADAPTER
16	3007029	O-RING - VALVE STEM UPPER	54	3006987	NOZZLE OIL TUBE - SHORT
17	3007156	O-RING - VALVE STEM LOWER	55	3005900	REGULATOR ASSEMBLY - SHORT
18	3006995	PIPE CONNECTOR - RETURN	56	3005902	ELECTRODE ASSEMBLY - SHORT
19	3007893	BLEEDER	57	3005869	ELECTRODE PORCELAIN
20	3006553	COIL U-BRACKET AND KNURLED NUT	58	3005894	END CONE
21	3002279	COIL	59	3005892	SHORT AIR TUBE
22	3007806	PUMP			
23	3006994	PIPE CONNECTOR - SUPPLY	50	3949272	<b>LONG COMBUSTION HEAD 10" (275T2)</b>
24	3000443	PUMP DRIVE KEY	51	3005897	TURBULATOR DISC
25	3005845	MOTOR	52	3005896	CROSS - CASTING
26	3005801	GASKET	53	3006965	NOZZLE ADAPTER
27	3007318	AIR TUBE COVER	54	3006988	NOZZLE OIL TUBE - LONG
28	3006500	HI FIRE DELAY VALVE	55	3005901	REGULATOR ASSEMBLY - LONG
29	3001157	PRIMARY CONTROL 530SE/C	56	3005903	ELECTRODE ASSEMBLY - LONG
30	3002280	PHOTO-CELL	57	3005869	ELECTRODE PORCELAIN
31	3002278	PRIMARY CONTROL SUB BASE	58	3005894	END CONE
32	3005809	OIL PRESSURE TUBE	59	3005893	LONG AIR TUBE
33	3005808	OIL RETURN TUBE			
34	3005849	SEMI FLANGE			
35	3005851	UNIVERSAL MOUNTING FLANGE			
36	3005852	MOUNTING GASKET			
37	3006499	HYDRAULIC JACK			
38	3008050	CAPILLARY TUBE			
39	3000645	HYDRAULIC AIR SHUTTER			
40	3007358	ACOUSTIC LINER			
41	3005799	FAN			
42	3005846	CAPACITOR 16 µF			

## 4.5 Electrode setting

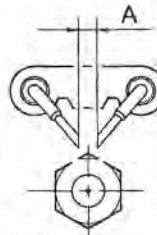


WARNING

These dimensions must be observed and verified.

RIELLO 40 F22	A	B	C
Inches	5/32"	13/64"	5/32" to 13/64"
mm	4	5	4 to 5

Tab. D



D6003

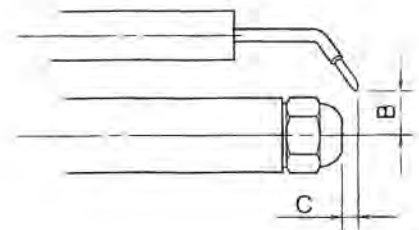


Fig. 6

## 4.6 Nozzle

In order to guarantee that emissions do not vary, recommended and/or alternative nozzles specified by Riello in the Instruction and warning booklet should be used.



WARNING

It is advisable to replace nozzles every year during regular maintenance operations.



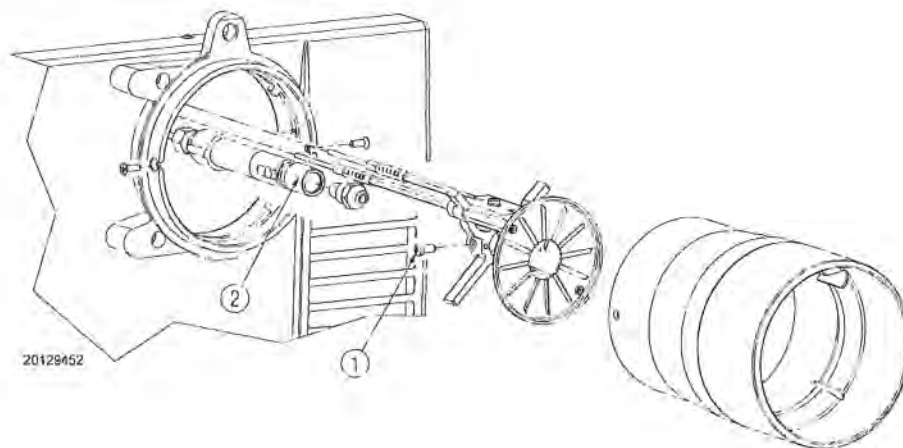
CAUTION

The use of nozzles other than those specified by the Manufacturer and inadequate regular maintenance may result into emission limits non-conforming to the values set forth by the regulations in force, and in extremely serious cases, into potential hazards to people and objects.

The manufacturing company shall not be liable for any such damage arising from non observance of the requirements contained in this manual.

## 4.6.1 Nozzle placement

- Remove the nozzle adapter 2)(Fig. 7) from the drawer assembly by loosening the screw 1).
- Insert the proper nozzle into the nozzle adapter and tighten securely (do not over tighten).
- Replace adapter, with nozzle installed, into drawer assembly and secure with screw 1).



20129452

Fig. 7

## 6 Maintenance

### 6.1 Notes on safety for the maintenance

The periodic maintenance is essential for the good operation, safety, yield and duration of the burner.

It allows you to reduce consumption and polluting emissions and to keep the product in a reliable state over time.



The maintenance interventions and the calibration of the burner must only be carried out by qualified, authorised personnel, in accordance with the contents of this manual and in compliance with the standards and regulations of current laws.

Before carrying out any maintenance, cleaning or checking operations:



Disconnect the electrical supply from the burner by means of the main system switch.



Close the fuel interception tap.



Wait for the components in contact with heat sources to cool down completely.

### 6.2 Maintenance programme

#### 6.2.1 Maintenance frequency



The gas combustion system should be checked at least once a year by a representative of the manufacturer or another specialised technician.

#### 6.2.2 Checking and cleaning



The operator must use the required equipment during maintenance.

##### Combustion

The optimum calibration of the burner requires an analysis of the flue gases. Significant differences with respect to the previous measurements indicate the points where more care should be exercised during maintenance.

##### Combustion head

Open the burner and make sure that all components of the combustion head are in good condition, not deformed by the high temperatures, free of impurities from the surroundings and correctly positioned.

##### Fan

Check to make sure that no dust has accumulated inside the fan or on its blades, as this condition will cause a reduction in the air flow rate and provoke polluting combustion.

##### Boiler

Clean the boiler as indicated in its accompanying instructions in order to maintain all the original combustion characteristics intact, especially the flue gas temperature and combustion chamber pressure.

##### Burner

Clean the outside of the burner.  
Clean and grease the cam variable profile.

##### Pump

Unusual noise must not be evident during pump operation. If the pressure is found to be unstable or if the pump runs noisily the flexible hose must be detached from the line filter and the fuel must be sucked from a tank located near the burner. This measure permits the cause of the anomaly to be traced to either the suction line or the pump. If the problem lies in the suction line, check to make sure that the filter is clean and that air is not entering the piping.

##### Filters

Check the filtering baskets on line and at nozzle present in the system. Clean or replace if necessary. If rust or other impurities are observed inside the pump, use a separate pump to lift any water and other impurities that may have deposited on the bottom of the tank.

##### Nozzles

It is advisable to replace nozzles every year during regular maintenance operations. Do not clean the nozzle openings; do not even open them.

##### Flexible hoses

Check to make sure that the flexible hoses are still in good condition.

##### Fuel tank

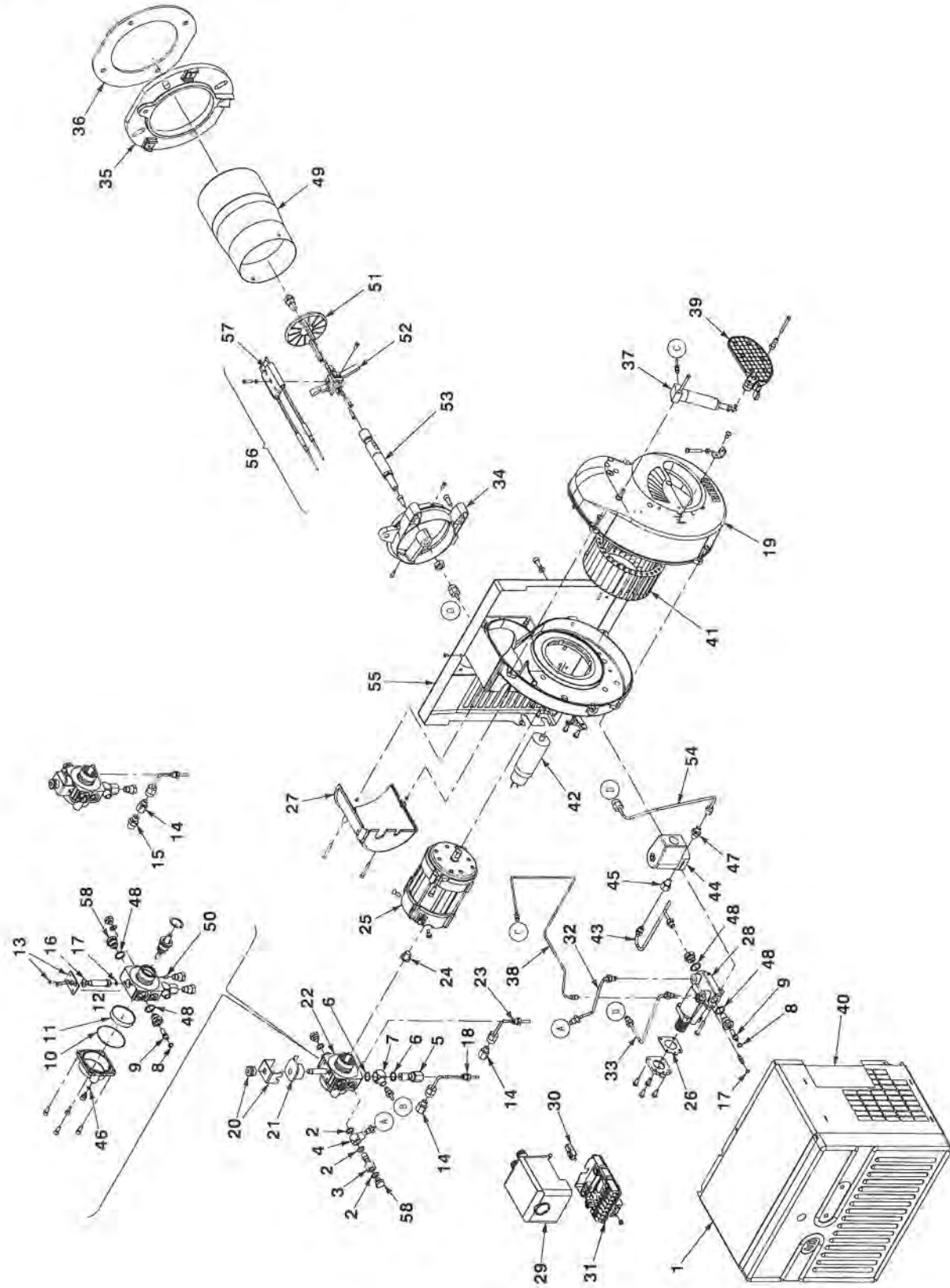
Approximately every 5 years, or whenever necessary, suck any water or other impurities present on the bottom of the tank using a separate pump.

##### Combustion

In case the combustion values found at the beginning of the intervention do not respect the standards in force or, in any case, do not correspond to a proper combustion, contact the Technical Assistant and have him carry out the necessary adjustments.

# VF1100

## A Appendix - Spare parts



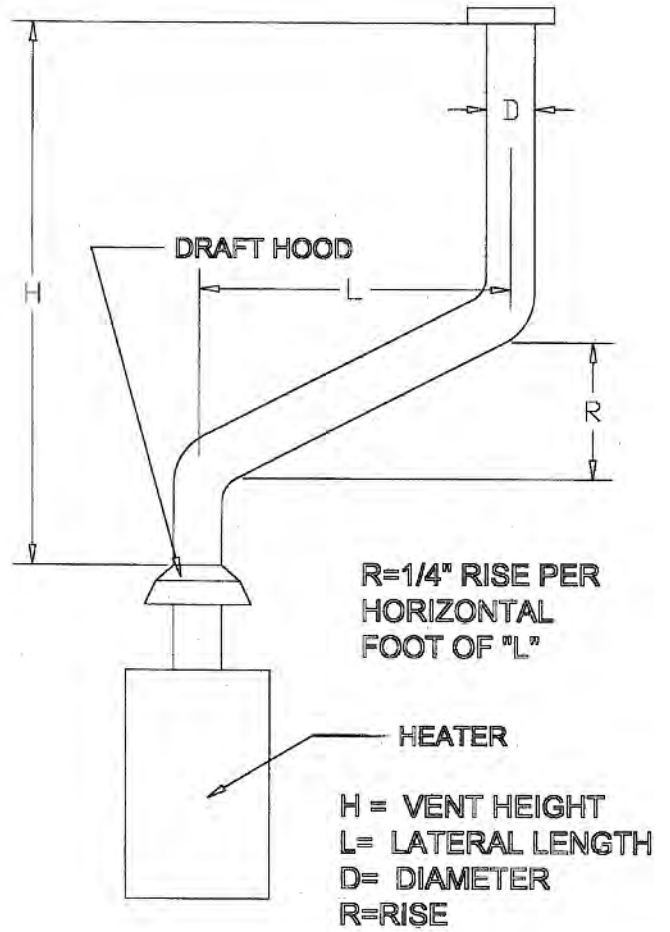
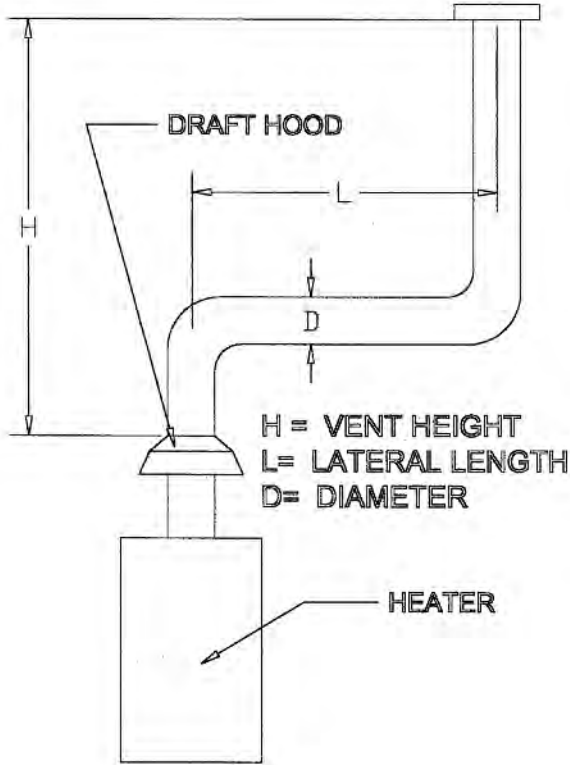
N.	CODE	DESCRIPTION	*
1	3007235	BURNER BACK COVER	B
2	3007077	CRUSHABLE METAL WASHER	B
3	3005771	BANJO CORE ADAPTER - PRESSURE PORT	C
4	3005803	BANJO FITTING - PRESSURE PORT	C
5	3005804	BANJO CORE ADAPTER - RETURN LINE	C
6	20122674	CRUSHABLE METAL WASHER	B
7	3005805	BANJO FITTING - RETURN	C
8	3007028	O-RING - PUMP PRESSURE REGULATOR	B
9	20032135	REGULATOR SCREW	C
10	3007162	O-RING - PUMP COVER	B
11	3005719	PUMP SCREEN	A
12	3006925	VALVE STEM	B
13	3007203	VALVE STEM PLATE	
14	3005847	1/4" NPT/ METRIC ADAPTER - FEMALE	C
15	3006571	3/8" NPT/METRIC ADAPTER - MALE	C
16	3007029	O-RING - VALVE STEM UPPER	B
17	3007156	O-RING - VALVE STEM LOWER	B
18	3006995	PIPE CONNECTOR - RETURN	
19	3007966	AIR INTAKE	
20	3006553	COIL U-BRACKET AND KNURLED NUT	
21	3002279	COIL	B
22	3007806	PUMP	
23	3006994	PIPE CONNECTOR - SUPPLY	
24	3000443	PUMP DRIVE KEY	A
25	20091753	MOTOR	C
26	3005801	SEAL	B
27	20025347	AIR TUBE COVER	
28	3006500	DELAYNG DEVICE	
29	3002858	CONTROL BOX	B
30	3002280	PHOTORESISTOR	A
31	20067689	TERMINAL BOARD	C
32	20129814	OIL PRESSURE TUBE	C
33	20129818	OIL RETURN TUBE	C
34	3005810	COLLAR	
35	3005814	UNIVERSAL MOUNTING FLANGE	
36	3005813	MOUNTING GASKET	A
37	3006499	HYDRAULIC JACK	C
38	3008050	TUBE	C
39	3000645	HYDRAULIC AIR SHUTTER	
40	3007358	ACOUSTIC LINER	
41	3005799	FAN	C
42	20087024	CAPACITOR	C
43	3020313	OIL LINE	C
44	3020299	SOLENOID VALVE	B
45	3020304	CONNECTOR	C
46	20096148	O-RING	B
47	3020303	CONNECTOR	C
48	3007087	SEAL	B
49	20129819	FLAME FUNNEL	B
50	20029299	BY-PASS SCREW	B
51	3005897	TURBULATOR DISC	
52	3005896	CROSS - CASTING	
53	20129820	NOZZLE HOLDER	C

Appendix - Spare parts

N.	CODE	DESCRIPTION	*
54	20129822	NOZZLE OIL TUBE	C
55	3007224	FRONT SHIELD	B
56	3005902	ELECTRODE ASSEMBLY	A
57	3005869	INSULATOR	A
58	3013603	PLUG AND SEAL	B

\*  
**ADVISED PARTS**  
 A = Spare parts for minimum fittings  
 A+B = Spare parts for basic safety fittings  
 A+B+C = Spare parts for extended safety fittings

# EXHAUST FLUE PIPE GUIDELINES



## CAPACITY OF TYPE B DOU- BLE-WALL VENTS SERVING A SINGLE DRAFT HOOD-HEATER x 1000 BTU'S

## FOR INDOOR APPLICATIONS

TOTAL VENT HEIGHT (H) FEET	LATERAL LENGTH (L) FEET	VENT DIAMETER (D) INCHES							
		10	12	14	16	18	20	22	24
6	0	NR	850	1170	1530	1960	2430	2950	3520
	2	NR	650	890	1170	1480	1850	2220	2670
	6	NR	630	870	1150	1470	1820	2210	2650
	12	NR	610	840	1110	1430	1795	2180	2600
8	0	NR	970	1320	1740	2220	2750	3360	4010
	2	NR	745	1020	1340	1700	2110	2560	3050
	8	NR	720	1000	1320	1670	2070	2530	3030
	16	NR	685	950	1260	1600	2035	2470	2960
10	0	NR	1060	1450	1925	2450	3050	3710	4450
	2	NR	850	1130	1480	1890	2340	2840	3390
	10	NR	795	1080	1430	1840	2280	2780	3340
	20	NR	735	1030	1360	1780	2230	2720	3250
15	0	NR	1240	1720	2270	2900	3620	4410	5300
	2	NR	985	1350	1770	2260	2800	3410	4080
	15	NR	905	1250	1675	2150	2700	3300	3980
	30	NR	845	1180	1550	2050	2620	3210	3840
20	0	NR	1350	1900	2520	3250	4060	4980	6000
	2	NR	1100	1520	2000	2570	3200	3910	4700
	10	NR	1045	1460	1940	2500	3130	3830	4600
	20	NR	990	1390	1880	2430	3050	3760	4550
30	0	NR	945	1270	1700	2330	2980	3650	4390
	2	NR	784	1075	1420	1880	2400	3000	3700
	20	NR	784	1185	1650	2200	2870	3650	4480
	40	NR	705	1075	1520	2060	2700	3480	4270