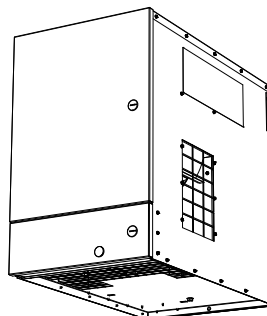


INSTALLATION AND OPERATION INSTRUCTIONS

AGRICULTURAL AIR HEATER

MODELS: VELOCITY

VF80CE-L5 DSI, VF80CE-N5 DSI



OWNER/INSTALLER: For your safety this manual must be carefully read before installing, operating or servicing this air heater. This air heater is intended for use with either Natural Gas or Propane Gas. It must be installed by a qualified service person or a licensed contractor in accordance with state and local codes.

▲WARNING: Improper installation, adjustment, alteration, service or maintenance can cause injury, property damage or death. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency or the gas supplier.

INSPECT all combustion air openings into the building and, if necessary, clear as they become blocked by litter, dust, feathers or other matter.

FOR YOUR SAFETY: EXHAUST FANS **MUST** be operating on an appropriate cycle when air heaters are operating to avoid a high concentration of carbon monoxide. When used without fresh air, this air heater may give off carbon monoxide, an odorless and poisonous gas. **CARBON MONOXIDE POISONING MAY LEAD TO DEATH.** Early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness and nausea. If you experience these signs, **GET FRESH AIR IMMEDIATELY!** Have the air heaters serviced as soon as possible and check the ventilation in the house.

These air heaters are designed for agricultural applications and may operate with the use of either Natural Gas or Liquid Propane (LP) Gas. Check the air heater's nameplate to determine the correct gas type before proceeding with installation.

IF YOU SMELL GAS:

- ! **DO NOT** try to light any appliance.
- ! **DO NOT** touch any electrical switch; do not use any telephone in your building.
- ! **IMMEDIATELY** call your gas supplier from a neighbor's telephone. Follow the gas supplier's instructions. If you cannot reach your gas supplier, call the fire department.

FOR YOUR SAFETY

DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

**SAVE THIS MANUAL
FOR FUTURE REFERENCE.**

IMPORTANT: SAVE THIS MANUAL FOR FUTURE REFERENCE.

KROMSCHROEDER SA.

Santa Eulalia, 213 - 08902 L'Hospitalet de Llobregat - Barcelona - España

Phone: +34 93 432 9600 Fax: +34 93 422 0090 - E-mail: info@kromschroeder.es www.kromschroeder.es

⚠ WARNING GENERAL HAZARD WARNING

- Failure to comply with the precautions and instructions provided with this appliance, 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.
- If you need assistance or heater information such as an instructions manual, labels, etc. contact the manufacturer.

⚠ WARNING FIRE AND EXPLOSION HAZARD

- Keep solid combustibles, such building materials, paper or cardboard, feathers, straw and dust a safe distance away from the heater as recommended by the instructions.
- Never use the appliance in spaces which contain or may contain volatile or airborne combustibles, or products such as gasoline, solvents, paint thinner, dust particles or unknown chemicals.
- Failure to follow these instructions may result in a fire or explosion, property damage, personal injury or loss of life.

⚠ WARNING FIRE AND EXPLOSION HAZARD

Not for home or recreational vehicle use. Installation of this appliance in a home or recreational vehicle may result in a fire or explosion, property damage or loss of life.

⚠ WARNING POISONOUS GAS AND ASPHYXIATION HAZARD

- Proper gas supply pressure must be provided to the inlet of the appliance. Refer to rating plate for proper gas supply pressure.
- Gas pressure in excess of the maximum inlet pressure specified at the appliance inlet can cause fires or explosions, leading to serious injury, death, building damage or loss of livestock.
- Likewise, gas pressure below the minimum inlet pressure specified at the appliance inlet may cause improper combustion, leading to asphyxiation, carbon monoxide, poisoning and therefore serious injury or death to humans and livestock.

⚠ WARNING**HAZARD FOR INSTALLATIONS IN HOG BARNS AND
OTHER APPLICATIONS****EXPLOSION AND ASPHYXIATION HAZARD**

Manure pits will release combustible and asphyxiant gases if agitated in any way. If pits are to be disturbed or agitated in any way, all heaters and other ignition sources must be turned off and locked out.

Foaming in manure pits will cause the release of combustible and asphyxiant gases. Pit foaming is unpredictable and can occur at any time. Pressure washing and other actions that disturb pits can cause foaming.

Audit manure pits for foaming frequently, at least once a month and develop an emergency action plan to be executed in the event of foaming. In the event of foaming, all heaters and other ignition sources must be turned off and locked out.

EXPLOSION HAZARD

Heaters must be kept clean at all times. Sudden dust release from a heater can cause a grain dust explosion.

Heaters must be turned off during cleaning.

CARBON MONOXIDE HAZARD

The barns must be ventilated sufficiently for the present equipment and livestock. Heater ventilation requirements are outlined in the Ventilation Section of this manual.

Inadequate ventilation will cause Carbon Monoxide to build up inside the barn.

EXPLOSION AND FIRE HAZARD

Heaters installed outdoors are subjected to sunlight. Sunlight causes rapid aging on components such as flexible rubber gas lines, etc. Flexible rubber hoses must be reviewed annually during service and replaced if they show the slightest signs of deterioration (e.g. change in color, chalking of surface, cracks in surface, etc.)

FIRE HAZARD

Through wall kits must be installed properly as per the provided instructions. Kits not installed properly can cause PPD and other materials to catch on fire at wall penetration point.

Use only genuine accessories designed and supplied by KROMSCHROEDER SA. Excessive backpressure from accessories not approved by KROMSCHROEDER SA can cause heater operational performance issues and cause excessive Carbon Monoxide, heater component overheating, etc.

Failure to follow these instructions may result in a fire or explosion, property damage, personal injury or loss of life.

TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
1.0)	SAFETY	5
2.0)	INSTALLER RESPONSIBILITY	5
3.0)	GENERAL INFORMATION	6
4.0)	MINIMUM CLEARANCES TO COMBUSTIBLES	7
5.0)	SPECIFICATIONS	8
6.0)	DIMENSIONS	9
7.0)	INSTALLATION – SUSPENSION, HANGING AND LEVELING THE HEATER	10
8.0)	GAS CONNECTIONS	11
8.1)	SEDIMENT TRAP AND GAS LEAK CHECKS	12
8.2)	INSTALLING THE SEDIMENT TRAP	12
8.3)	GAS LEAK TEST	12
8.4)	INSTRUCTIONS FOR PRESSURE TEST GAUGE CONNECTION	13
9.0)	ELECTRICAL REQUIREMENTS	14
10.0)	LIGHTING AND SHUTDOWN INSTRUCTIONS	16
10.1)	DIRECT SPARK (DSI) IGNITION SYSTEM	16
10.2)	SEQUENCE OF OPERATION	16
10.3)	DIRECT SPARK IGNITION SEQUENCE OF OPERATION	16
10.4)	VARIABLE HEAT OUTPUT ADJUSTMENT	17
11.0)	VENTILATION	17
12.0)	CLEANING AND ANNUAL MAINTENANCE	18
13.0)	SERVICING	20
13.1)	MOTOR AND BLOWER ASSEMBLY	21
13.2)	AIR PROVING (SAIL SWITCH)	21
13.3)	IGNITION CONTROL MODULE (DSI)	21
13.4)	TRANSFORMER	21
13.5)	HIGH TEMPERATURE LIMIT SWITCH	22
13.6)	FLAME SENSOR	22
13.7)	SPARK ELECTRODE	22
13.8)	GAS VALVE (DSI)	23
13.9)	BURNER ORIFICE	23
13.10)	MAIN BURNER CHECKS	23
14.0)	REPLACING PARTS	23
14.1)	REMOVAL OF MOTOR AND BLOWER ASSEMBLY	23
14.2)	REMOVAL OF AIR PROVING (SAIL) SWITCH	24
14.3)	REMOVAL OF IGNITION CONTROL MODULE – DSI MODELS	25
14.4)	REMOVAL OF TRANSFORMER – DSI MODULES	25
14.5)	REMOVAL OF HIGH TEMPERATURE LIMIT SWITCH – ALL MODELS	26
14.6)	REMOVAL OF FLAME SENSOR – DSI MODELS	26
14.7)	REMOVAL OF ELECTRODE AND HOT SURFACE IGNITER – DSI MODELS	27
14.8)	REMOVAL OF GAS VALVE AND BURNER ORIFICE – DSI MODELS	27
14.9)	REMOVAL OF MAIN BURNER – ALL MODELS	28
15.0)	GAS TYPE CONVERSION	29
16.0)	TROUBLESHOOTING	30
16.1)	TROUBLESHOOTING CHART – DSI (1)	30
16.2)	TROUBLESHOOTING CHART – DSI (2)	31
17.0)	REPLACEMENT PARTS GUIDE	32
18.0)	WARRANTY	38

1.0) SAFETY

This heater is a self-contained air heater. Safety information required during installation and operation of this heater is provided in this manual and the labels on the product. The installation, service and maintenance of this heater must be performed by a contractor qualified in the installation and service of gas fired heating equipment.

All personnel in contact with the heater must read and understand all safety information, instructions and labels before operation. The following symbols will be used in this manual to indicate important safety information.

The intended use of this appliance is the heating of agricultural animal confinement buildings. Adequate ventilation is required.

FOR YOUR SAFETY: EXHAUST FANS MUST be operating on an appropriate cycle when heaters are operating to avoid a high concentration of carbon monoxide.

When used without fresh air, this heater may give off carbon monoxide, an odorless and poisonous gas. **CARBON MONOXIDE POISONING MAY LEAD TO DEATH.** Early signs of carbon monoxide poisoning resemble the flu with headaches, dizziness and nausea. If you experience these signs, **GET FRESH AIR IMMEDIATELY!** Have the heaters serviced as soon as possible and check the ventilation in the house.

The following symbols will be used in this manual to indicate important safety information.



Warning instructions must be followed to prevent or avoid hazards which may cause serious injury, property damage or death.



Caution instructions must be followed to prevent incorrect operation or installation of the heater which may cause minor injury or property damage.

2.0) INSTALLER RESPONSIBILITY

The installer is responsible for the following:

- The heater installation, electrical and gas supplies must be installed in accordance with these installation instructions and any applicable codes and regulations.
- Every heater shall be located with respect to building construction and other equipment so as to permit access to the heater.
- Each installer must follow the clearances to combustible materials for the heaters.
- Install the heater so that the supports and hangers are correctly spaced in accordance with these instructions. The heater must be supported by materials having a working load limit of at least 68 kg.
- Supply the owner with a copy of these Installation and Operation Instructions.
- Gravity or mechanical means shall be provided to supply and exhaust at least 10m³/hr per KW of installed heaters.
- Never use the heater as a support for a ladder or other access equipment. Do not hang anything from the heater.
- Supply all installation materials necessary that are not included with the heater.
- Check the nameplate to make sure that the burner is correct for the gas type in the building.
- To install the heater using best building practices.

3.0) GENERAL INFORMATION

This is a self-contained agricultural air heater for use in locations where flammable gases or vapors are not generally present and is intended for heating of agricultural animal confinement buildings. The intended use is heating of agricultural animal confinement buildings.

INSTALLATION REQUIREMENTS

Installation of this heater must be in accordance with all applicable codes shown in the instructions and/or the local codes and authorities having jurisdiction. In the UK all equipment must be installed and maintained in accordance with the relevant provisions of the Gas Safety (Installations and Use) Regulations 1998 for gas fired products. Installation practices must take into account the Health and Safety at Works Act 1974 or relevant codes of practice. In addition the installation must be carried out in accordance with the current IEE wiring regulations BS 7671-latest revision, BS 6896-latest revision (Industrial & Commercial) and any other relevant British Standards and Codes of Practice by a qualified installer. All external wiring **MUST** comply with the current IEE wiring regulations.

Clearances to combustibles as outlined in the manual should always be observed. In areas used for storage of combustible materials where they may be stacked below the heater, the installer must post signs that will "specify the maximum permissible stacking height to maintain the required clearances from the heater to combustibles."

Every heater shall be located with respect to building construction and other equipment so as to permit access to the control housing. Each installer shall use skillful and reliable installation practices when locating the heaters and must give consideration to service accessibility.

This heater is for either **INDOOR or OUTDOOR INSTALLATION** and is used in an **UNVENTED** mode. The term *Unvented* actually means *Indirect Vented*. While the products of combustion are expelled into the building, national codes require ventilation in the building to dilute these products of combustion. This ventilation must be provided by gravity or mechanical means. Ventilation requirements are addressed further in these instructions.

Although these heaters may be used in many applications other than space heating (e.g., process heating), KROMSCHROEDER SA will not recognize the warranty for any use other than space heating.

This heater is not an explosion proof heater. Where the possibility of exposure to volatile and low flash point materials exists, it could result in property damage or death. This heater must not be installed in a spray booth where the heater can operate during the spraying process. Consult your local fire marshal or insurance company.

Before installation, check that the local distribution conditions, nature of gas and pressure, and adjustment of the appliance are compatible.

This heater must be applied and operated under the general concepts of reasonable use and installed using best building practices.

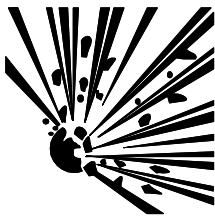

It is the responsibility of the qualified installer to supply the appropriate lifting equipment to safely install the agricultural air heater. Tools required for the safe installation, startup and maintenance are various screwdrivers, wrenches, pipe wrenches, volt and multi-meter, air and gas manometer and required tools to safely install the chosen hanging materials.

These instructions refer to appliances designed to operate in the European Union.
Appliances designed for other countries (Non-European Union) are available on request.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

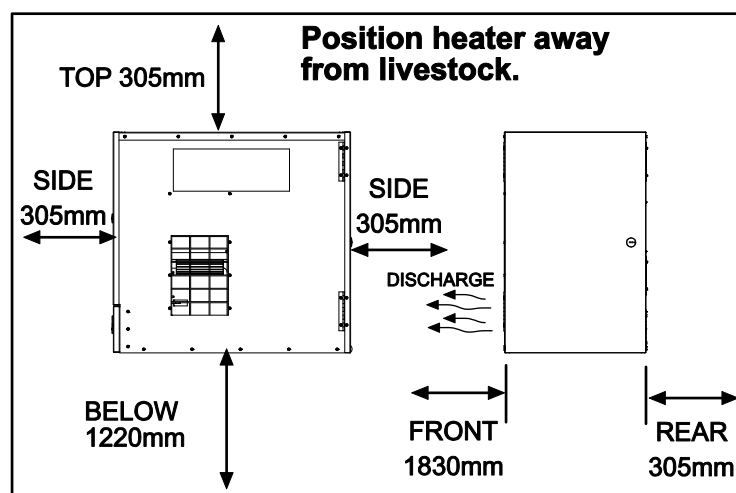
Children must be supervised not to play with the appliance.

4.0) MINIMUM CLEARANCES TO COMBUSTIBLES

⚠ WARNING		
		<h3 style="margin: 0;">FIRE AND EXPLOSION HAZARD</h3> <p>Combustible material must be located outside the clearance dimensions listed.</p> <p>Failure to do so may result in death, serious injury or property damage.</p>

Minimum clearances to combustibles shall be measured from the outer surfaces as shown in the following diagram:

Minimum Clearances to Combustibles



▲ WARNING: Certain materials or objects, when stored under the heater, will be subjected to radiant heat and could be seriously damaged. Observe the Minimum Clearances to Combustibles listed in the manual and on the heater at all times.

NOTE:

1. The clearances specified above must be maintained to combustibles and other materials that may be damaged by temperatures 90°F (50 °C) above ambient temperature. Clearances to combustibles are posted on the burner box. In areas used for storage of combustible materials where they may be stacked below the heater, NFPA54 requires that the installer must post signs that will “specify the maximum permissible stacking height to maintain the required clearances from the heater to combustibles.” KROMSCHROEDER SA recommends posting these signs adjacent to the heater thermostat or other suitable location that will provide enhanced visibility.

2. The stated clearance to combustibles represents a surface temperature of 90 °F (50 °C) above room temperature. Building materials with a low heat tolerance (such as plastics, vinyl siding, canvas, tri-ply, etc.) may be subject to degradation at lower temperatures. It is the installer’s responsibility to assure that adjacent materials are protected from degradation.

5.0) SPECIFICATIONS

MODEL NO.			VF80CE (DSI)
INPUT RATING (kW)	Propane Gas:		73.3 max./46.9 min.
	Natural Gas:		73.3 max./46.9 min.
GAS SUPPLY PRESSURE	Propane Gas:	Maximum	60 mbar
		*Minimum	37 mbar
	Natural Gas:	Maximum	60 mbar
		*Minimum	20 mbar
MANIFOLD PRESSURE	Propane Gas:		24.9 mbar
	Natural Gas:		10.0 mbar
ORIFICE SIZE	Propane Gas:		Ø 0.176" (4.47 mm)
	Natural Gas:		Ø 0.290" (7.37 mm)
WEIGHT			50.8 kg
DELIVERED AIRFLOW			1,700 m³/h
VENTILATION REQUIRED	Per Heater		28.3 m³/per min
GAS CONSUMPTION	Propane Gas:		2.76 m³/hr - 10.33 liters per hr
	Natural Gas:		7.0 m³/hr
GAS CONNECTION			Rp-1/2
ELECTRICAL SUPPLY			230 Vac, 1 Phase, 50Hz
TOTAL AMP DRAW			2.0A
MOTOR RATING			1/4HP, 1100 rpm

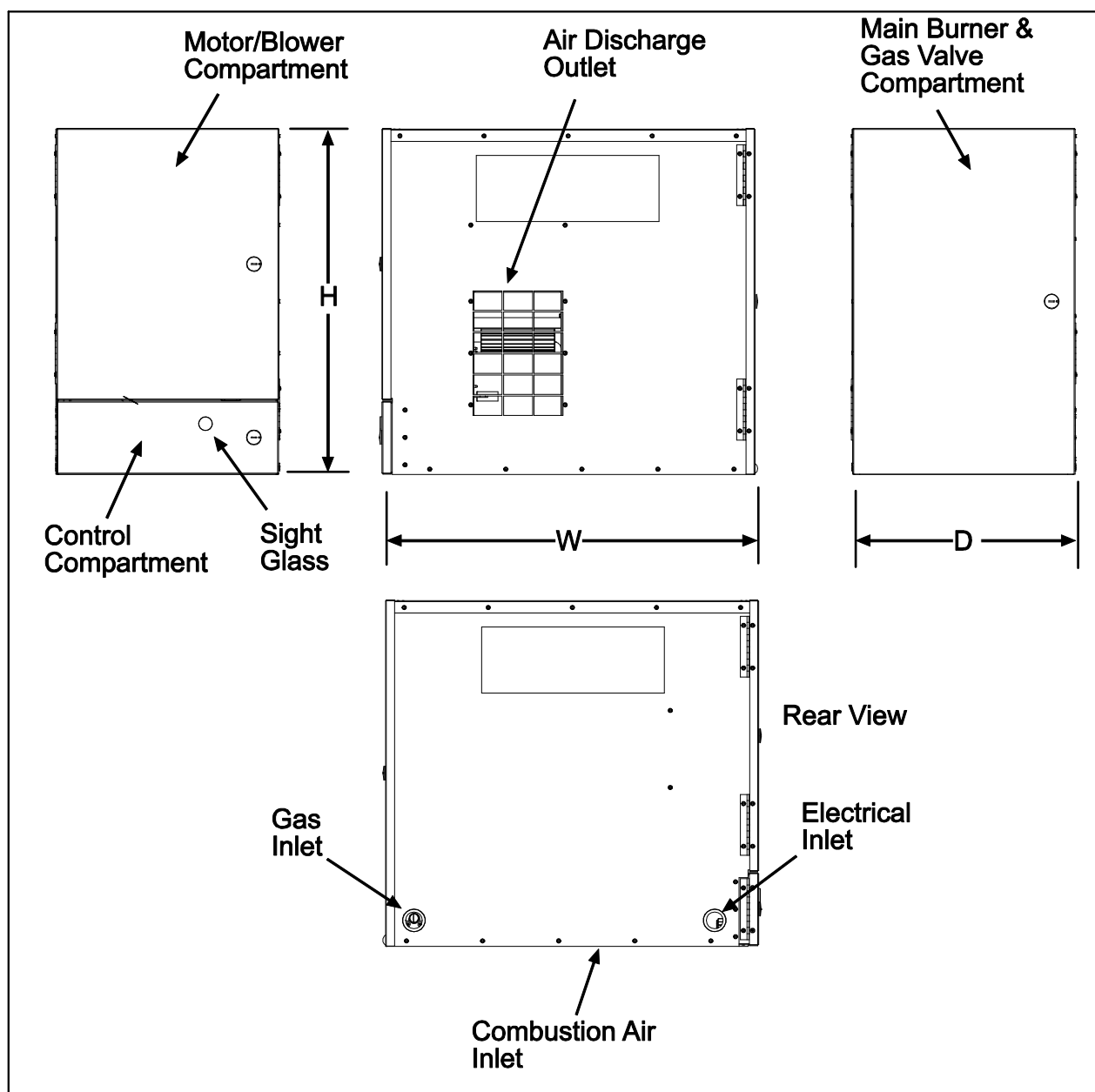
* The minimum inlet gas supply pressure for the purpose of input adjustment.

MODEL IDENTIFICATION:

Complete Model No.	Gas Type	Description
VF80CE-N5 DSI	Natural	Direct Spark Ignition NG – 73.3 kW
VF80CE-L5 DSI	Propane	Direct Spark Ignition LP – 73.3 kW

Module Electrical Rating:	Direct Spark Ignition DSI
Input-Control: 18-30 VAC 50/60 Hz (class 2 transformer)	3 ignition trials
Input Power-Line: 230 VAC (L1, IND contacts only)	3 second pre-purge period 10 second trial for ignition period 20 second inter-purge period
Flame Sensitivity: >0.7µA minimum	

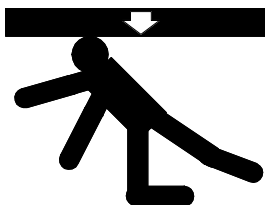
6.0) DIMENSIONS



Model No.	W (width)	D (depth)	H (height)
VF80CE-N5 DSI	779mm	465mm	722mm
VF80CE-L5 DSI			

7.0) INSTALLATION – SUSPENSION, HANGING AND LEVELING THE HEATER

⚠ WARNING



SEVERE INJURY HAZARD

All materials used to suspend the heater must have a minimum working load of 150 lbs (68 kg).

All “S” Hooks must be crimped closed.

Never use the heater to support a ladder or other access equipment.

Failure to do so may result in death, serious injury or property damage.

Heater must be secured by only noncombustible materials.

Heater must be installed using best building practices.

All hanging material such as chains, etc. must have a minimum working load capacity of 150 lbs (68 kg).

Turnbuckles can be used with chains to allow leveling of the heater. All “S” hooks must be manually crimped closed by the installer.

When using rigid means for heater suspension (rod, flat bar, etc.) secure all suspension points to prevent vibration from loosening any fastener, etc.

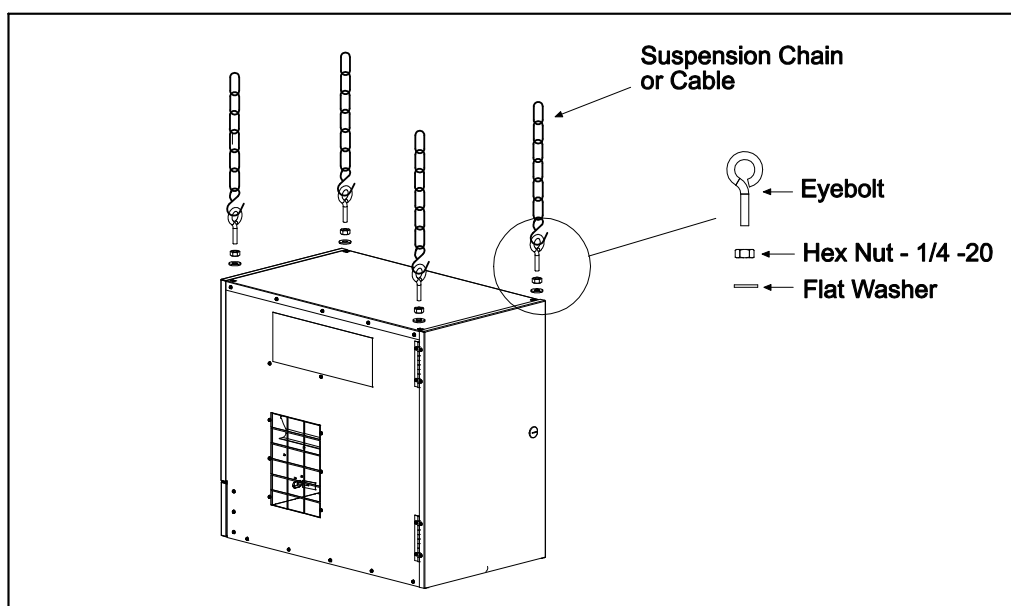
Heaters must not be supported by gas or electric supply lines and must be suspended from a permanent structure with adequate load capacity.

Locate the heater away from livestock so that they cannot damage the heater. Follow all guidelines as outlined in the Minimum Clearances to Combustibles Section 4.0.


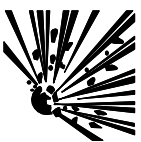

Assemble the eyebolts, nuts and washers (included with heater) into the top of the heater cover panel. The eyebolts must be screwed into the top nuts by at least $\frac{1}{2}$ inch. Secure the eyebolt with the $\frac{1}{4}$ -20 nut and washer to prevent it from screwing out.

Suspend the heater to desired level using hanging materials with a minimum working load capacity of 150 lbs (68 kg).

Make sure the heater is level. Optional turnbuckles (not supplied) can also be used to level the heater.



8.0) GAS CONNECTIONS

⚠ WARNING			
			FIRE AND EXPLOSION HAZARD Tighten the flexible gas hose and components securely. Improperly connected gas lines may result in fire, explosion, poisonous fumes, toxic gases, asphyxiation or death. Connect gas lines in accordance to national, state, provincial and local codes.
			Leak test all components of gas piping before operation. Never use an open flame of any kind to check for leaks. Failure to do so may result in death, serious injury or property damage.

IMPORTANT BEFORE CONNECTING THE GAS TO THE HEATER

Connect to the supply tank or manifold in accordance with state or local building codes. Authorities having jurisdiction should be consulted before the installation is made.

2. Check that the gas fuel on the burner rating plate matches the fuel for the application.
3. Check that the gas supply piping has the capacity for the total gas consumption of the heaters and any other equipment connected to the line.
4. Check that the calculated supply pressure with all gas appliances and heaters operating will not drop below the minimum supply pressure required for these heaters. Check inlet supply pressures on Section 5.0.
5. All gas supply lines must be located in accordance with the required clearances to combustibles from the heater as listed on the clearances label of the heater and Section 4.0 of this manual.
6. Pipe joint compounds must be resistant to the action of liquefied petroleum gases.
7. Gas connections to individual air heaters shall be hard piped, made using suitable flexible metal or rubber hosing suitable for LP gas usage. Check with the authorities having jurisdiction and/or local codes prior to choosing an individual gas connection method.
8. The gas pipe, flexible hose and connections must be self-supporting. The gas pipe work must not bear any of the weight of the heater or any other suspended assembly.
9. A sediments trap (supplied with the heater) must be installed to the heater inlet as described in 8.1.
10. This appliance is equipped with a combination gas valve. The maximum supply pressure to the appliance is 60 mbar. If the line pressure is more than the maximum supply pressure, then a second stage regulator which corresponds to the supply pressure must be used.
11. After all gas connections have been made, make sure the heater and all gas outlets are turned off before the main gas supply is turned on slowly. Turn the gas supply pressure on and check for leaks.
12. If a 2nd stage regulator is used, the ball valve down-stream in the supply line must be closed when purging the gas lines to prevent gas seeping through it. If initial gas pressure is higher than 60 mbar the

redundant combination gas valve is designed to lock out. Pressure build-up in the supply lines prior to the heater must be released before proper heater operation.

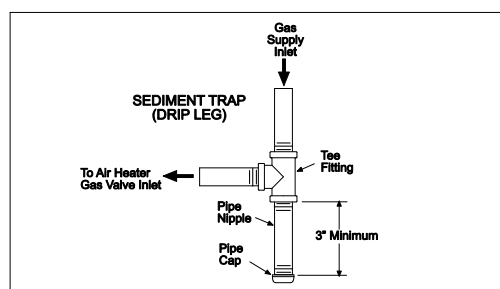
13. If a 2nd stage regulator is needed, it must be installed upstream of flexible metal or rubber hoses.

8.1) SEDIMENT TRAP AND GAS LEAK CHECKS

A sediment trap kit is furnished with each heater and is to be installed by qualified contractor in accordance with the manufacturer's instructions and all codes and requirements of the authority having jurisdiction. Failure to follow instructions could result in death, serious injury or property damage. The qualified contractor performing this work assumes responsibility for this installation.

8.2) INSTALLING THE SEDIMENT TRAP

- a) When installing the gas line to the air heater, the sediment trap (see figure below) must be installed in the gas line at a point before the air heater. The sediment trap must be installed vertical to properly function.
- b) This sediment trap or "drip leg" acts to trap impurities and water that can condense out of the gas. It helps to keep impurities from entering the appliance and causing potential damage to gas valves, etc. Periodically remove the cap from the drip leg and drain any accumulation of dirt and/or water.



8.3) GAS LEAK TEST

After all gas connections joints are made, perform the gas leak test using an approved leak detection solution at the pipe. Bubbles forming indicate a gas leak. **SHUT OFF GAS AND FIX ALL LEAKS IMMEDIATELY.**

Manual shutoff to the heater must be closed when pressure testing above 60 mbar.

8.4) INSTRUCTIONS FOR PRESSURE TEST GAUGE CONNECTION

INLET GAS PRESSURE CHECK

1. Turn off all electrical power and manual gas shutoff valve to the system to connect manometer hoses.
2. Turn the pressure test screw in the center of the inlet pressure boss (see **Figure 1** below) not more than one turn **counterclockwise**. Attach a 9 mm hose and manometer over the inlet pressure boss on the valve.
3. Ignite the appliance burner by switching on the electricity supply to the appliance and open the manual gas shutoff valve. Check that the manometer reading is as shown in the chart below (see also the Data Label affixed to the Burner Control Box).
4. Switch off the electricity supply to the appliance and close manual gas shutoff valve. Remove the manometer tube from the gas valve test boss. After testing, carefully seal test point with the provided screw. Recommended torque = 1.0 Nm.

MANIFOLD GAS PRESSURE CHECK AND ADJUSTMENTS

All adjustments must be made on the basis of the specific characteristics of the appliance. Check inlet and outlet pressure using the pressure test points provided. After testing, carefully seal test points with the provided screws. Recommended torque = 1.0 Nm.

1. Turn off all electrical power to the system to connect manometer hoses.
2. Turn the pressure test screw in the center of the outlet pressure boss not more than one turn **counterclockwise**. Attach a 9 mm hose and manometer over the outlet pressure test boss on the valve (see **Figure 1** below). If regulator needs to be adjusted, see instructions below.

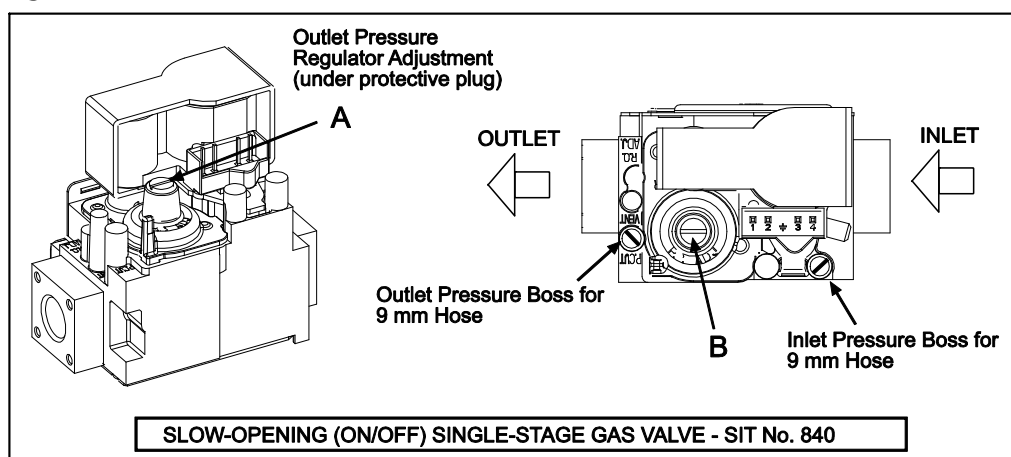
TO ADJUST REGULATOR (single stage gas valves):

1. Remove the protective plug **A** (see **Figure 1** below). Turn regulator adjustment screw **B** **clockwise** ↻ to **increase pressure**, or **counterclockwise** ↺ to decrease pressure. After setting put back the protective plug.

DO NOT EXCEED THE PRESSURES SHOWN IN THE GAS PRESSURE TABLE.

2. After testing pressure and adjusting the regulator, turn off all electrical power to the system, remove manometer hoses, turn outlet test screw clockwise to seal pressure port. Tighten to 1.0 Nm torque minimum. Turn on system power.

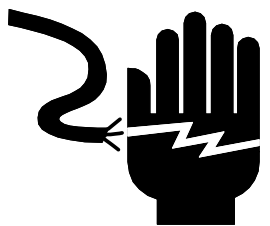
Figure 1



GAS PRESSURE TABLE			
GAS TYPE	MANIFOLD PRESSURE	SUPPLY PRESSURE	
		Minimum*	Maximum
Natural Gas	10 mbar	20 mbar	60 mbar
Propane Gas	24.9 mbar	37 mbar	60 mbar

* Minimum permissible gas supply pressure for purpose of input adjustment

9.0) ELECTRICAL REQUIREMENTS

⚠ WARNING	
	<p>ELECTRIC SHOCK HAZARD</p> <p>Disconnect electrical power and gas supply before servicing.</p> <p>This appliance must be connected to a properly grounded electrical source.</p> <p>Failure to do so may result in death or serious injury.</p>

The electrical wiring to this heater must be installed in accordance with the latest or current National Regulations and any Local Regulations, which apply.

Electrical supply	230V~50Hz 500W
Current rating	2.0A
Fuse externally	5.0A

- Using flexible international harmonized 3-wire PVC (thermoplastic jacket) supply cable with earth (0.75 mm² to National or Local standard specifications) connect the power supply leads to the terminal block and earth connection located inside the control housing as follows:

Brown	-	to terminal marked L
Blue	-	to terminal marked N
Green/Yellow	-	to terminal marked \equiv

Refer to the internal connection wiring diagram shown below.

- Thermostats must be located outside the direct flow of the hot air and/or be located a minimum of 3m from either side of the heater. Above rules do not apply to non-temperature sensing controls.

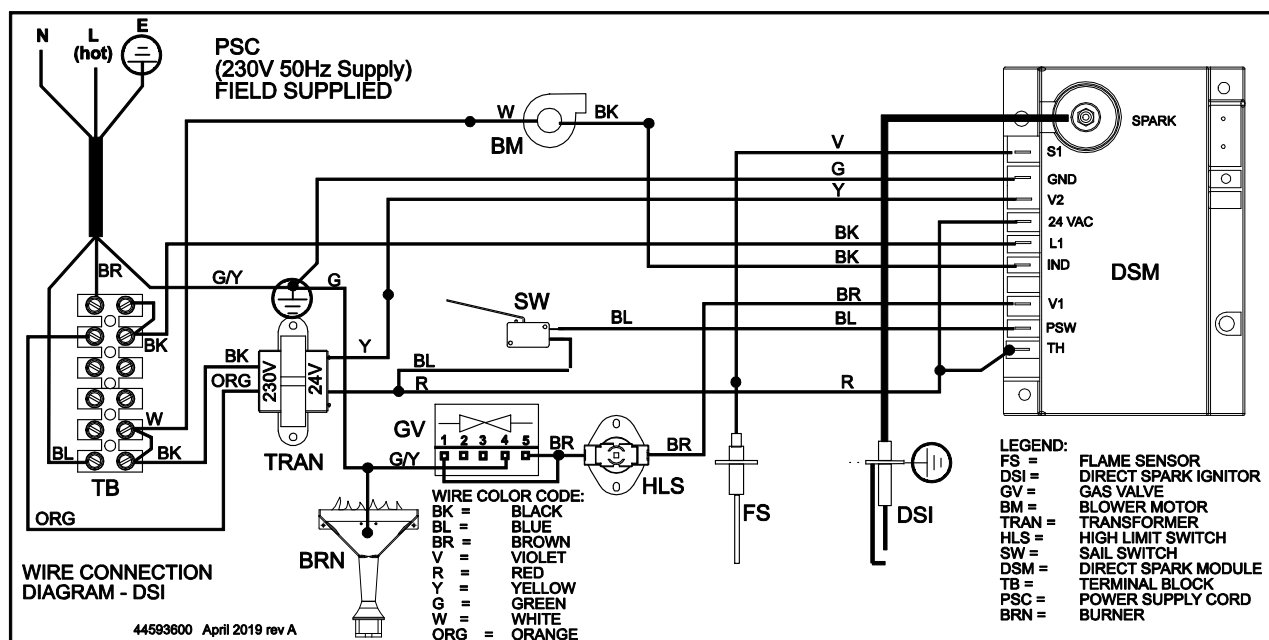
NOTE: It is important for the correct function of the appliance for the polarity of the electrical supply to be correct.

For stationary appliances that will not be moved:

The method of connection to the electrical supply must facilitate complete isolation and should preferably be via a fused double pole isolator having a constant separation of at least 3mm in all poles and supplying the appliance ONLY.

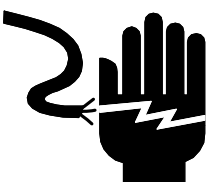
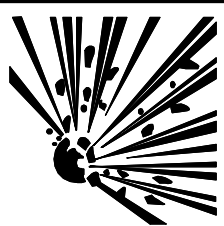
Alternatively, connection may be made via a fused 3 pin plug and un-switched, shuttered socket, both complying with the requirements of National or Local Regulations. Neither thermostat nor switch are supplied as standard equipment.

NOTE: In the event of an electrical fault after installation of the appliance, preliminary system checks are required to be carried out i.e. earth continuity, polarity and resistance to earth.

INTERNAL CONNECTION WIRING DIAGRAM – DSI SYSTEM

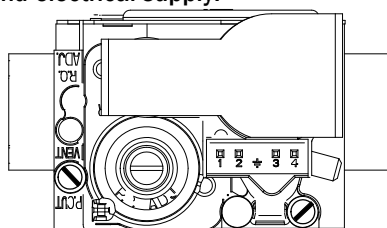
Module Terminal Designations - DSI	
S1	Flame sensor
GND	24Vac transformer ground to module
V2	24Vac transformer ground to Gas valve
24 VAC	24Vac supply to module
L1 (HOT)	230Vac supply to module
IND	230Vac supply to blower motor
V1	Gas valve output 24Vac
PSW	Sail switch return 24Vac
TH	24Vac supply to module
SPARK	DSI igniter

10.0) LIGHTING AND SHUTDOWN INSTRUCTIONS

⚠ WARNING		
		ELECTRIC SHOCK & EXPLOSION HAZARD Disconnect electrical power and gas supply before servicing. Failure to do so may result in death or serious injury.

10.1) DIRECT SPARK (DS) IGNITION SYSTEM

1. Turn on the gas and electrical supply.

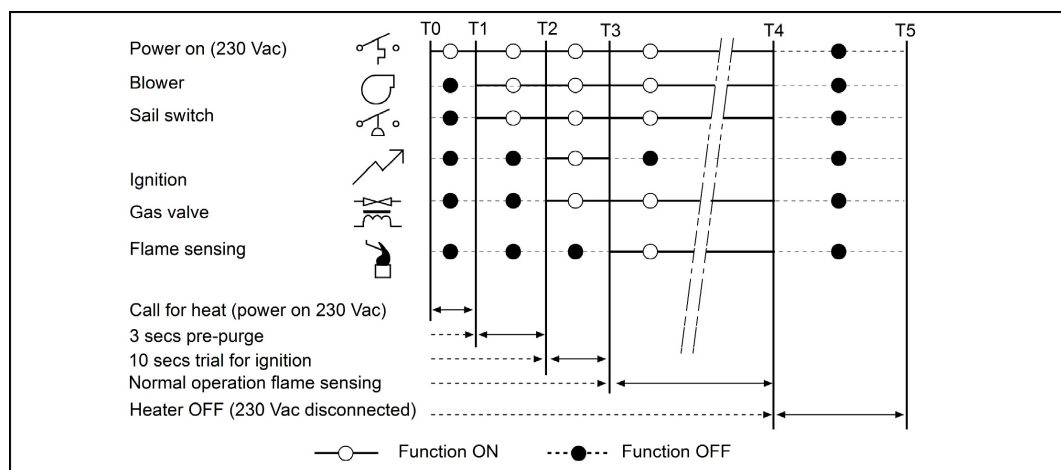


2. Set the thermostat to call for heat. The blower motor will energize.
3. Ignition should occur after the 3 second air pre-purge.
4. If ignition fails, two more ignition attempts are made. If unsuccessful the heater goes into lockout. Each time after 20 seconds the unit will air pre-purge for 3 seconds and spark for 10 seconds. Turn the thermostat (or power) off for 60 seconds to take the system out of lockout.
5. If the heater does not light, manually reset the thermostat or shut off power completely for five (5) minutes before attempting to relight.
6. To permanently shut down the heater, turn off the gas and electrical supply.

10.2) SEQUENCE OF OPERATION

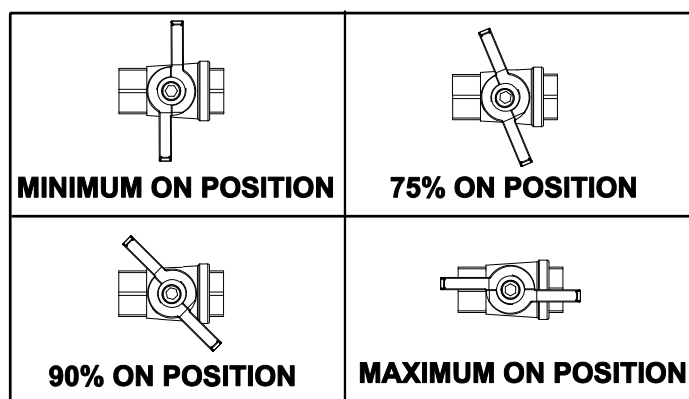
The charts below show the sequence of operation for the normal operating cycle of the VF80CE DSI air heater.

10.3) DIRECT SPARK IGNITION SEQUENCE OF OPERATION



10.4) VARIABLE HEAT OUTPUT ADJUSTMENT

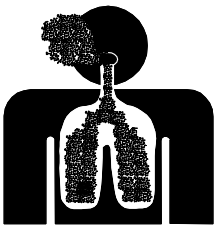
The heater is equipped with a manual ball valve. This manual ball valve can be adjusted for variable heat output by rotating the handle in the positions shown.



NOTE: The manual ball valve is not a gas shut-off valve.

11.0) VENTILATION

⚠ WARNING



CARBON MONOXIDE HAZARD

Heaters installed unvented must be installed in an area with at least 10m³/hr per KW heat input of outside air ventilation.

In buildings with airborne contamination the heater must be installed with fresh air for combustion.

Failure to do so may result in death, serious injury, property damage or illness from Carbon Monoxide poisoning.

FOR YOUR SAFETY: Exhaust fans must be operating on an appropriate cycle when heating the building to avoid high concentrations of carbon monoxide and water vapor.

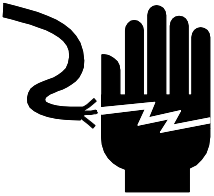
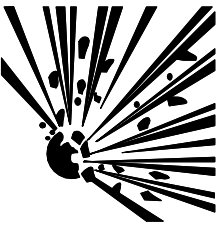
The temptation, particularly during the winter months, is to close up the heated space to conserve heat and save money. This must be resisted, particularly during the heating up period prior to the arrival of the life stock, because the lack of ventilation can restrict the required amount of combustion air for the air heaters causing them to burn improperly and produce levels of carbon monoxide which could be harmful to people and the life stock.

⚠ WARNING Carbon Monoxide is an odorless and poisonous gas. Extended exposure to carbon monoxide may lead to death. Early signs of carbon monoxide poisoning resemble the flu, including headaches, dizziness and/or nausea. If you experience these signs, **GET FRESH AIR IMMEDIATELY**. Have the air heater(s) serviced as soon as possible and check the ventilation in the heated space.

The heater requires a minimum of 10m³/hr per kW heat input of outside air for ventilation. The ventilation requirements and calculation methods for unflued appliances are set out in the European Standards **EN 13410 (latest edition)** and must be applied. This requirement means that a total of 733 m³/h is required per air heater. Ventilation requirements may vary depending on other equipment that may be located in the building requiring ventilation. All ventilation requirements should be addressed before sizing the necessary gravity or mechanical means to accomplish this ventilation.

While ventilation is necessary for proper air heater and proper growing conditions for the life stock, excessive ventilation can result in high fuel consumption. Adjust the ventilation as necessary for optimum performance of the heaters and growing conditions for the life stock.

12.0) CLEANING AND ANNUAL MAINTENANCE

⚠ WARNING		
		ELECTRIC SHOCK & EXPLOSION HAZARD
		<p>Disconnect electrical power and gas supply before servicing.</p> <p>Failure to do so may result in death or serious injury.</p>

This heater must be cleaned and serviced annually by a qualified contractor before the start of each heating season and at any time excessive accumulation of dust and dirt is observed. Maximum heating efficiency and clean combustion will be maintained by keeping the heater clean. To clean the heater, turn off all electrical and gas supply to the heater.

The contractor shall check the following during periodic maintenance.

- **Clearances to combustibles:** Check that clearances are being maintained. Make sure that the appliance area is kept clear and free from combustible materials, gasoline and other flammable vapors and liquids.
- **Insulated Air Duct:** Disconnect air ducting (if equipped) and inspect internally using a flashlight to make sure no foreign material has collected. Clean any foreign materials.

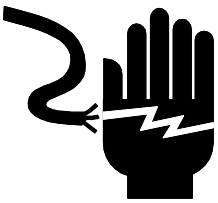
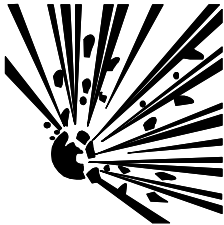
Through wall kits must be installed properly as per the provided instructions. Kits not installed properly will cause PPD and other materials to catch on fire at wall penetration point.


Only genuine air ducts designed and supplied by KROMSCHROEDER SA must be used to avoid excessive backpressure which will cause heater operational performance issues and cause excessive Carbon Monoxide, heater component overheating, etc.

- **Adjustable Air Diverter:** Check the adjustable air diverter and make sure that there is no obstruction around the exhaust openings. Clean any foreign materials. Inspect any joints to make sure they are completely sealed.

- **Gas Lines and flexible connectors:** Make sure that the gas lines are not leaking. Check the gas connection to the heater for any signs of damage, fatigue or corrosion. If there are any signs of damage to the gas connection or leaks found in the gas piping, immediately stop using the heater until the gas pipe and connections have been repaired or replaced. Check that the gas lines are not bearing the weight of the heater. The flexible gas lines must not have sharp bends. Heaters installed outdoors are subjected to sunlight. Sunlight causes rapid aging on components such as flexible rubber gas lines, etc. Flexible rubber hoses must be reviewed annually during service and replaced if they show the slightest signs of deterioration (e.g. change in color, chalking of surface, cracks in surface, etc.)
- **Control Box:** Clean the access panel, and the inside of the control box. Remove any dirt or debris including spider webs. Replace faulty gaskets.
- **Blower Wheel and Housing:** Check that the blower wheel spins freely, blow out any dust or dirt with compressed air. A dirty wheel can reduce the volume of air pulled and can result in heater failure.
- **Electrode and Flame Sensor Condition:** Visually check that the electrode gap (if equipped) is maintained at 3/16" (4.7mm) and that the tips of the flame sensor and spark electrode are free from deposits. Clean off any deposits. Check that the electrode ceramic is free from cracks. **CAUTION: The ceramic portion of the electrode is very fragile so any cleaning or adjustments must be done with care.**
- **High Temperature Limit Switch:** Check for proper operation. See section 14.5)
- **Foreign Objects:** Check and remove any foreign objects that are present at the heater. The air supply opening at the bottom panel must be unobstructed. This includes tumble weeds and other growing plants underneath the heater when installed outdoors.
- **Suspension System:** Check that the suspension system is holding the heater level. Make sure that the heater is hanging securely, look for any evidence where the heater may have been hit accidentally and tighten any loose hanging points. Check that S hooks are closed. Check that there is no evidence of wear on the chain, threaded rod or other suspension methods at the connection to the heater and at the ceiling.
- **Main Burner and Orifice:** Check the Main burner and orifice; remove any dirt or debris including spider webs.
- **Periodic Cleaning of Cabinet:** Periodically clean the external part of the cabinet areas first by blowing the cabinet off with compressed air then using water spray and brushing lightly. **CAUTION: The heater shall not be operated for one hour following any wash-down.**
Dust released from a heater can cause a grain dust explosion. Heaters must be turned off during cleaning.
- **Safety Labels:** Replace safety and all other labels if they are no longer visible. See section 17 for replacements.

13.0) SERVICING

⚠ WARNING	
	
ELECTRIC SHOCK, FIRE AND EXPLOSION HAZARD	
Disconnect electric power and gas supply before servicing.	
Do not attempt to repair parts that are not serviceable.	
Failure to follow these instructions can result in death, injury or property damage.	

⚠ WARNING	
	BURN HAZARD
Allow heater to cool before service.	
Heater surfaces are hot for a period of time after operation.	
Failure to follow these instructions can result in death, injury or property damage.	

It is essential that at least once a year, preferably before the heating season, the heater is serviced by a qualified person. In exceptionally dirty conditions, more frequent servicing may be desirable.

After any maintenance and/or replacement of components the heater must be re-commissioned to ensure proper operation. After working on gas carrying components the appliance must be checked for gas leaks and pressure settings verified.

See Section 15 how to remove and change replacement parts.

IMPORTANT:

1. Do not rest anything, especially ladders, against the appliance.
2. Gas and electrical supplies must be isolated before commencing servicing work or replacement of components.
3. Unless instructed to the contrary, re-assemble components in reverse order.
4. Check all joints for gas soundness after carrying out any servicing of the appliance.
5. On completion of a service/fault finding task which has required the breaking and re-making of electrical connections, the following checks must be made.
 - a. Ground (earth) continuity check.
 - b. Polarity check.
 - c. Resistance to earth check.

13.1) MOTOR AND BLOWER ASSEMBLY

The motor (including the capacitor) and blower wheel are not serviceable.

If the blower assembly makes excessive noise the motor bearings have failed and the motor needs replacing. Replace the motor when 230Vac are supplied but it does not turn.

If the blower assembly makes excessive vibration the impellor may require cleaning. Carefully remove the motor and blower assembly and clean the impellor with compressed air. If vibration persists the impellor needs replacing.

13.2) AIR PROVING (SAIL) SWITCH

The air proving (sail) switch is not serviceable.

When the blower starts operating the air proving (sail) switch paddle is pushed on by the airflow and makes a contact inside the switch. Check that the sail switch paddle blade is not bent and moves freely up or down in the switch housing. Remove and straighten carefully if necessary.

Remove wires and place an ohm meter over the switch terminals and check that there is continuity when the paddle blade is moved up or down manually.
Replace if necessary.

13.3) IGNITION CONTROL MODULE (DSI)

The ignition module (DSI) is not serviceable.

The ignition module controls the proper sequence of operation of the heater. See Section 11 for operating sequence. A red diagnostics LED on the module provides information as to why the heater may not be operating.

Direct Spark

Red LED Flashes	Error Condition
Steady ON	Internal Control Failure – replace module
1	Airflow Fault – air proving (sail) switch did not make contact
2	Flame is sensed prior to ignition – verify electrode and wiring, replace module
3	Lockout – turn electric power off for 60 seconds and restart

13.4) TRANSFORMER

The transformer is not serviceable

Check that the transformer is receiving 230VAC power supply. Blue and brown wires
Check that there is 24VAC on the outlet side of the transformer. Red and yellow wires
Replace if necessary.

13.5) HIGH TEMPERATURE LIMIT SWITCH

The high temperature limit switch is not serviceable.

The high temperature limit switch is wired in series with the gas valve. It serves the purpose to prevent the heater from overheating. In normal operation the switch is normally closed. If the high temperature limit switch has been activated it must be manually reset by pushing the red reset button in the center. The heater must be allowed to cool down for at least 15 minutes. Turn off power to heater before pushing the reset button. When reset successful a click is heard.

Remove wires and place an ohm meter over the switch terminals and check that there is continuity after the red reset button has been pressed.

Annual test – be careful the switch will be hot in some areas.

To test the operation of the high temperature limit switch remove it and hold a small flame to the vicinity of the sensing portion of the switch. A “click” will indicate that the switch has activated. Place an ohm meter over the switch terminals and check that there is NO continuity. Wait for the switch to cool and push the red reset button. Place an ohm meter over the switch terminals and check that there is continuity.

Replace if necessary.

13.6) FLAME SENSOR

The flame sensor is not serviceable.

The flame sensor transmits a millivolt signal to the ignition module indicating the presence of a flame. The flame mV can be measured by disconnecting the purple flame sensing wire and placing a volt meter in series between the purple and yellow wire. A voltage greater than 1mVdc (direct current) indicates a strong flame signal.

Inspect the ceramic portion of the flame sensor for any cracks.

Check the flame sensor rod for oxidation. Use steel wool to remove oxidation.

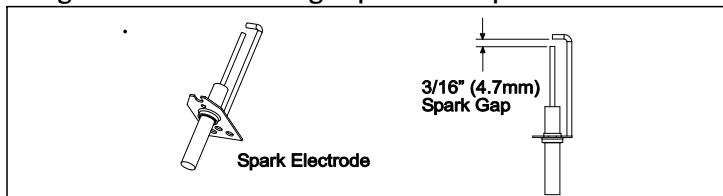
Replace if necessary.

13.7) SPARK ELECTRODE

Both the spark electrode and hot surface igniter are not serviceable.

The spark electrode creates a spark across the 2 rods which ignites the burner. The spark gap must be 3/16" (0.188 inches or 4.7mm). Remove the spark electrode and carefully adjust the spark gap.

The ignition cable is an integral part of the spark electrode and cannot be removed.



Inspect the ceramic portion of the spark electrode any cracks.

Check the spark electrode rod for oxidation. Use steel wool to remove oxidation.

Replace if necessary.

13.8) GAS VALVE (DSI)

The gas valve is not serviceable. If the valve has been submerged in water, it must be replaced.

The gas valve operates with 24Vac. If the maximum inlet pressure of 60 mbar is not exceeded, and the pressure regulator adjusted properly there will be pressure on the outlet side of the gas valve after energizing the gas valve.

Replace if necessary.

13.9) BURNER ORIFICE

Inspect the burner orifice for dirt or insect debris. Clean the orifice hole with a drill bit the same size as the orifice or by soaking the orifice in acetone liquid cleaner. Dry the orifice by blowing compressed air through it. **NOTE:** Care must be taken not to ream the orifice hole to a larger diameter as this will result in over firing the burner and potentially causing damage to the heater.

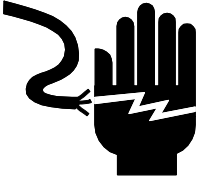
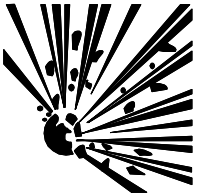
13.10) MAIN BURNER CHECKS

Inspect the main burner and check for cracks or extreme rusting.

Inspect the burner ports for dirt, dust or other debris. Clean with a bristle brush and blow out with compressed air.

Replace if necessary.

14.0) REPLACING PARTS

⚠ WARNING		
		ELECTRIC SHOCK & EXPLOSION HAZARD Disconnect electrical power and gas supply before servicing. Failure to do so may result in death or serious injury.

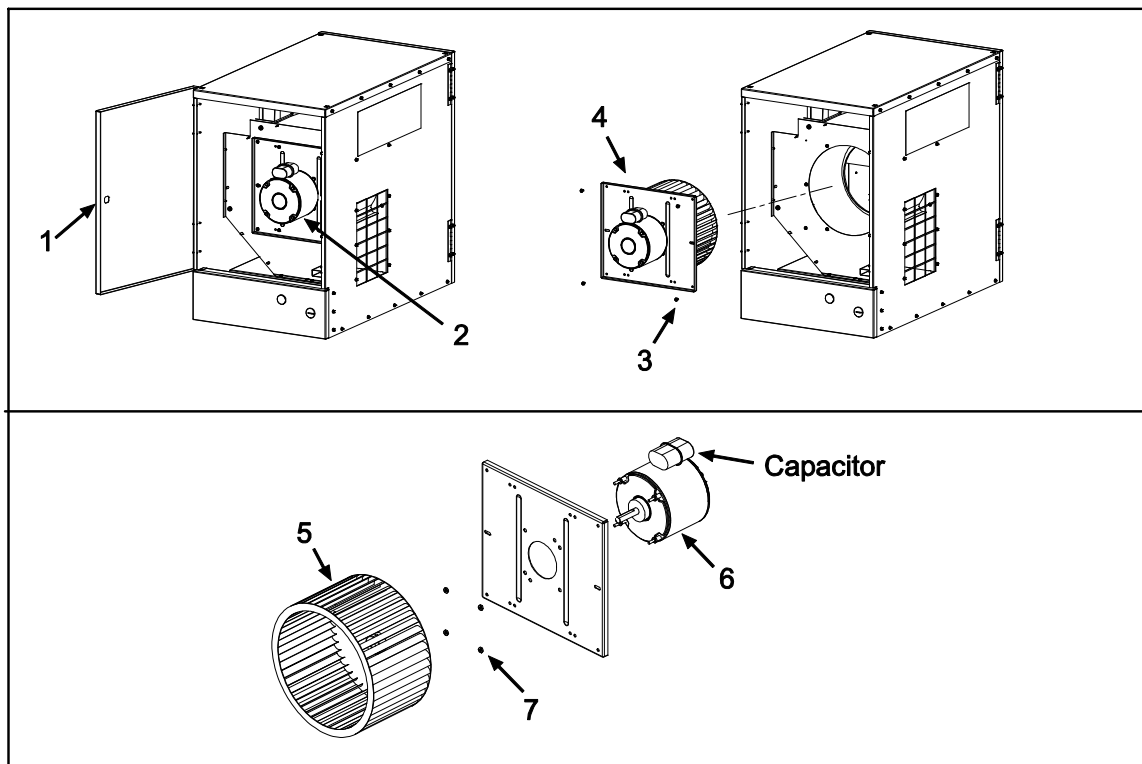
Use only genuine KROMSCHROEDER SA replacement parts. Parts are available from the factory for replacement by a licensed person. Refer to the Replacement Parts Guide in Section 17 for all replacement parts.

14.1) REMOVAL OF MOTOR AND BLOWER ASSEMBLY

Replacement procedure:

1. Rotate the latching knob and open the door at the motor and blower compartment.
2. Disconnect the motor lead wires.
3. Remove the (10) sheet metal screws from the motor mounting plate. The motor and blower assembly is heavy and must be supported well.
4. Slide the complete motor and blower assembly away from the heater housing.
5. To replace the blower wheel loosen the set screw holding the blower wheel onto the motor shaft. Remove blower wheel and replace with new. Allow a clearance of 1/8" (3.2mm) between the blower wheel and the mounting plate. Tighten the set screw (torque to 16.3 Nm) onto the flat side of the motor shaft.
6. To replace the motor remove the blower wheel as described in 5.
7. Remove the (4) hex nuts from the motor and slide away from the motor plate.
8. Replace motor in reverse order and blower wheel as described in 5. Reconnect motor leads. Note: Refer to

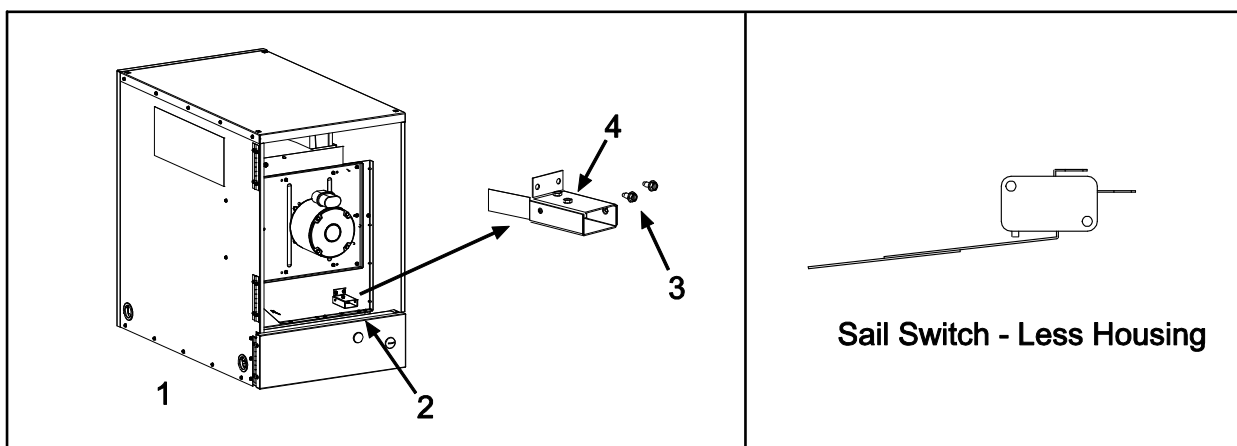
the wiring connection diagrams in section 9.0.



14.2) REMOVAL OF AIR PROVING (SAIL) SWITCH

Replacement procedure:

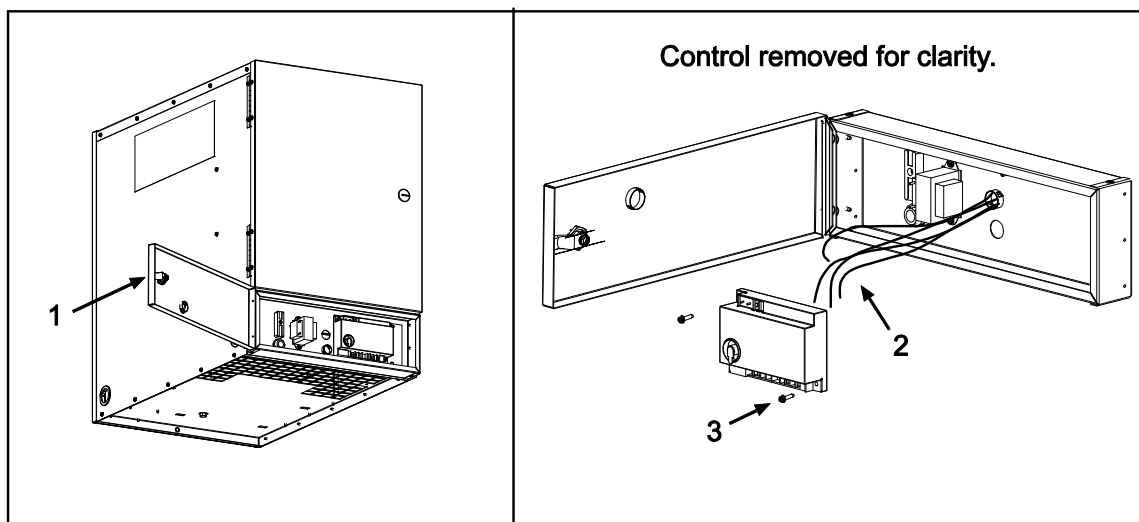
Rotate the latching knob and open the door at the motor and blower compartment.
 Disconnect the lead wires from the switch.
 Remove the (2) sheet metal screws holding the sail switch and housing sub-assembly.
 Remove clip on cover and the (2) nuts holding the sail switch to the housing.
 Replace the switch in the reverse order. Note: Refer to the wiring connection diagrams in section 9.0.



14.3) REMOVAL OF IGNITION CONTROL MODULE – DSI MODELS

Replacement procedure:

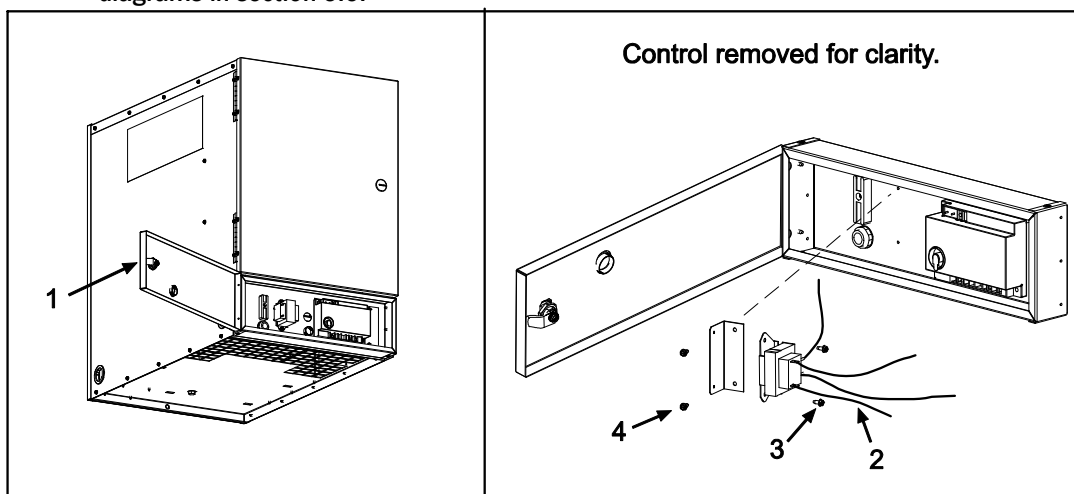
1. Rotate the latching knob and open the small door of the module/transformer control compartment.
2. Disconnect the wire leads from the defective module.
3. Remove the (2) sheet metal screws holding the module and remove it.
4. Replace module in reverse order. Note: Refer to the wiring connection diagrams in section 9.0.



14.4) REMOVAL OF TRANSFORMER – DSI MODELS

Replacement procedure:

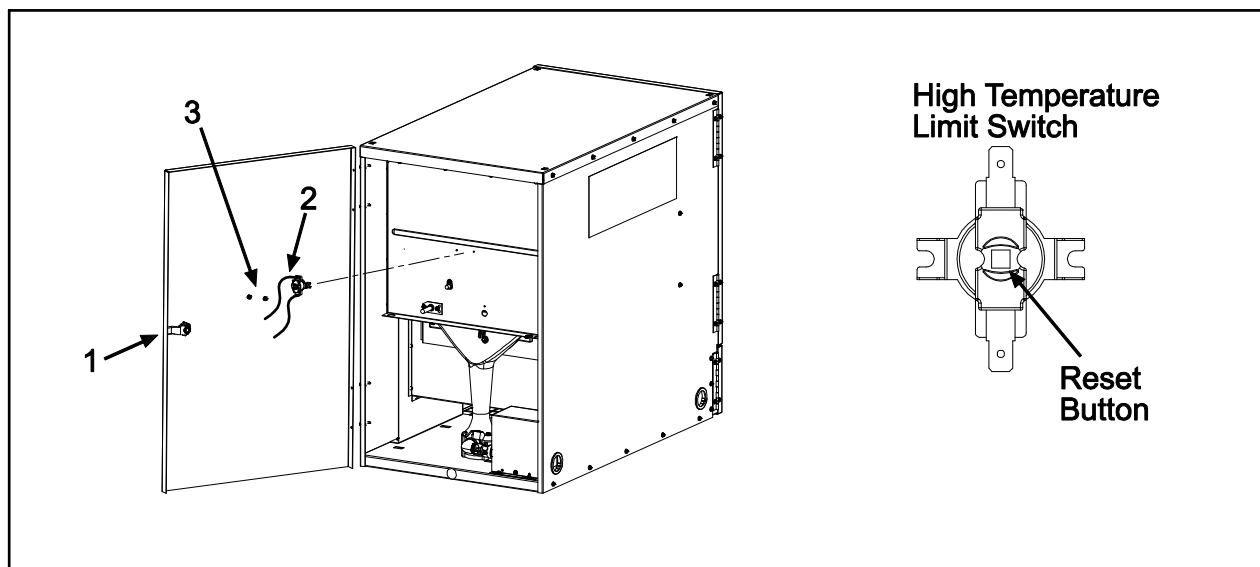
1. Rotate the latching knob and open the small door of the module/transformer control compartment.
2. Disconnect the wires from the defective transformer.
3. Remove the (2) sheet metal screws holding the transformer and remove it. Note the ground wires attached to one of these screws.
4. Remove the transformer holding bracket and retain with the screws for later use.
5. Replace transformer in reverse order. Note: Reattach ground wires. Refer to the wiring connection diagrams in section 9.0.



14.5) REMOVAL OF HIGH TEMPERATURE LIMIT SWITCH - ALL MODELS

Replacement procedure:

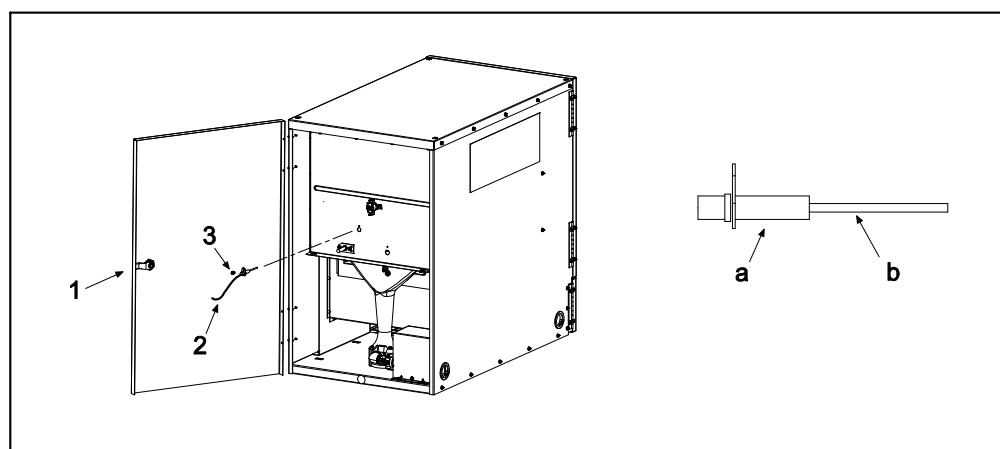
1. Rotate the latching knob and open the large size door at the burner/gas valve compartment.
2. Disconnect the lead wires from the limit switch.
3. Remove the (2) sheet metal screws holding the high temperature limit switch and remove it.
4. Replace high temperature limit switch in reverse order. Note: Refer to the wiring connection diagrams in section 9.0.



14.6) REMOVAL OF FLAME SENSOR - DSI MODELS

Replacement procedure:

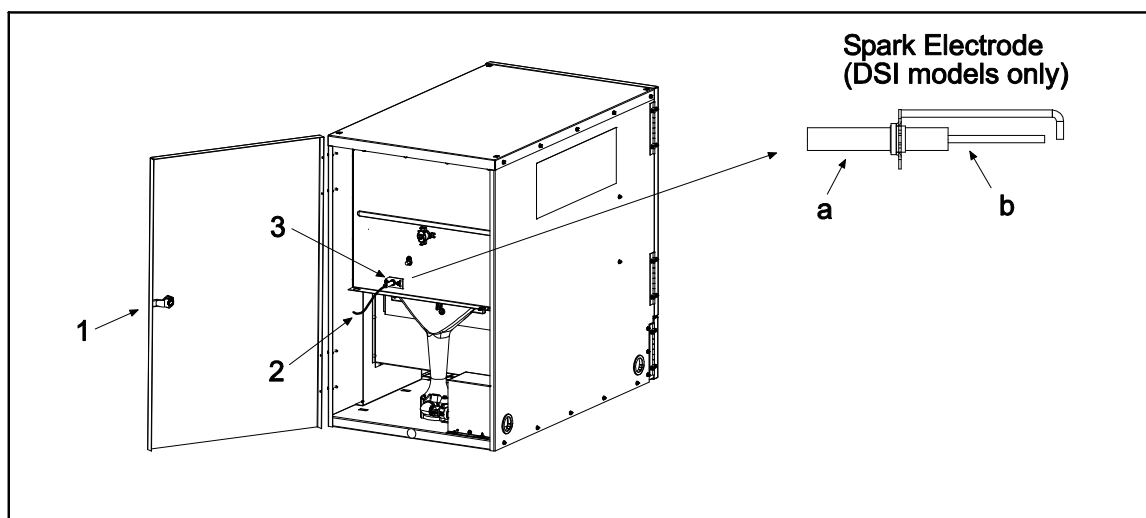
1. Rotate the latching knob and open the large size door at the burner/gas valve compartment.
2. Disconnect the flame sensor wire.
3. Remove the (1) sheet metal screw holding the flame sensor and remove it.
4. Replace flame sensor in reverse order. Note: Refer to the wiring connection diagrams in section 9.0.



14.7) REMOVAL OF SPARK ELECTRODE – DSI MODELS

Replacement procedure:

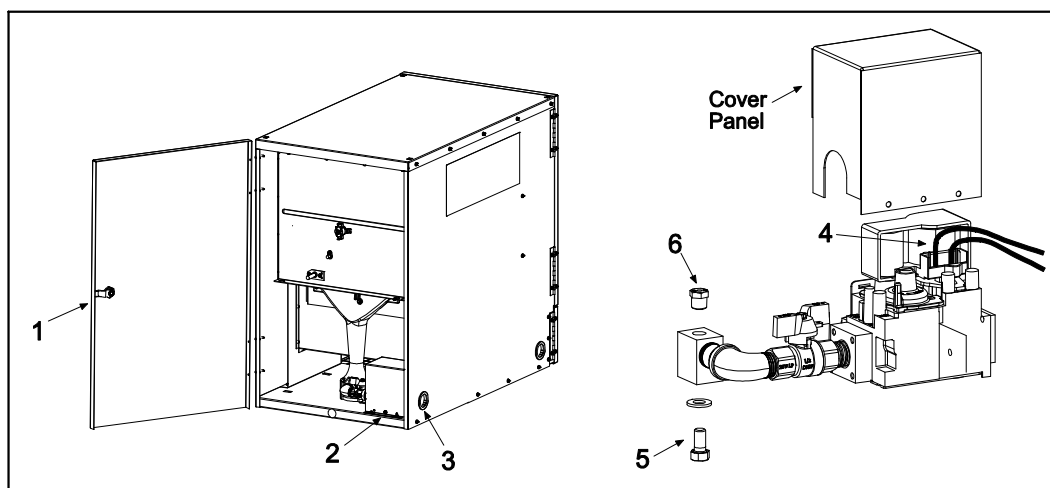
1. Rotate the latching knob and open the large size door at the burner/gas valve compartment.
2. Disconnect the wire lead wire from the spark electrode.
3. Remove the (1) sheet metal screw holding the electrode and remove it.
4. Replace this in reverse order. Note: Refer to the wiring connection diagrams in Section 9.0.



14.8) REMOVAL OF GAS VALVE AND BURNER ORIFICE – DSI MODELS

Replacement procedure:

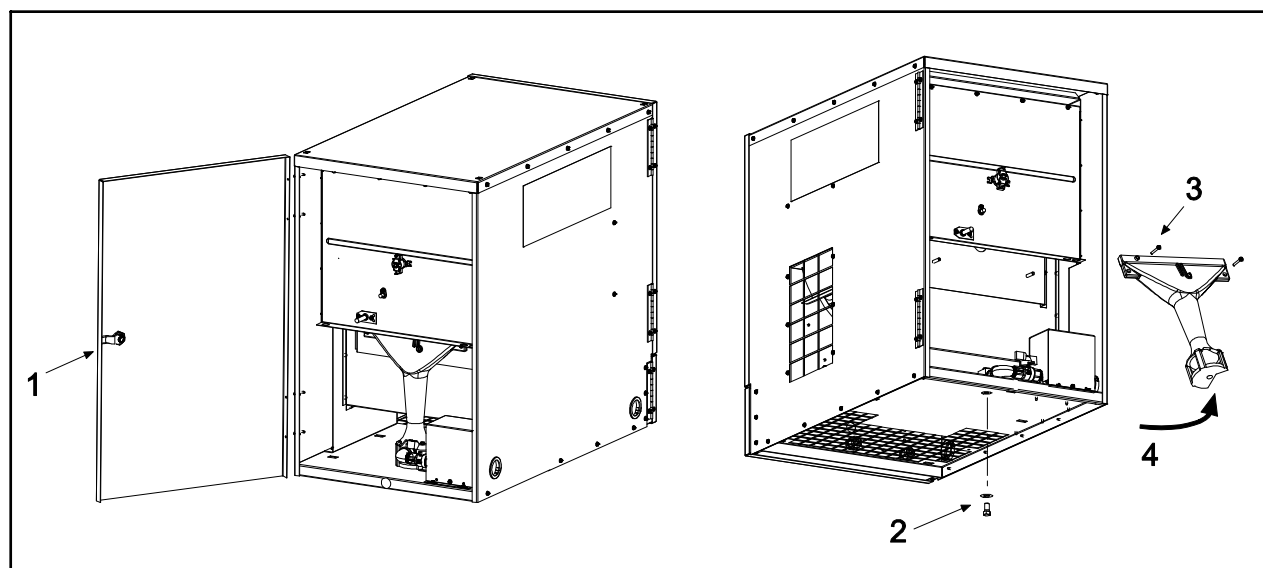
1. Rotate the latching knob and open the large size door at the burner/gas valve compartment.
2. Remove the (1) sheet metal screw from the gas valve cover panel and remove it.
3. Disconnect the gas piping from the inlet side of the gas valve.
4. Disconnect the wiring from the gas valve terminals.
5. Remove the machine screw and washer from the bottom of the heater that is securing the main burner and orifice holder block. Remove the complete gas valve assembly from the heater.
6. Remove the main burner orifice from the orifice holder block.
7. Remove gas valve from the assembly.
8. Replace the orifice and gas valve in reverse order. The gas valve must be aligned straight with the orifice holder block to allow proper installation into the heater. Note: After replacing the gas valve, check the gas pressures and perform a gas leak test in accordance with Section 8.0.



14.9) REMOVAL OF MAIN BURNER – ALL MODELS

Replacement procedure:

1. Rotate the latching knob and open the large size door at the burner/gas valve compartment. Remove the gas valve as described in 14.9
2. Remove the screw attaching the ground wiring onto the burner.
3. For Pilot models disconnect the pilot assembly from the main burner by removing the wing screw.
4. Remove the machine screw and washer from the bottom of the heater that is securing the main burner and orifice holder block.
5. Remove the (2) long screws that attach the burner. The spacers located between the burner and mounting plate must be retained for re-installation.
6. Start by pulling the burner foot out first. Care must be given not to disturb the spark or hot surface ignitor and flame sensor.
7. Replace these in reverse order. Perform a gas leak test in accordance with Section 8.0. Repeat lighting and shutdown procedures in accordance with Section 10.0 to ensure proper burner ignition.



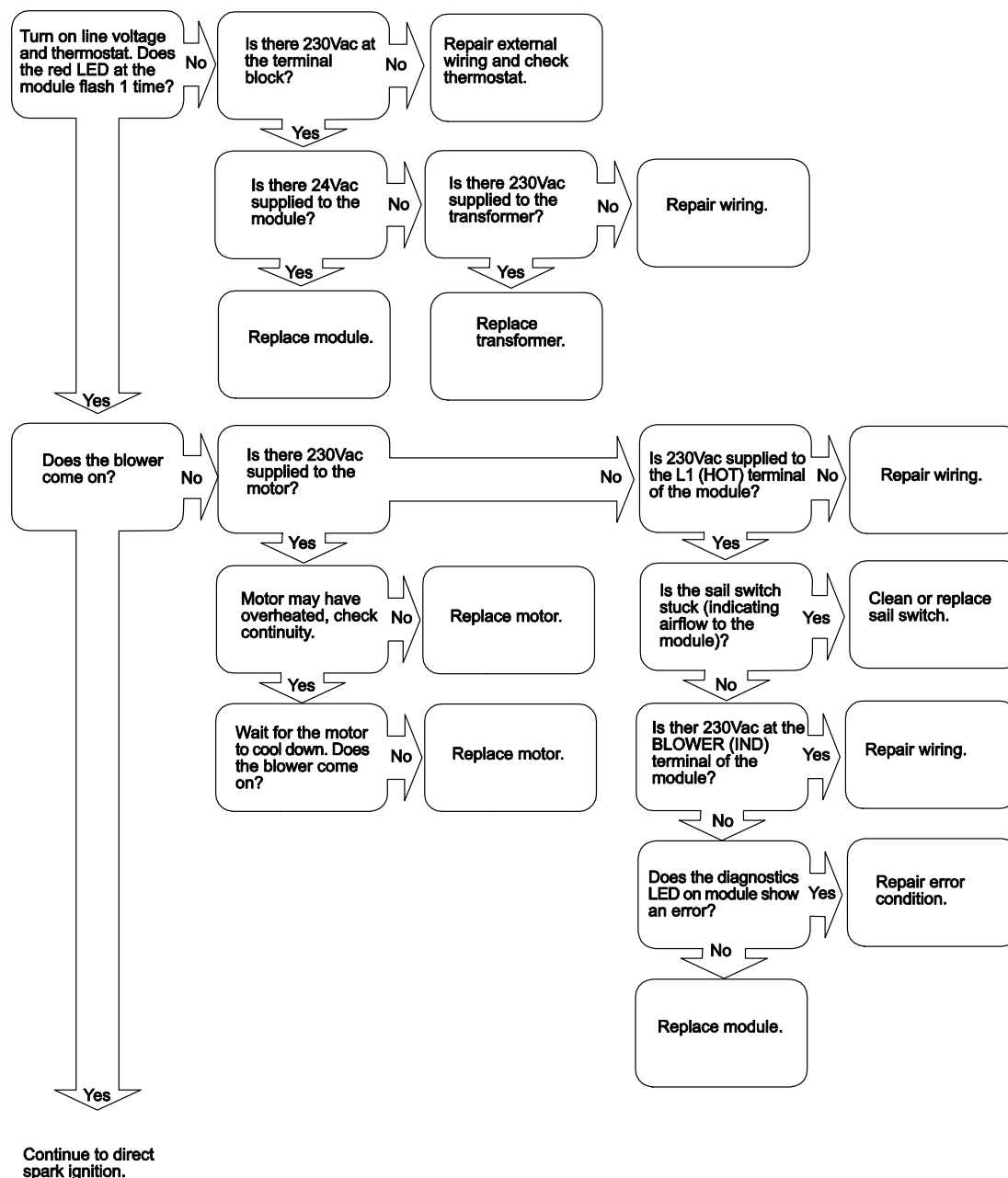
15.0) GAS TYPE CONVERSION

Conversion procedure:

1. Remove the gas train assembly as described in section 5.8)
2. Remove the orifice as described in 5.8) 6.
3. Install new orifice for the different gas type. See section 5.0) SPECIFICATIONS and section 18.0) REPLACEMENT PARTS GUIDE.
4. Reinstall gas train assembly as described in section 5.8)
5. Attach conversion label to heater.
6. Commission heater and adjust gas valve pressures as per section 8.0)

16.0) TROUBLESHOOTING

16.1) TROUBLESHOOTING CHART – DSI

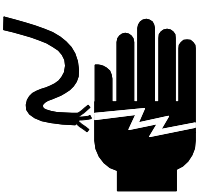


CONTINUE TO DIRECT SPARK IGNITION (DSI)

16.2) TROUBLESHOOTING CHART – DSI



17.0) REPLACEMENT PARTS GUIDE

⚠ WARNING	
	<p>ELECTRIC SHOCK & EXPLOSION HAZARD</p> <p>Disconnect electrical power and gas supply before servicing.</p> <p>Failure to do so may result in death or serious injury.</p>

Only use genuine KROMSCHROEDER SA replacement parts. Parts are available from the factory for replacement by a licensed person. Refer to the Replacement Parts Guide in Section 17.0) for all replacement parts.

MODELS USED ON: VF80CE (DSI) - LP & NG

MODEL SUFFIXES

Item No.	Part No.	Description	DSI
1	02174120	Screw Pan Head Machine #6-32 x 3/4"	1
2	02127010	Nut Hex #6-32	1
3			
4			
5			
6	50000090	Nut Caged Plain Steel 1/4-20	4
7	44602010	Housing Top 250K Heater	1
8	02132080	1/8 x .294 steel body rivet	42
9	50000430	Latch Slotted Cam	2
10	44602020	Door 250K Heater Motor Compartment	1
11	50000540	Hinge Heater Doors	4
12	44602030	Door 250K Heater Burner Compartment	1
13	44596010	Baffle Flame 250K Heater	1
14	44596020	Duct Flame 250K Heater	1
15	44596030	Chamber Flame	1
16	44596040	Duct Wall Flame 250K Heater	1
17	44596050	Plate Burner Mounting Heater 250K	1
18	50000100	Bolt Carriage 10-24 7 1/2" W/Short Square 302 SS	2
19	50000250	Nut Hex Serrated Flange #10-24 SS	2
19a	02167040	Nut Hex #8-32 SS	2
20	44597010	Plate Blower Wheel Assembly 250K Heater	1
21	44597020	Venturi Blower Wheel Assembly 250K Heater	1
22	44597030	Housing Blower Wheel 250K Heater	1
23	44597040	Plate Blower Wheel Outlet Top 250K Heater	1
24	44598500	Plate Mounting Motor 225-250M BTU Heater	1
25	50000760	Motor 1/4 HP 1100 RPM 240V 1 Ph 50 Hz 48Y Frame	1
26	50000690	Wheel Blower 10-3/4 x 6 CCW	1
27	50000050	Connector Liquid Tight Nylon 1/2"	1
28	50000180	Screw Sheet Metal #8 X 3/8" 410 SS Slotted Hex Head	4
29	50000200	Screw Sheet Metal #8 X 3/4" HWH Slotted 410 SS	7

Model Velocity VF80CE



30	03946030	Sealing Strip 1/8" x 3/8"	2
31	30739010	Terminal Block Heater – 6 Pole (CE)	1
32	50000120	Ground screw #10 x 3/4"	1
33	30632560	Module, Fenwal #35-615305-595 DSI Box Heater	1
34	50000420	Plug V-0 Liquid Tight .500 Heyco	1
35	50000430	Latch Slotted Cam	1
36	30279860	Transformer 240/24V 60 Hz At 20VA (Hartland #HCT-09C0AA01)	1
36a			
37	50000540	Hinge Heater Doors	1
38	44599000	Housing Control 250K Heater Assembly	1
39	44599520	Cover Control Housing 250K Heater	1
40	44450120	Harness Direct Spark Heater Wiring – not shown-	1
41	50000660	Harness Control Box Power Wiring – not shown-	1
42			
43	50000010	Screw Machine #4-40 x 3/4" Phillips Drive Pan Head Zinc	2
44	50000020	Nut 4-40 Hex Head Zinc	6
45	44600030	SAIL SWITCH SUB-ASSEMBLY - CE	1
46	44600050	Mount Air Proving Switch Heater	1
47	44600060	Cover Air Proving Switch Heater	1
48	50000170	Elbow 90 Degree Street 1/2"F x 4/2"M	1
49	50000060	Nipple Black 1/2" X 2"	2
50	50000080	Nipple 1/2" X 1-1/2" Full Thread Standard Wall	1
51	30797030	Valve Gas DSI LP SIT @ 24.9 mbar - NG SIT @ 10.0 mbar	1
52	44450140	Wire Harness – w/5 Pole Connector (3 wire)	1
53	50000480	Orifice Burner 250L LP	1
54	50000470	Orifice Burner 250M NG	1
55	50000490	Manifold Gas Assembly 250K Heater	1
56	50000500	Valve Heater Modulating 1/2"FPT 1/4 Turn	1
56a	50000510	Valve Heater Modulating NG 1/2" NPT	1
57	44601520	Bracket Gas Valve (SIT) 250K Heater	1
57a	50000040	Bolt Hex Cap 3/8-16 X 3/4" Zinc	1
58	50000180	Screw Sheet Metal #8 X 3/8" 410 SS Slotted Hex Head	84
59	4267020	Screw Machine M4 x 6mm Pozi-Pan Head	2
59a	50000210	Screw Sheet Metal #8 X 1-1/2" HWH Slotted 410 SS	2
60	50000230	Spacer Round 1/4" x .166 x 1.00, 18.8SS	2
61	50000240	Washer Lock 3/8" Grade 9 Zinc Plated	1
62	50000120	Ground screw #10 x 3/4"	1
63	30216070	Electrode Assembly – DSI Heater (PSE-GF39)	1
64	50000310	Strain Relief Bushing .625 Heyco	1
65	50000330	Sight Glass Clear 1.00 Heyco	1
66	50000360	Bushing 1.75 Heyco	2
67	50000380	Plug .875 Heyco	1
68	50000390	Bushing Plastic .75" Hole With Fingers Black	1
69	50000450	Switch High Limit 350F Manual Reset	1
70	50000460	Burner Cast Iron HS Heater	1
71	50000520	Sensor Flame 3.875" Straight	1
72	44602040	Plate Base 250K Heater Assy	1
73	44602080	Housing Output Side 250K Heater	1

Model Velocity VF80CE



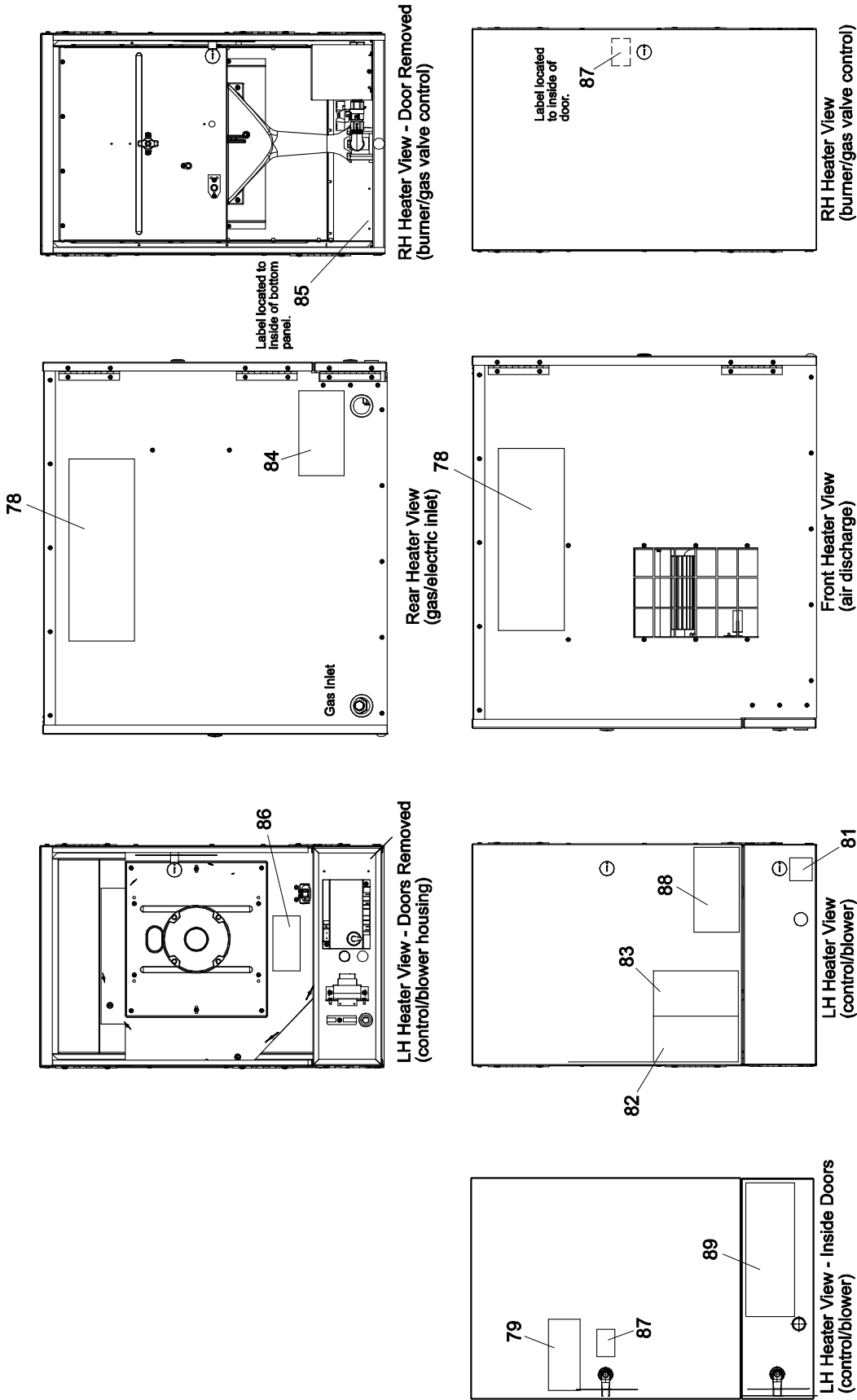
74	44602060	Housing Side 250K Heater	1
75	44601530	Cover Gas Valve 250K Heater	1
76	50000320	Clamp Cable Nylon .390 Heyco –not shown-	-
77	43539470	MANUAL (not shown)	1
78	42013149	Logo, KROMSCHROEDER “VELOCITY”(UK)	2
79	43311290	Label, Nameplate	1
80	44593930	Label Kit – DSI UK (not shown)	1
81	43269730	Label, Symbol – Voltage Danger (230V)	1
82	44593010	Label, Combination Hazards & Ventilation	1
83	44593020	Label, Wash-Down Hazards	1
84	44593039	Label, Electrical Grounding	1
85	44593049	Label, Variable Heat Adjustment	1
86	44593059	Label, Blower Rotation	1
87	44593069	Label, Access Panel (closed)	1
88	44593160	Label, Lighting/Shutdown – DSI UK	1
89	44593600	Label, Wire Diagram – DSI UK	1
90	44603000	CARTON (not shown)	1

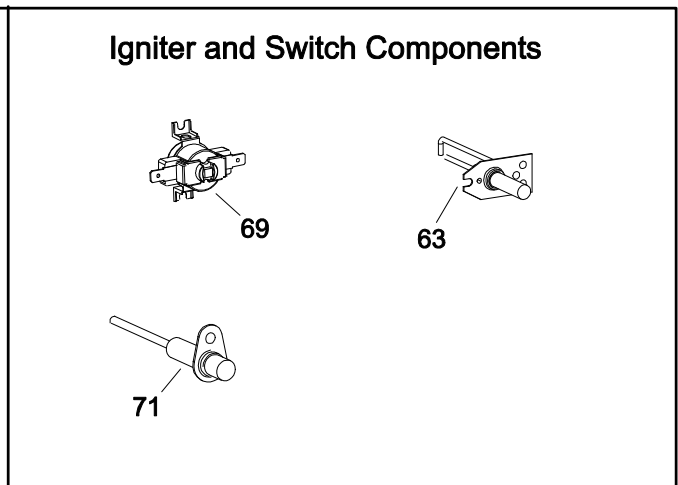
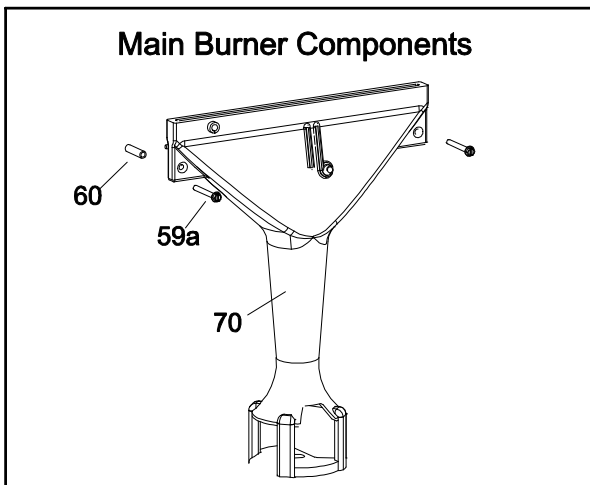
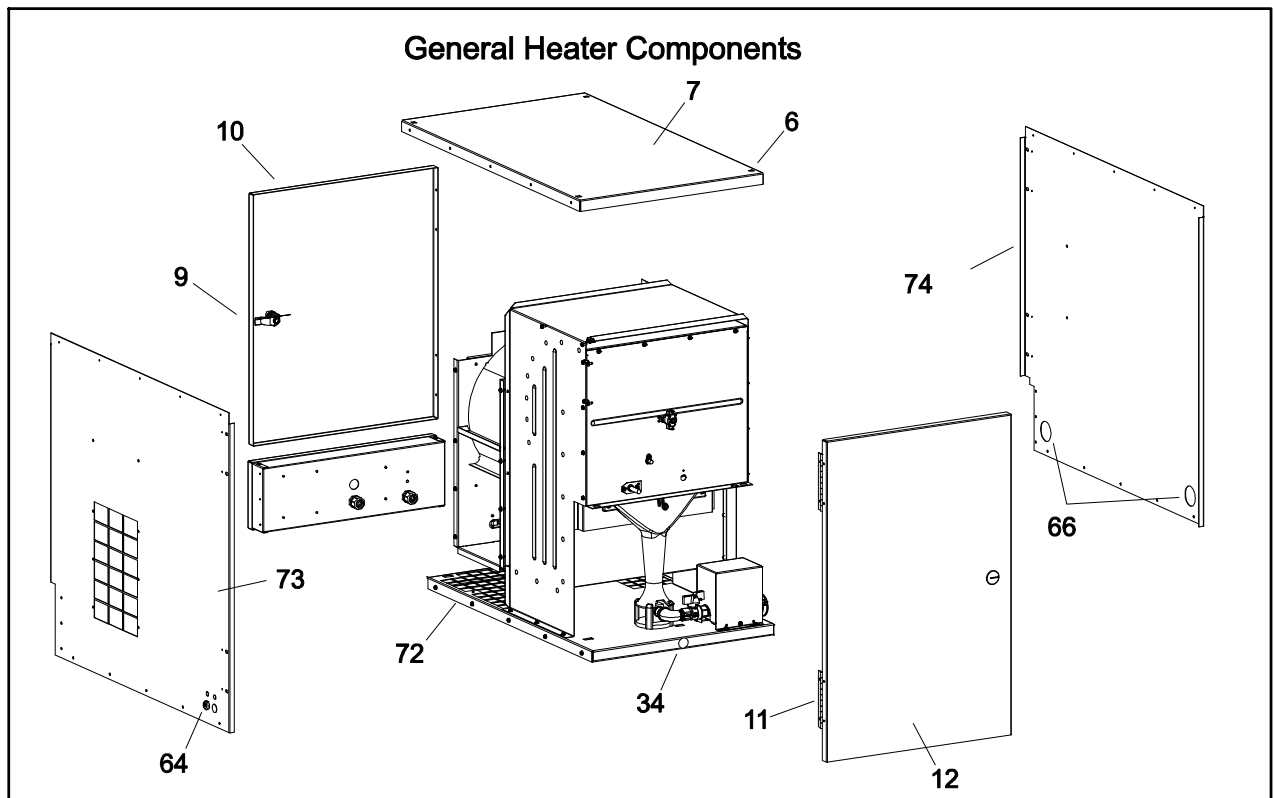
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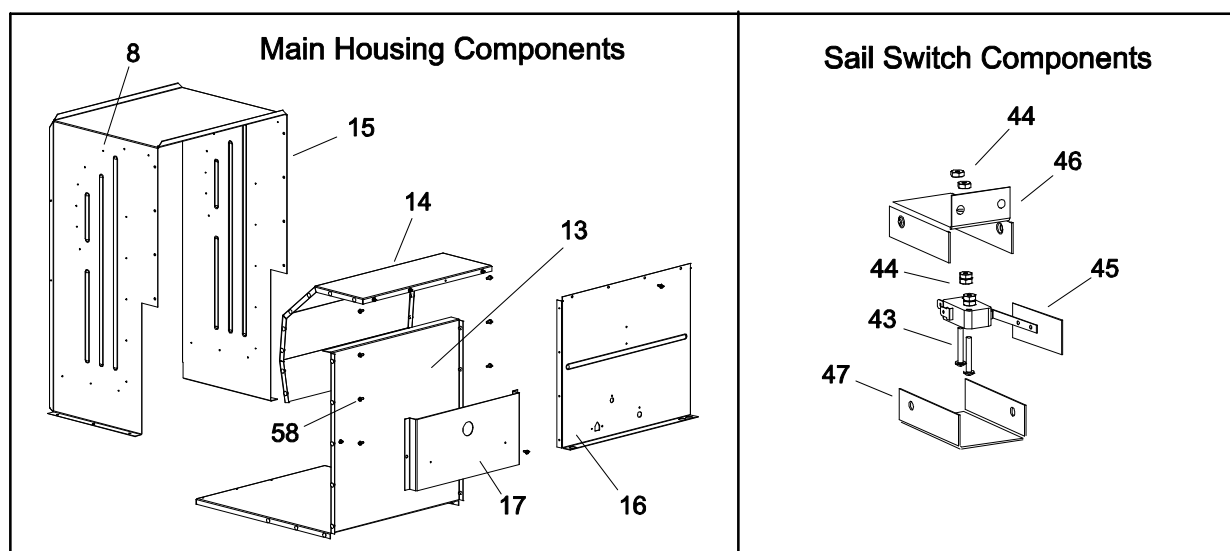
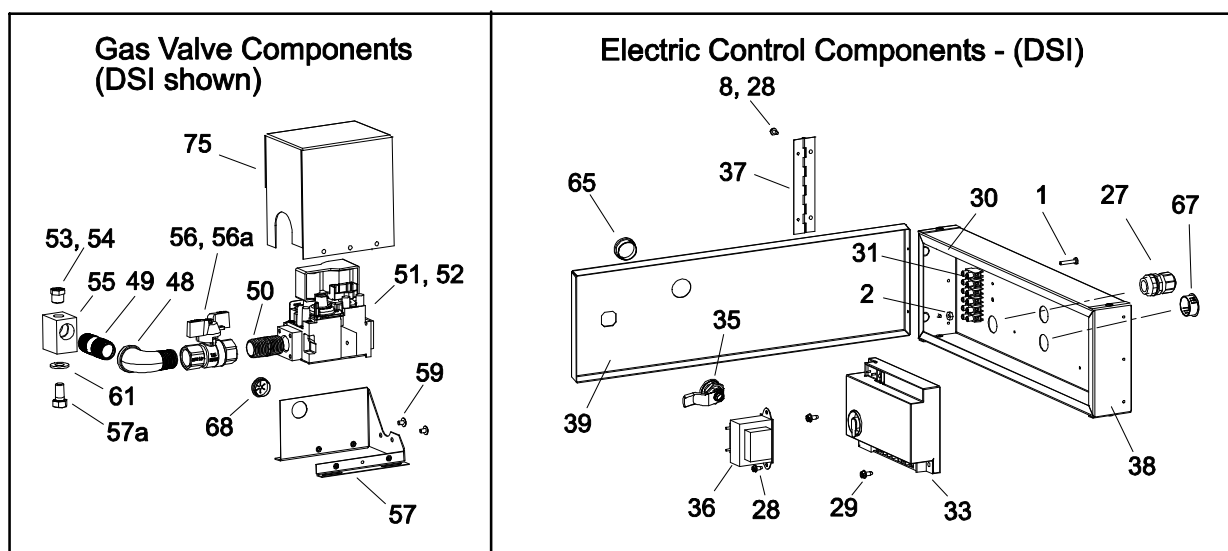
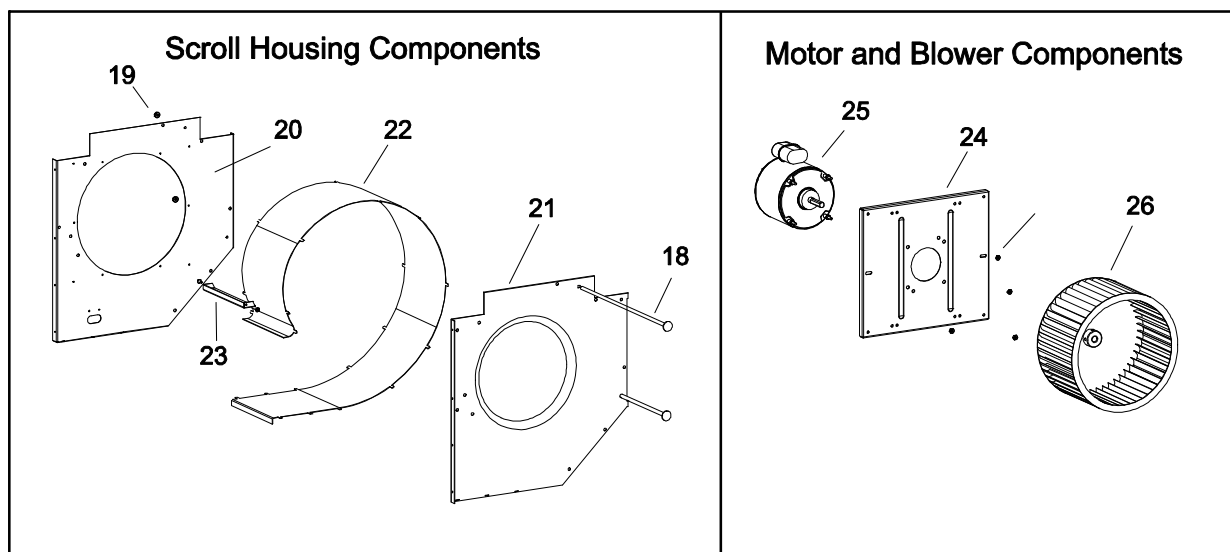
- 1) Screws, Nuts and Washers are standard hardware items and can be purchased at any local hardware store.
- 2) Please order by PART NUMBER – not by Item Number.
- 3) Replacement Part Prices are available when ordering.
- 4) Please refer to complete Model Number when ordering.

ALL ILLUSTRATIONS ARE INTENDED TO GIVE THE GENERAL IMPRESSION OF UNITS ONLY. WE RESERVE THE RIGHT TO ALTER ANY SPECIFICATION WITHOUT NOTICE.

Label Locations







18.0) WARRANTY**KROMSCHROEDER SA PRODUCTS LIMITED WARRANTY****LIMITED WARRANTY**

KROMSCHROEDER SA, the manufacturer, warrants the original owner of any KROMSCHROEDER SA Poultry Heating Product that it will be free from defects in material or workmanship under normal use and service. The heater(s) shall be installed, used and maintained strictly in accordance with the manufacturer's instructions. The manufacturer's sole obligation under this warranty is limited to furnishing replacement parts for 12 months from the date of shipment by the manufacturer. Labor charges for the removal of defective parts or the installation of replacement parts is not included.

WARNING: Manufacturer's warranty shall not apply and KROMSCHROEDER SA is not responsible for damages caused with regard to: (a) circumstances where gas pressure to each heater is higher than that specified for each heater; (b) circumstances where the type of gas is different than the type of gas noted on the name plate for each heater; (c) water damage to gas controls; (d) circumstances where any acid or acid-based product causes damage to the metal components; or (e) any heater or component part which has been repaired or replaced with other than factory parts, modified in any way, misused or damaged, or which has been used contrary to the manufacturer's written instructions.

LIMITATION OF WARRANTY: THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. WITHOUT LIMITING THE FOREGOING, THE MANUFACTURER EXPRESSLY EXCLUDES ANY AND ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY OF MERCHANTABILITY FOR ITS PRODUCTS.

If any provision of this warranty is found to be void, unenforceable or unconscionable, then that portion is hereby severed and the remainder of this warranty is hereby saved and shall remain in force.

EXCLUSIVE REMEDY: The sole and exclusive remedy under this warranty is the replacement of the defective parts or brooders as hereinabove specified. THE MANUFACTURER DOES HEREBY EXPRESSLY EXCLUDE ANY AND ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER THIS OR ANY OTHER WARRANTY. Without intending to limit the aforesaid exclusion, THE MANUFACTURER DOES HEREBY EXCLUDE ANY LIABILITY UNDER THIS OR ANY OTHER WARRANTY FOR INJURIES OR COMMERCIAL LOSSES TO PROPERTY THAT RESULT FROM THE OPERATION, PROPER OR IMPROPER, OF ITS PRODUCTS.

Model Velocity VF80CE



ADDITIONAL TERMS: Manufacturer assumes no liability for delay in performing its obligations under this warranty. Manufacturer assumes no liability for failure in performing its obligations there under if failure results directly or indirectly from any cause beyond its control, including but not limited to acts of God, acts of Government, floods, fires, shortages of materials, strikes and other labour difficulties or delays or failures of transportation facilities.

This is a Non-Residential product. Installation and service shall be by a registered Contractor and in accordance with National and Local standards.

When presenting warranty claims, proof of date of purchase must be submitted.

No Representative is authorized to assume for the manufacturer, any liability except as set forth above.

FOR YOUR RECORDS:

Kromschroeder SA Brooder Model Number: _____ Date Installed: _____

Serial Numbers: _____

For spare parts, contact your local dealer or **Kromschroeder SA** directly.

Kromschroeder SA.
Santa Eulalia, 213 - 08902 L'Hospitalet de Llobregat - Barcelona - España
Phone: +34 93 432 9600 Fax: +34 93 422 0090 -
E-mail: info@kromschroeder.es www.kromschroeder.es