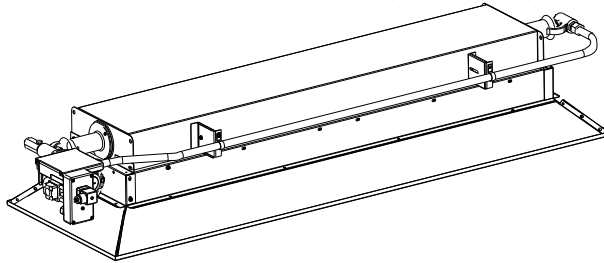


SPACE-RAY

Overhead Radiant Plaque Heaters INSTALLATION, SERVICING AND OPERATING INSTRUCTIONS

OWNER / INSTALLER: For your safety this manual must be carefully and thoroughly read and understood before installing, operating or servicing this heater.

SRP (DBI) SERIES MODELS: SRP08, SRP15, SRP22, SRP30



!INSTALLER: This manual is the property of the owner. Please present this manual to the owner when you leave the job site.

▲WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury or death. Read the installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.

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

In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain the required clearances from the heater to the combustibles. Signs must either be posted adjacent to the heater thermostats or in the absence of such thermostats, in a conspicuous location.

▲WARNING NOT FOR RESIDENTIAL USE.

This heater is not approved in any residential application. This includes (but is not limited to) the home, living quarters, attached garages, etc. Installation in residential indoor spaces may result in property damage, asphyxiation, and serious injury or death.

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! WHAT TO DO IF YOU SMELL GAS:

- ! DO NOT try to light any appliance. Extinguish any open flame. Open windows.
- ! 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.

▲WARNING:

- ◆ Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- ◆ If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.
- ◆ DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

1) SAFETY

This heater is a self-contained infrared radiant ceramic 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.



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) 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 40kg.
- Supply the owner with a copy of these Installation and Operation Instructions.
- Ventilation Gravity or mechanical means shall be provided to supply at least 10m³/h of exhaust air per kw of operating heat input.
- 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.

3) GENERAL INFORMATION

This heater is a self-contained infrared radiant plaque heater for use in locations where flammable gases or vapors are not generally present and is intended for space heating **non-residential spaces**.

SAFETY REQUIREMENTS

- ! The heater area must be kept clear and free from combustible materials, gasoline and other flammable vapors and liquids.
- ! This heater is designed for use with one type of gas (LPG or Natural). Make sure that the type of gas to be supplied to this heater matches that shown on the heater rating plate.
- ! **DO NOT** install this heater directly onto an LPG container or propane cylinder without directions from your propane company. LPG containers (propane cylinders) must not be stored indoors or in the vicinity of any gas-burning appliance.
- ! Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burns or clothing ignition.
- ! Clothing or other flammable materials should not be hung from the heater or placed on or near the heater.
- ! Young children should be carefully supervised when they are in the same space as the heater.
- ! **NEVER** attempt to service the heater while it is plugged in, operating or hot. Any guard or other protective device removed for servicing a heater must be replaced prior to operating the heater.
- ! Installation and repair should be done by a qualified service person. The heater should be inspected before use and at least annually by a qualified service person. More frequent cleaning may be required as necessary. It is imperative that the control compartment, air passageways and burner of the heater be kept clean.

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 7671:2001), BS 6896:2005 (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 **INDOOR INSTALLATION ONLY** and is used in **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.

These instructions are only valid if the following country code is on the appliance **GB** or **IE**. If this code is not present on the appliance, it is necessary to refer to the technical instructions which will provide the necessary information concerning the modification of the appliance to the conditions of use for the country.

Although these heaters may be used in many applications other than space heating (e.g., process heating), Space-Ray 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.

For optimum temperature control, do not locate thermostats in shaded or draughty locations outside the area to be heated. The sensor should also be shielded from direct radiation to prevent short cycling of the heater.

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 this manual and on the heater at all times.

4) MINIMUM CLEARANCES TO COMBUSTIBLES

⚠ WARNING		
		FIRE AND EXPLOSION HAZARD Combustible material must be located outside the clearance dimensions listed. Failure to do so may result in death, serious injury or property damage.

⚠ WARNING		
		FIRE AND EXPLOSION HAZARD Always maintain minimum clearances and post signs where needed. Signs should state the hazards for the particular application and be legible to the building occupants. Consult the factory or a factory representative for additional information on signage compliance. Failure to do so may result in fire and/or explosion, property damage, serious injury or death.

For maximum safety the building must be evaluated for hazards before installing the heater system. Examples include, but are not limited to:

- Gas and electrical lines
- Combustible and explosive materials
- Chemical storage areas
- Areas of high chemical fume concentrations
- Provisions for accessibility to the heater
- Adequate clearances around the openings
- Combustion and ventilating air supply
- Vehicles parking areas
- Vehicles with lifts or cranes
- Storage areas with stacked materials
- Lights
- Sprinkler heads
- Overhead doors and tracks
- Dirty, contaminated environment

A critical safety factor to consider before installation is the clearances to combustible materials. Clearance to combustibles is defined as the minimum distance you must have between the infrared surface, or reflector, and the combustible item. Considerations must also be made for moving objects around the infrared heater. The following is a partial list of items to maintain clearances from:

Combustible Items Include:

- Wood
- Paper
- Fabric
- Chemicals
- Wall or roof insulation

Moving Objects Include:

- Overhead doors
- Vehicles on lifts
- Cranes
- Hoists
- Car wash equipment

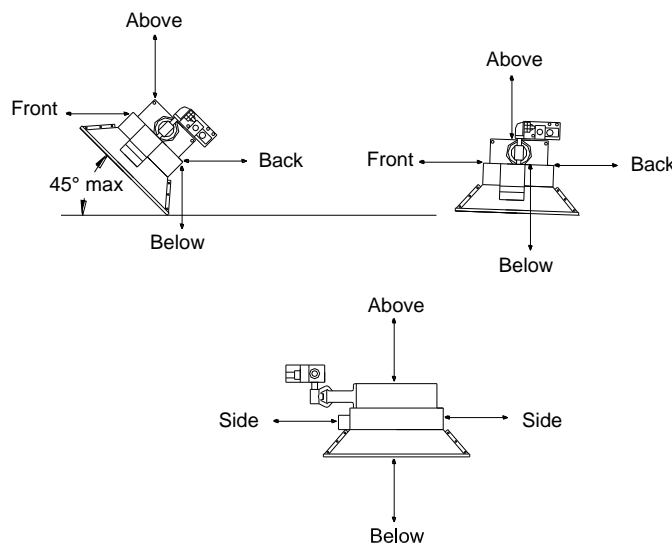
When installing the infra-red heater system, the minimum clearances to combustibles must be maintained. These distances are shown in Chart below and on the heater. If you are unsure of the potential hazards, consult your local fire marshal, fire insurance carrier or other qualified authorities on the installation of gas fired infra-red heaters for approval of the proposed installation.

Minimum clearances shall be measured from the outer surfaces as shown below:

Table 1

MODEL	HORIZONTAL		45°		ABOVE	BELOW	SIDE
	FRONT	BACK	FRONT	BACK			
SRP08	610mm	610mm	865mm	205mm	915mm	1220mm	610mm
SRP15	915mm	915mm	1830mm	305mm	915mm	2590mm	1145mm
SRP22	1145mm	1145mm	2085mm	305mm	915mm	2975mm	1270mm
SRP30	1375mm	1375mm	2365mm	305mm	915mm	3355mm	1525mm

Fig. 1



NOTE: The clearance to combustible materials noted above must be maintained at all times and the same clearance distances must be adhered to from any other materials that may be damaged by temperatures 90° F above the ambient temperature. It is the installer’s responsibility to ensure that building materials with a low heat tolerance (such as plastic, vinyl siding, canvas, tri-ply etc.) which may degrade at lower temperatures are protected to prevent degradation. Clearances to combustibles are posted on the reflector near the control end of the heater.

⚠ WARNING INSTALLER

In locations used for storage of combustible materials where they may be stacked below the heater, NFPA 54 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.” Space-Ray recommends posting these signs adjacent to the heater thermostat or other suitable location that will provide enhanced visibility. It is important to provide warnings to alert individuals of potential hazards and safety actions. Posted signs should state the hazards for the particular application and be legible to building occupants.

⚠ WARNING Fire sprinkler heads must be located at an appropriate distance from the heater. This distance may exceed the published clearance to combustibles. Certain applications will require the use of high temperature sprinkler heads or relocation of the heaters.

Sprinkler systems containing propylene glycol or other flammable substances are not to be used in conjunction with this heater without careful consideration for and avoidance of potential fire or explosion hazards. For further information consult NFPA 13. Always observe applicable state and local codes.

5) TECHNICAL DATA

Table 2

MODEL	SRP08-N	SRP08-L
Heat Input	7.6kW (Hs) 6.84kW (Hi)	7.6kW (Hs) 6.84kW (Hi)
Appliance Type	A ₁	A ₁
Appliance Cat.	I _{2H}	
Adjusted for	2H G20 20mbar	
Setting Pressure	12.0mbar	
Injector	Ø2.2mm	
Pre-Injector	None	None
NOx Class		
Electrical Supply	230v~50Hz 25W	
Fuse Externally	3A	
Dimensions	L = 0.645m W = 0.428m H= 0.325m	
Weight	6.0kg	
Gas Connection	Rc - ½	

Table 3

MODEL	SRP15-N	SRP15-L
Heat Input	15.2kW (Hs) 13.68kW (Hi)	15.0kW (Hs) 13.5kW (Hi)
Appliance Type	A ₁	A ₁
Appliance Cat	I _{2H}	I ₃₊
Adjusted for	2H G20 20mbar	3+ G30/G31 29/37mbar
Setting Pressure	12.0mbar	None
Injector	Ø3.1mm	Ø1.9mm
Pre-Injector	None	None
NOx Class		
Electrical Supply	230V ~ 50Hz 25W	
Fuse Externally	3A	
Dimensions	L = 0.925m W = 0.435m H = 0.325m	
Weight	11.0kg	
Gas Connection	Rc - ½	

Table 4

MODEL	SRP22-N	SRP22-L
Heat Input	21kW(Hs) 18.9kW (Hi)	21kW(Hs) 18.9kW (Hi)
Appliance Type	A ₁	A ₁
Appliance Cat	I _{2H}	
Adjusted for	2H G20 20mbar	
Setting Pressure	15.0mbar	
Injector	Ø3.4mm	
Pre-Injector	None	None
NOx Class		
Electrical Supply	230V ~ 50Hz 25W	
Fuse Externally	3A	
Dimensions	L = 1.205m W = 0.435m H = 0.325m	
Weight	14.0kg	
Gas Connection	RC - ½	

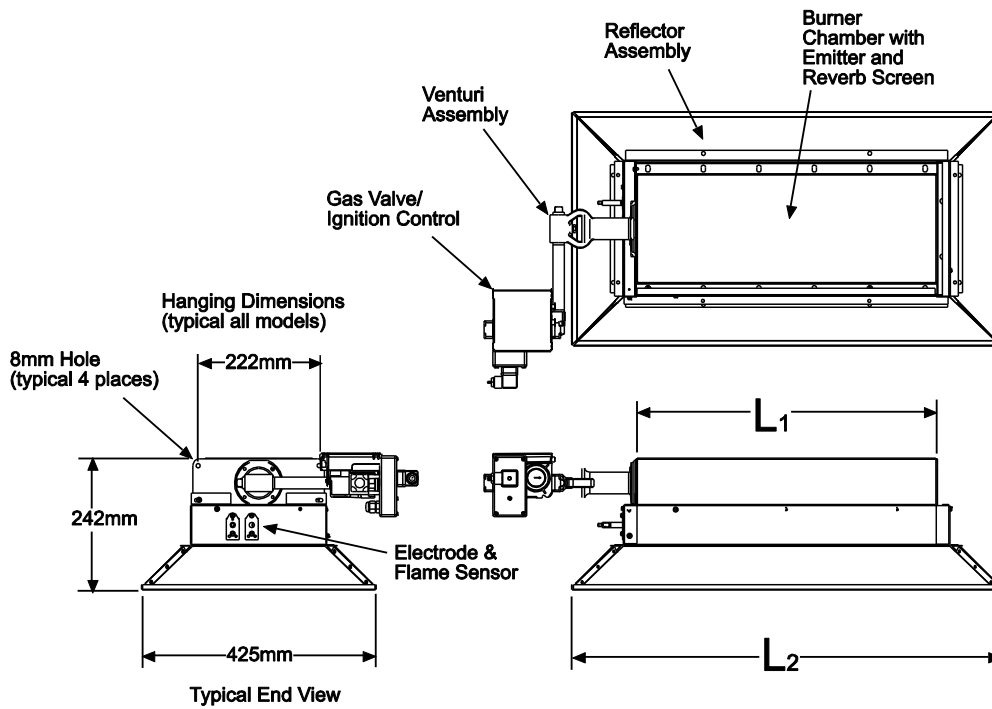
Table 5

MODEL	SRP30-N	SRP30-L
Heat Input	30.4kW (Hs) 27.36kW (Hi)	30.0kW (Hs) 27kW (Hi)
Appliance Type	A ₁	A ₁
Appliance Cat	I _{2H}	I ₃₊
Adjusted for	2H G20 20mbar	3+ G30/31 29/37mbar
Setting Pressure	12.0mbar	None
Injector	2 x Ø3.1mm	2 x Ø1.9mm
Pre-Injector	None	None
NOx Class		
Electrical Supply	230V ~ 50Hz 25W	
Fuse Externally	3A	
Gas Connection	Rc - ½	
Reflector	Deep	
Dimensions	L = 1.455m W = 0.435m H = 0.325	
Weight	24.0kg	
Reflector	Parabolic	
Dimensions	L = 1.475m W = 0.540m H = 0.550m	
Weight	28kG	

Table 6

MODEL	SRP30 Hi/Lo-N	SRP30 Hi/Lo-L
Heat Input	30.4kW/15.2kW (Hs)	30.0kW/15.0kW (Hs)
Appliance Type	A ₁	A ₁
Appliance Cat	I _{2H}	I ₃₊
Adjusted for	2H G20 20mbar	3+ G30/G31 29/37mbar
Setting Pressure	12.0mbar	None
Injector	2 x Ø3.1mm	2 x Ø1.9mm
Pre-Injector	None	None
NOx Class		
Electrical Supply	230V ~ 50Hz 25W	
Fuse Externally	3A	
Gas Connection	RC - ½	
Reflector	Deep	
Dimensions	L = 1.455m W = 0.435m H = 0.325m	
Weight	24.0kg	
Reflector	Parabolic	
Dimensions	L = 1.475m W = 0.540m H = 0.550m	
Weight	28.0kg	

6) DIMENSIONS – Models SRP08, SRP15, SRP22



Model	L1	L2
SRP08	278mm	506mm
SRP15	553mm	781mm
SRP22	827mm	1056mm

Fig. 2

6.1) DIMENSIONS – Models SRP30

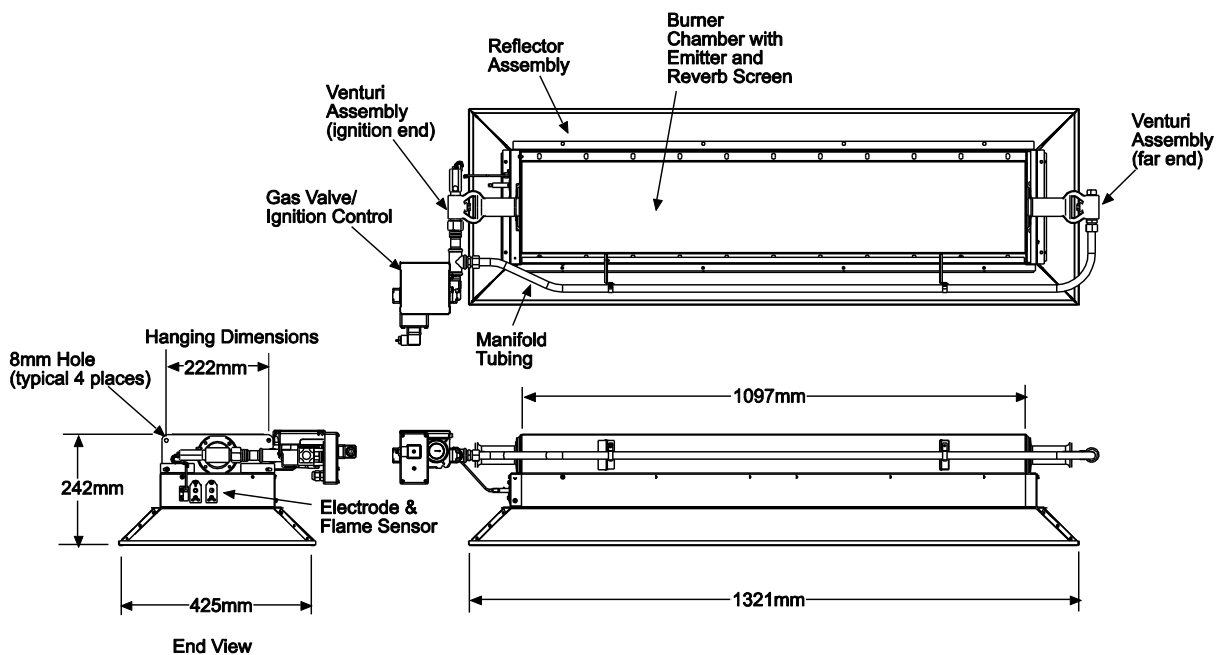


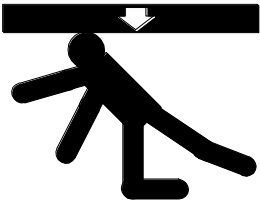
Fig. 3

7) UN-PACKING

The appliance is supplied in a carton, assembled complete and ready for installation. Any optional equipment supplied is packed inside the carton also.

8) INSTALLATION

Notwithstanding their limited scope, the appliance should be installed in accordance with the relevant provisions of any National Gas Safety (Installation and Use Regulations). Due account should also be taken of any obligations arising from any National Health and Safety at Work Regulations, National and Local Building Regulations and National Electrical Wiring Regulations. The appliance must be installed, and where necessary, converted for use on other gases, by a qualified installer.

⚠ WARNING	
	SUSPENSION HAZARD Always suspend from a permanent part of the building structure that can support the total force and weight of the heater. Never use the heater to support a ladder or other access equipment. Improper suspension of the infrared heater may result in collapse and being crushed. Failure to do so may result in death, serious injury or property damage.

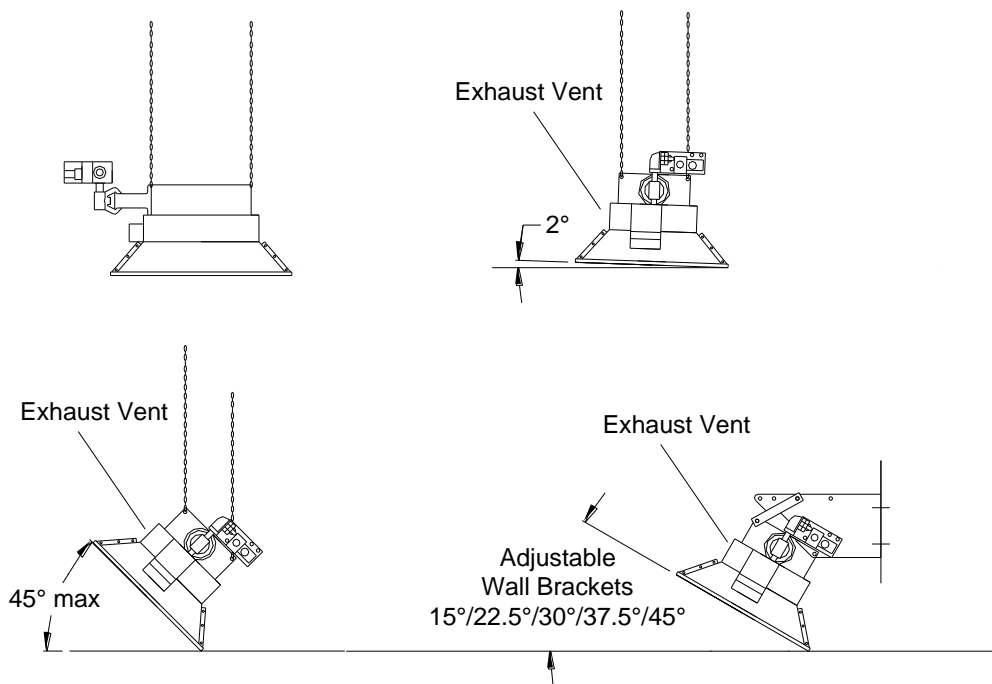
A. Suspension

1. The appliance should be located with respect to building construction and other equipment, to permit access to the appliance for servicing etc.
2. For suspending the appliance, it is recommended that suitable protected welded chain (ø3mm x 65 links/m) or ø6mm (minimum) mild steel drop rods and suitable brackets are used. Attach the chains or drop rods to the 4 holes located at each corner of the appliance plenum body, by use of M8 screws and nuts. Providing at least ø5mm closed link hooks are used, chains may be attached directly to the 4 holes in the appliance plenum body.
3. The appliance must be suspended with its longitudinal axis horizontal, but may have its lateral axis either horizontal or at an angle of up to 45° (maximum) from the horizontal, as shown in Fig. 4. below.

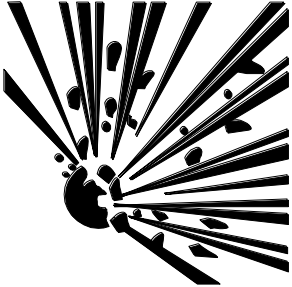
IMPORTANT: When suspended at an angle from the horizontal, the appliance **MUST** be positioned with the exhaust vent (located between the plenum body and reflector) along the higher side of the appliance.




4. The appliance may be mounted off a vertical surface also in which case it is recommended that use is made of the purpose designed pair of brackets that are available as optional equipment. The brackets provide for a range of mounting angles from the horizontal (15°, 22.5°, 30°, 37.5°, 45°) by virtue of adjustable straps attached to the surface mounted brackets.
5. The brackets should first be fixed to the vertical surface by means of 4 bolts (M8 minimum) through pre-formed holes in the brackets. Attach the brackets to the 4 holes located at each corner of the appliance plenum body by use of M8 screws and nuts.

Fig. 4



9) GAS SUPPLY

⚠ WARNING	
	<p style="text-align: center;">FIRE AND EXPLOSION HAZARD</p> <p>An approved connector, suitable for the environment of equipment usage, is required. Visible or excessive swaying, flexing and vibration of the gas connections must be avoided to prevent failure. Neither the gas pipe nor the connector shall be placed in the “flue discharge area”. In no case shall the gas supply support the weight of the heater.</p> <p>Failure to do so may result in death, serious injury or property damage.</p>

⚠ WARNING			
			<p style="text-align: center;">FIRE AND EXPLOSION HAZARD</p> <p>Tighten 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.</p> <p>Failure to do so may result in death, serious injury or property damage.</p>

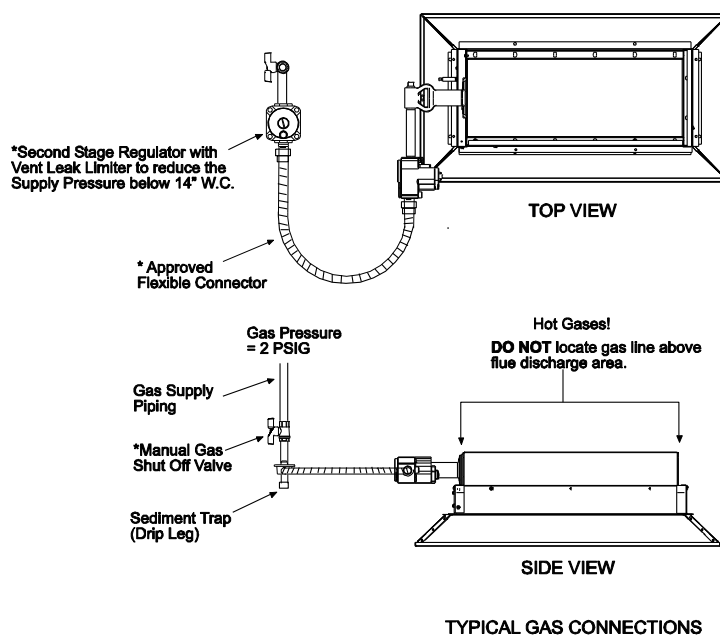
1. Natural Gas - G20 at 20mbar supply pressure (appliance cat 2H).

Maximum supply pressure (Pmax)-	25mbar
Minimum supply pressure (Pmin) -	17mbar
Setting Pressure	- 12.5mbar
Gas Connection	- Rc - ½

2. Gas pipe sizing must be calculated in accordance with local or National codes taking into account all gas appliances installed using the common gas supply. For assistance contact the distributor.
3. Installation pipes should be fitted in accordance with National and Local Regulations. Pipes of a smaller size than the appliance connection (Rc - ½) should not be used and the pipework must be designed to achieve a gas supply pressure between the maximum and minimum valves stated above, measured at the appliance inlet pressure test point.

A field installed manual shut-off valve must be installed in the gas piping to each brooder. This will allow service of individual heaters without having to shut down the entire gas supply system.

It is essential to provide a flexible metallic hose, which must conform to National or Local Regulations, to connect the appliance to the gas supply. Minimum size to be ½" (12.7mm) bore.



4. LPG - G30/G31 at 29/37mbar supply pressure (appliance cat 3+).

Maximum supply pressure (Pmax)	G30 - 35mbar
	G31 - 45mbar
Minimum supply pressure (Pmin)	G30 - 20mbar
	G31 - 25mbar

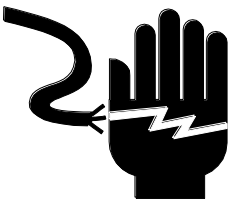
Note:- for appliances cat 3+, the governor is not operational.

Gas connection: Rc - ½.

5. The appliance should be connected to a permanent piped supply of LPG, with pipes of adequate size to achieve a gas supply pressure between the maximum and minimum valves stated above, measured at the appliance inlet pressure test point.
6. The complete installation MUST be tested for soundness in accordance with National or Local Regulations.

10) ELECTRICAL SUPPLY

⚠ WARNING



ELECTRIC SHOCK HAZARD

Disconnect electrical power and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

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

1. Direct Burner Spark Ignition: the electrical wiring to the appliance must be installed in accordance with the latest or current National Regulations and any Local Regulations which apply.

Electrical supply 230v ~ 50Hz 25W
 Current rating 0.11A
 Fuse externally 3A

2. Twin core and earth PVC covered flexible supply cable (0.5mm² - to National or Local standard specification) must be used, with connections made as shown in Fig. 5.
3. SRP30 Hi/Lo models only.
 Three core and earth PVC covered flexible supply cable (0.5mm² - to National or Local standard specification) must be used, with connections made as shown in Fig. 6.

SRP 08, 15, 22 & 30

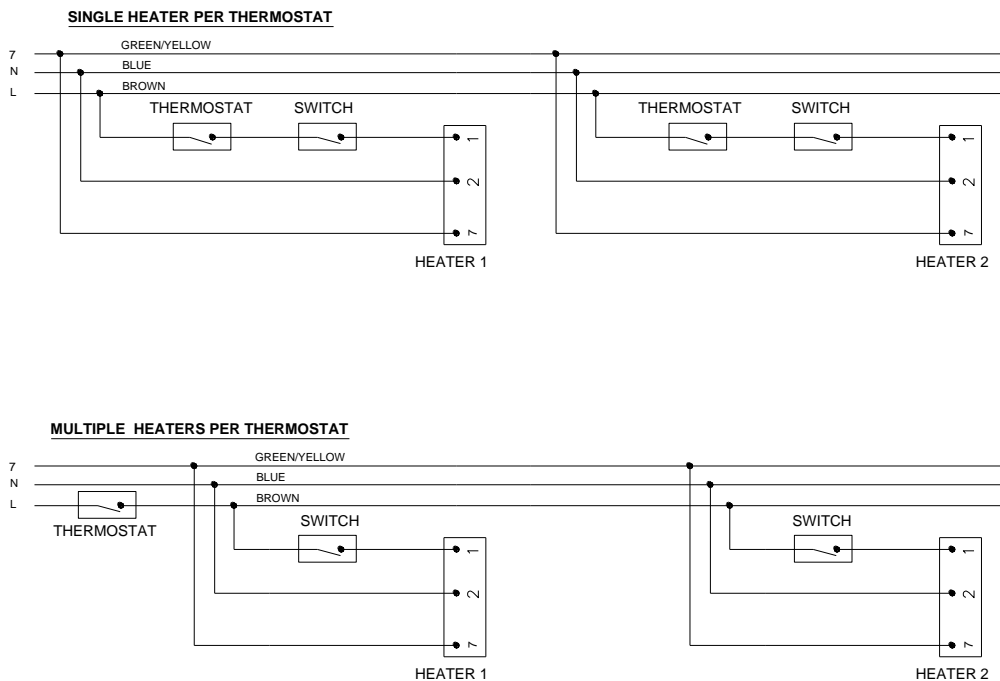


Fig.5

SRP 30 HI/LO

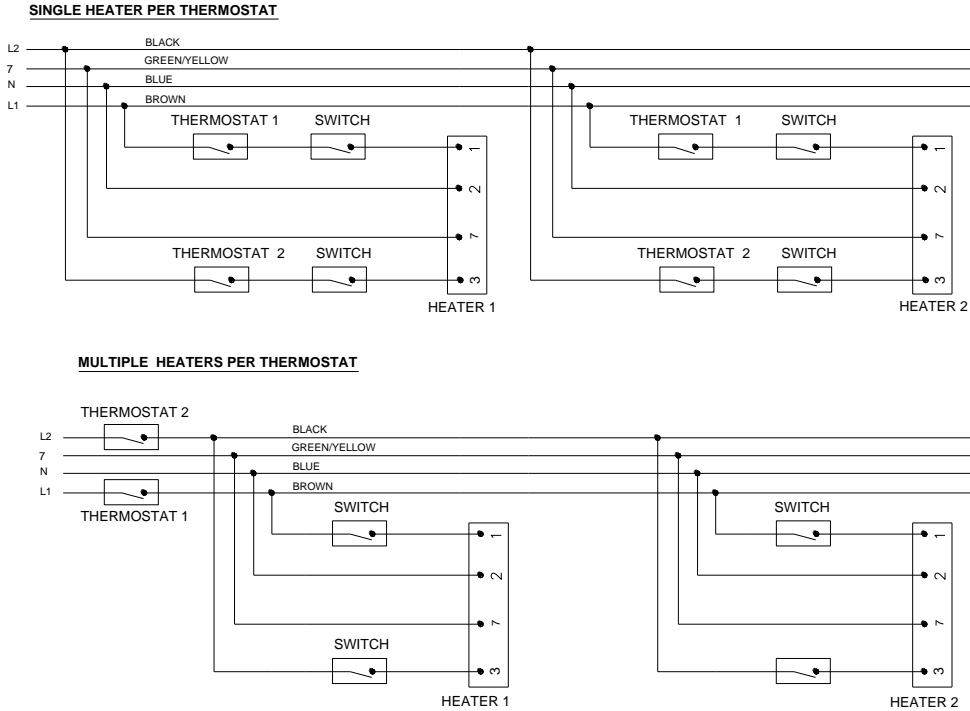


Fig. 6

Notes: -

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.

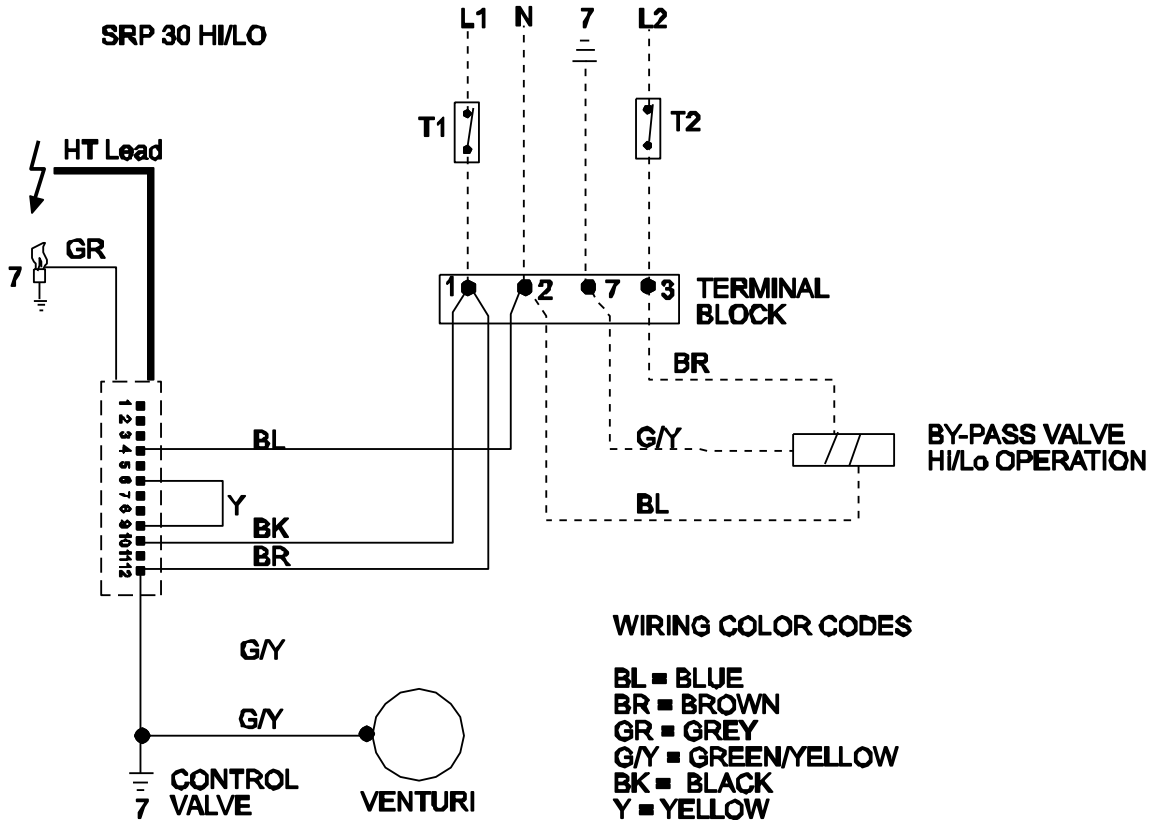


Fig. 7

Alternatively connections may be made via a 3 pin plug and unswitched socket; both complying with the requirements of National or Local Regulations. Neither thermostat nor switches are supplied as standard equipment.

N.B. 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.

4. Internal Wiring Diagram (Honeywell Controls)

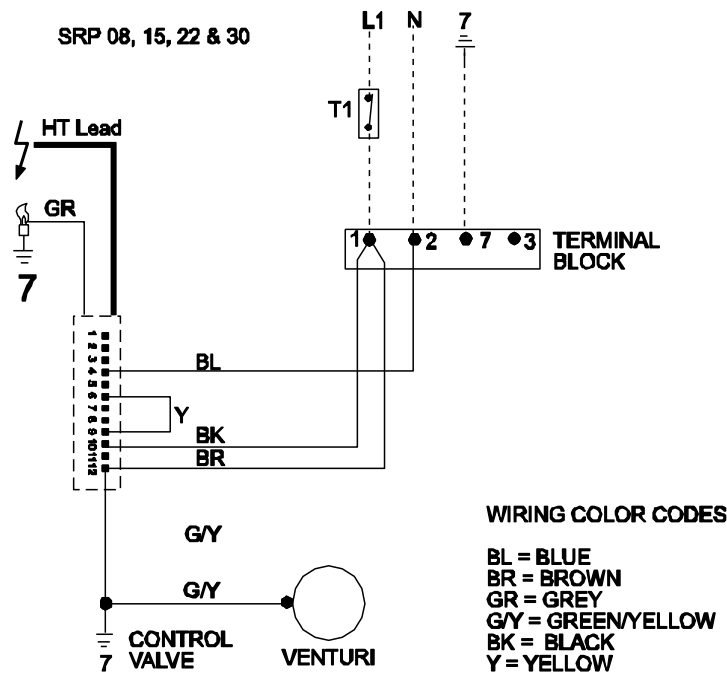
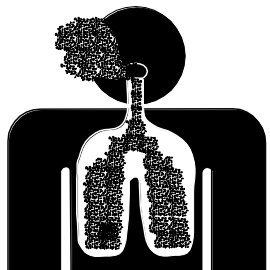


Fig. 8

11) VENTILATION

⚠ WARNING



CARBON MONOXIDE HAZARD

Heaters installed in an unvented mode require a minimum ventilation flow of 4 CFM per 1,000 Btu/hr of total installed capacity.

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

The installation room should have a volume of at least $10\text{m}^3/\text{kW}$ of installed nominal heat input of the radiant heater.

The ventilation requirements and calculation methods for unflued appliances are set out in the European Standards **EN 13410:2001** and must be applied. The following is guidance to the standard:

Ventilation may be achieved by any of the three following different means:

- a) thermal evacuation of the products of combustion/air mixture
- b) mechanical evacuation of the products of combustion/air mixture
- c) natural air change

A. Ventilation by Thermal Evacuation

Ventilation by thermal evacuation is sufficient if **$10\text{m}^3/\text{h}$ of exhaust air per kW of operating heat input** are ventilated out of the installation room.

The air/products of combustion mixture must be evacuated above the radiant heaters, if possible near the ridge, by means of exhaust mixture opening(s), (vents).

Where the exhaust mixture opening(s) can be closed, it shall only possible to operate the radiant heaters when they are open.

The maximum horizontal distance between a radiant heater and a vent opening shall be:
6 (six) times the vent height in the case of **wall** openings
3 (three) times the vent height in the case of **roof** openings

B. Ventilation by Mechanical Evacuation

Ventilation by mechanical evacuation is sufficient if **10m³/h of exhaust air per kW of operating heat input** are ventilated out of the installation room.

The air/products of combustion mixture must be evacuated above the radiant heaters using fan(s).

It shall only be possible to operate the radiant heaters whilst the exhaust airflow is proven.

The maximum horizontal distance between a radiant heater and a fan shall be:
6 (six) times the fan mounting height in the case of **wall** openings
3 (three) times the fan mounting height in the case of **roof** openings

Total minimum proven ventilation airflow in **m³/h** will be:

Total installed kW input X 10

Note: Mechanical exhaust air openings must be positioned such that the burner stability of the nearest appliance is unaffected.

C. Ventilation by Natural Air Change

Gas-fired radiant heaters may be operated without any special exhaust system if the exhaust gases are discharged to the outside atmosphere by a sufficient natural air change in the installation room.

Furthermore, no provision for thermal or mechanical ventilation is required in the following particular cases:

Buildings with natural air change greater than 1.5 volumes per hour
Buildings with a density of operating heat input not greater than 5W/m²

D. Air Supply

Air supply openings are required to admit air and shall be located below the radiant heaters.

The total area of the unobstructed cross-sections of all the air supply openings shall not be smaller than the total area of the unobstructed cross-sections of all the exhaust openings.

Slits and gaps of **fixed** cross-section can also be used as air supply openings.

Where the air supply openings can be closed, it shall only be possible to operate the radiant heaters when they are open.

12) ASSEMBLY

A. SRP08/SRP15/SRP22/SRP30 (Direct Burner Spark Ignition)

1. The appliance should be raised and suspended from chains or drop rods or from brackets fixed to vertical surfaces which have been previously installed in accordance with section 8a. - Suspension.
2. Connect the gas supply in accordance with Section 9. - Gas Supply, of these Installation Instructions.
3. Using twin core and earth flexible supply cable, as specified in Section 10, suitable for 230V ~ 50Hz 25W supply, connect to the terminal block (fitted to inside junction box, attached to the Control Valve) as follows:-

Brown - to terminal marked 1
Blue - to terminal marked 2
Green/Yellow - to terminal marked 7 (earth)

External fuse required - 3 amp.
See section 10. for electrical supply requirements.

B. SRP30 Hi/Lo (Direct Burner Spark Ignition)

1. The appliance should be raised and suspended from chains or drop rods, or from brackets fixed to vertical surfaces that have been previously installed in accordance with Section 8a. - Suspension.
2. Connect the gas supply in accordance with Section 9. - Gas supply, of these Installation Instructions.
3. Using three core and earth flexible supply cable as specified in section 10., suitable for 230v ~ 50Hz 25W supply, connect to the terminal block (fitted to inside junction box, attached to the Control valve) as follows:-

Brown	-	to terminal marked 1
Blue	-	to terminal marked 2
Black	-	to terminal marked 3
Green/Yellow	-	to terminal marked 7 (earth)

External fuse required - 3 amp

See Section 10. for electrical supply requirements.

13) COMMISSIONING

It is essential that all new pipework installations are purged and tested for sounding using a suitable leak detection fluid prior to attempting to ignite any appliance. This work should be carried out in accordance with National or Local Regulations.

N.B. DO NOT TEST FOR SOUNDNESS BY USE OF NAKED FLAMES.

Direct Burner Spark Ignition Models:

A. Ignition

1. Turn on the gas supply to the appliance.
2. Switch on the electrical supply to the appliance.
3. If the appliance has a thermostat fitted in the electrical supply circuit, ensure that it is set high enough to demand heat. SRP30-Hi/Lo: ensure that the second thermostat (T2 - see Fig. 6) is set high enough to call for heat also.
4. After a waiting time of 1 second, the solenoid valves and the spark ignition electrode will be energised simultaneously.
5. Upon successful ignition the flame will be detected by the flame sensor and the ignition spark electrode will be de-energised.
6. Should the flame fail to permanently establish during the 25 seconds ignition period (Honeywell Control) the solenoid valve and ignition spark electrode will be de-energised and the appliance Ignition Control will go to "lockout" condition.
7. To repeat the ignition sequence it will be necessary to switch off the electricity supply to the appliance for a period of 10 seconds to reset the ignition control. If a first reset is not successful, wait at least 15 seconds before repeating the procedure. After reset, an extended waiting time will occur.
8. If the burner fails to ignite following a second ignition sequence, turn off the gas supply at the gas isolation valve and investigate the fault.
9. If gas failure occurs after successful ignition the appliance ignition control will attempt one re-ignition before going to "lockout" condition.
10. SRP30-Hi/Lo only: with both burners ignited (see 13c) turn down the temperature setting of the second thermostat (T2-see Fig. 6) and observe that the burner furthest from the Control Valve Assembly is extinguished. Re-ignite the burner by turning up the temperature setting of the second thermostat (T2).

IMPORTANT: Thermostat T1 must be set at a higher temperature than thermostat T2 to achieve the High/Low mode of operation.

B. Shut Down

1. To shut down the appliance for short periods of time, switch off the electrical supply to the appliance.
2. To shut down the appliance for a period of time in excess of one week, switch off the electrical supply to the appliance and turn off the gas supply at the gas isolation valve.

Note: Concise operating instructions are contained on Instruction Label (42604600), which should be affixed adjacent to a low level user control.

C. Checking Gas Pressure

1. To check the gas supply pressure.
2. Unscrew the sealing screw (2 turns) of the LEFT (Gas IN) control valve test nipple and connect a manometer to this test nipple.
3. Ignite the appliance burner by switching on the electrical supply to the appliance and check that the manometer reading is as stated below, for the gas type the appliance is adjusted for (see Data Label affixed to the appliance reflector, below the control valve).

Category 2H: gas type G20 (natural): supply pressure	20mbar (nom) 17mbar (min) 25mbar (max)
------------------------------------------------------	----------------------------------------------

Category 3+: gas type G30 (butane): supply pressure	29mbar (nom) 25mbar (min) 35mbar (mx)
-----------------------------------------------------	---------------------------------------------

Category 3+: gas type G31 (propane): supply pressure	37mbar (nom) 25mbar (min) 45mbar (max)
------------------------------------------------------	----------------------------------------------

4. Switch off the electrical supply to the appliance and remove the manometer tube from the LEFT (Gas IN) Control Valve test nipple. Screw in the test nipple sealing screw.
5. To check the burner setting pressure:-
6. Unscrew the sealing screw (2 turns) of the RIGHT (Gas OUT) Control Valve test nipple and connect a manometer to this test nipple.
7. Ignite the burner by switching on the electrical supply to the appliance and check that the manometer reading is as stated below, for the gas type the appliance is adjusted for (see Data Label, affixed to the appliance reflector, below the Control Valve).

SRP08/SRP15/SRP30/SRP30 Hi/Lo
Category 2H: gas type G20 (natural): setting pressure - 12.0mbar.

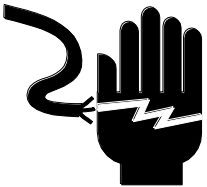
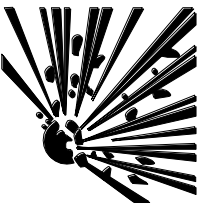
SRP22
Category 2H: gas type G20 (natural): setting pressure - 15.0mbar.

8. In the event that the burner setting pressure is incorrect remove the cap from the integral pressure governor of the control valve. Adjust the pressure (using a suitable screwdriver) by turning the pressure governor adjusting screw clockwise to increase, or anti-clockwise to decrease the burner setting pressure.
9. Upon obtaining the correct burner setting pressure, switch off the electrical supply to the appliance, remove the manometer tube from the RIGHT (Gas OUT) control valve test nipple and screw in the test nipple sealing screw. Replace the cap on the integral pressure governor of the control valve.

D. Flame Supervision

1. To check the operation of the flame supervision equipment, run the appliance normally, remove the flame sensor (grey) lead from the ignition control by gently pulling the connector using insulated pliers. Observe that the burner flame is extinguished within 1 second.
2. After a 'waiting time' of 1 second, the solenoid valves and the ignition spark electrode will be re-energised and with the flame sensor lead still disconnected, the Ignition Control will go to 'lockout condition' after a further 25 seconds (Honeywell Control).
3. Switch off the electrical supply to the appliance and reconnect the flame sensor lead to the ignition control.

14) Servicing

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

⚠ CAUTION	
	EQUIPMENT FAILURE HAZARD Do not blow out heating elements with high pressure air. Failure to do so may result in property damage.

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

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 joint 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, using a multimeter must be made.
 - a. Earth continuity check.
 - b. Polarity check.
 - c. Resistance to earth check.

A. Ignition Electrode

1. Disconnect the black HT ignition lead from the electrode, by gently pulling the plastic shroud from the Raja connector of the electrode.
2. Unscrew the two M4 screws securing the electrode to the flue collar assembly and withdraw the electrode.
3. Remove any foreign matter from the electrode rod and earth strap and check that the spark gap is 3.5mm. If the electrode is badly oxidised, replace the electrode (see section 15a.).
4. Upon re-assembly, ensure that the HT lead connector is securely attached to the electrode.

B. Flame Sensor Probe

1. Disconnect the grey flame sensor lead from the sensor probe by gently pulling the connector, using pliers.
2. Unscrew the two M4 screws, securing the sensor probe to the flue collar assembly and withdraw the probe.
3. Remove any foreign matter from the sensor rod and check the condition of the ceramic insulator. If the rod is badly oxidised or the ceramic insulator cracked, replace the sensor probe. (see section 15b.).
4. Upon re-assembly, ensure that the grey sensor lead connector is securely attached to the probe.

C. Venturi Fabrication

1. Check that the venturi is clean. If there is any evidence of dirt accumulating in the venturi, remove the venturi before cleaning to avoid getting dirt inside the plenum body.
2. To remove the venturi, first unscrew the four M4 screws securing the elbow flange connector to the control valve outlet port and remove the control valve assembly complete.
3. Unscrew the four M4 screws securing the Venturi casting to the plenum body end panel and carefully withdraw the venturi fabrication from the plenum body.
4. Clean by use of a stiff brush to remove any deposits.

D. Injector

1. Remove the injector from the venturi casting, inspect and clean as necessary with a soft bristle brush.

DO NOT DAMAGE THE INJECTOR ORIFICE BY USE OF SOLID OBJECTS.

E. Electrical Wiring

1. With the control valve assembly removed from the venturi casting, (see section 14c.) inspect the wiring and connections inside the junction box (attached to the control valve). To open the junction box, first slacken the gland nut (2 gland nuts on SRP30 Hi/Lo) located in the junction box below the control valve, then unscrew the four screws securing the cover of the junction box. Carefully lift away the cover. Replace any damaged wiring as necessary.
2. Unscrew the fastener securing the cover of the ignition control and lift off the cover. Check that the electrical connections are sound and the wiring undamaged. Replace any damaged wiring as necessary.

F. Reflector

1. Dirt accumulated on the outer surfaces of the reflector should be brushed off and the reflective surfaces cleaned with a soft cloth and detergent in water. A mild non-abrasive metal polish may be used where extra discolouration has occurred.

G. Emitter Assembly (ceramic plaque)

1. Ignite the appliance and observe the colour of the emitter surface. If there are pronounced dark areas on the surface, it probably indicates an accumulation of dirt on the inside surface of the ceramic plaque.

IMPORTANT: DO NOT DIRECT AN AIR LINE AT THE CERAMIC PLAQUE SURFACE AS IT MAY DAMAGE THE CERAMIC TILES OR DISLodge THE HIGH TEMPERATURE GASKET MATERIAL FROM AROUND THE TILES.

2. To remove any dirt accumulated on the inside surface of the ceramic plaque or to replace the emitter assembly in the case of cracked tiles, it will be necessary to disconnect the appliance and carry out the work at low level.
3. Disconnect the electrical supply to the appliance by unscrewing the M3 screw securing the electrical supply socket to the 4 pin plug attached, to the junction box. (secured to the control valve). Disconnect the gas supply pipe from the control valve by unscrewing the four M4 screws securing the straight flange to the control valve inlet port. Ensure that the 'O' ring in the flange is secure.

4. The appliance may now be disconnected from the suspension means and carefully lowered to the ground. See section 15b. for detailed instructions concerning replacement of the emitter assembly.
5. Carefully brush any foreign material from the back of the emitter (ceramic tile) assembly, using a soft brush. Clean the inside of the plenum body also.

H. Re-assemble and Commission

1. Re-assemble the appliance in reverse order and commission in accordance with the instructions contained in section 13.

I. Auxiliary Controls

1. Room thermostats, time switches, frost thermostats, etc should be checked to ensure correct functioning and are set to the users requirements.

15) REPLACING COMPONENTS

IMPORTANT: Disconnect gas and electrical supplies to the appliance before carrying out any repair work. This work can be carried out at high level using a purpose designed access tower, but it is preferable that this work should be carried out at ground level.

A. Ignition Electrode

1. Disconnect the black HT ignition lead from the ignition (spark) electrode by gently pulling the plastic shroud from the Raja connector of the electrode.
2. Unscrew the two M4 screws securing the electrode to the flue collar assembly and withdraw the electrode.
3. Before assembling a replacement electrode, check that the spark gap is 3.5mm. Insert the re-placement electrode into flue collar assembly and secure in position with the two M4 screws.

B. Flame Sensor

1. Disconnect the grey flame sensor lead from the flame sensor probe by gently pulling the connector, using pliers.
2. Unscrew the two M4 screws securing the flame probe to the flue collar assembly and withdraw the flame probe.
3. After assembling a replacement flame sensor and securing it to the flue collar assembly with the two M4 screws, replace the grey flame sensor lead, ensuring that the connector is securely attached to the flame sensor.

C. Ignition Control (Honeywell S4565P 2004)

1. Disconnect both the grey flame sensor lead and black HT ignition lead from the ignition control.
2. Unscrew the screw securing the red cover to the ignition control and remove the cover.
3. Unscrew the two screws securing the cable clamp to the ignition control and remove the cable clamp.
4. Disconnect the 10 way Molex electrical connector from the ignition control and gently pull the ignition control from the gas control valve.

D. Injector

1. Using a ½" A/F spanner, unscrew the injector from the venturi casting.

E. Venturi Fabrication

1. First unscrew the four M4 screws securing the elbow flange connector to the control valve outlet port and remove the control valve assembly complete.
2. Unscrew the four M4 screws securing the venturi casting to the plenum body end panel and carefully withdraw the venturi fabrication from the plenum body.
3. When assembling a replacement venturi fabrication replace the venturi gasket between the venturi casting and plenum body, also.

F. Twin Solenoid Control Valve (Direct Burner Spark Ignition)

1. Remove the ignition control and disconnect the gas supply pipe from the control valve by unscrewing the four M4 screws securing the straight flange connector to the control valve inlet port.
2. Disconnect the electrical supply to the appliance by unscrewing the M3 screw securing the electrical supply socket to the 4 pin plug attached to the junction box (secured to the control valve).
3. Unscrew the four M4 screws securing the elbow flange connector to the control valve outlet port and lift off the control valve.
4. To remove the electrical junction box from the control valve first slacken the gland nut (2 gland nuts on SRP30 Hi/Lo) located in the junction box, below the control valve. Unscrew the four screws securing the cover of the junction box and carefully lift away the cover. Unscrew the two screws securing the junction box to the control valve and remove the junction box complete.
5. When assembling a replacement control valve, ensure that the 'O' rings, located in the elbow flange and straight flange connectors are in sound condition and correctly positioned in the 'O' ring grooves of the connectors.

G. Reverberatory Screen



1. At the opposite end of the appliance to the controls, remove the two screws securing the reflector end panel to the flue collar.
2. Unscrew the two M4 screws securing the flue collar to the plenum body end panel and remove the flue collar.
3. Carefully slide out the reverberatory screen along the side retaining rails.
4. When assembling a replacement reverberatory screen, ensure that it is positioned on the cross support, at the controls end to prevent shorting of the flame sensor.

H. Emitter Assembly

1. Having disconnected the electrical and gas supplies from the appliance and lowered the appliance to the ground, (see sections place the appliance on a work bench and carry out the following instructions.
2. Disconnect the grey flame sensor lead from the flame probe by gently pulling the connector, using pliers.
3. Disconnect the black HT ignition lead from the ignition spark electrode by gently pulling the plastic shroud from the Raja connector of the electrode.
4. Remove the screws securing the reflector assembly to the flue collar panels and remove the reflector assembly.
5. Place the appliance with the emitter surface facing upwards. Remove the M4 screws securing the flue collar panels to the plenum body and remove the flue collar panels. Care should be taken to avoid damage to the spark electrode and flame probe.
6. Slide out the reverberatory screen.
7. Remove the 1/4" UNC nuts and setscrews retaining the emitter assembly and reverberatory screen side rails and end baffles to the plenum body. Lift off the reverberatory screen side rails and end baffles and carefully lift our the emitter assembly.
8. Clean off any ceramic paper gasket material from the plenum body flanges and emitter assembly.

9. When assembling a replacement emitter assembly, new ceramic paper gasket material must be used to provide a complete seal between the plenum body flanges and the emitter assembly.

16) OPERATING INSTRUCTIONS (Direct Burner Spark Ignition Models)

⚠ WARNING		
		<p style="text-align: center; margin: 0;">ELECTRIC SHOCK AND FIRE HAZARD</p> <p>Disconnect power to heater before servicing.</p> <p>Do not operate unit if repairs are necessary. Do not operate unit showing any signs of burner malfunction. Call a professional for assistance.</p> <p>Failure to do so may result in death, serious injury or property damage.</p>

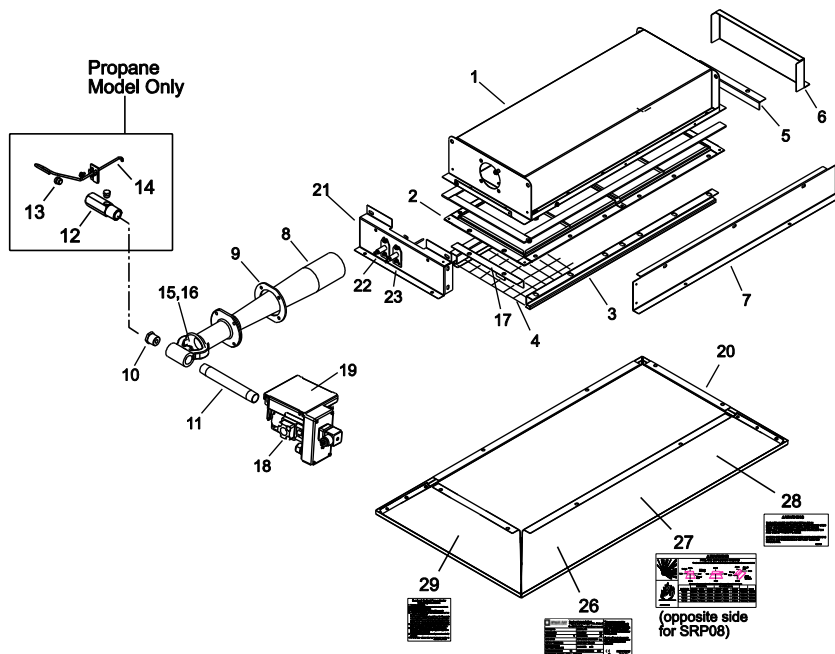
1. Turn on the gas supply to the appliance.
2. Set any time switch or thermostats to demand heat.
3. Switch on the electrical supply to the appliance.
4. The burner should ignite within 25 seconds (Honeywell Control).
5. Failure to ignite will result in the ignition controller going to "Lockout" condition.
6. If 'Lockout' occurs, switch off the electrical supply to the appliance, wait for 10 seconds before switching on the electrical supply to the appliance to repeat the ignition sequence.
7. If the appliance fails to ignite after a second sequence, switch off the electricity supply to the appliance and call the service engineer.
8. If gas failure occurs after successful ignition, the appliance will attempt one re-ignition before going to "Lockout" conditions.
9. To shut down the appliance for short periods of time, switch off the electrical supply to the appliance.
10. To shut down the appliance for longer periods of time switch off the electrical supply to the appliance and turn off the gas supply at the gas isolation valve.

17) REPLACEMENT PARTS GUIDE (Models SRP08, SRP15, SRP22)

Only use genuine Space-Ray replacement parts. Parts are available from the factory for replacement by a qualified person.

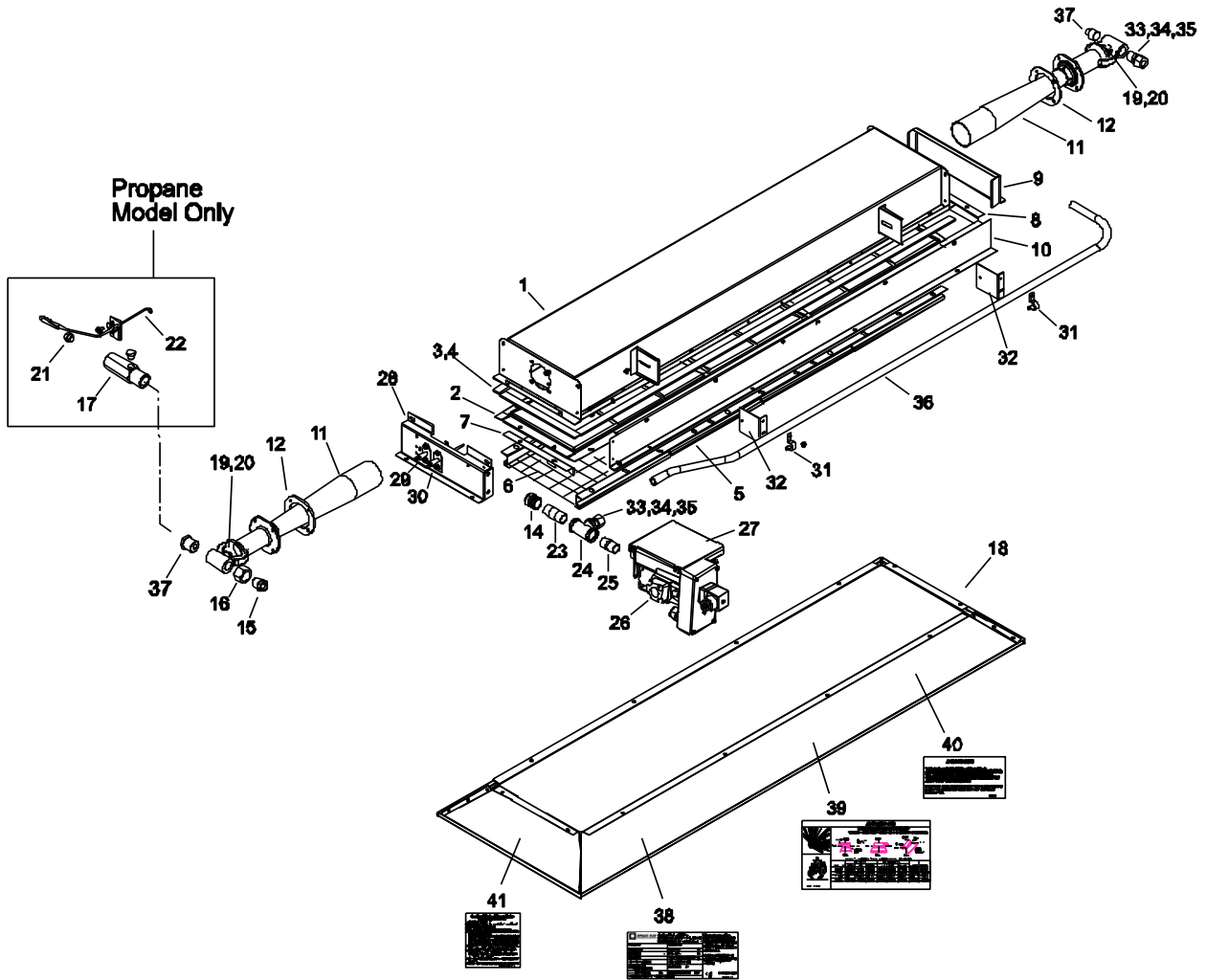
Item No.	Part No.	Description	SRP08	SRP15	SRP22
1	42129000	Plenum Box Assembly – SRP08	X		
1a	40714000	Plenum Box Assembly – SRP15		X	
1b	42319000	Plenum Box Assembly – SRP22			X
2	4262306	Emitter Kit – SRP08	X		
2a	4262307	Emitter Kit – SRP15		X	
2b	4262308	Emitter Kit – SRP22			X
3	42133000	Screen Retainer (Qty. 2) – SRP08	X		
3a	40608000	Screen Retainer (Qty. 2) – SRP15		X	
3b	42316000	Screen Retainer (Qty. 2) – SRP22			X
4	41748030	Reverb Screen – SRP08	X		
4a	41748010	Reverb Screen – SRP15		X	
4b	41748040	Reverb Screen – SRP22			X
5	40710020	End Reverb Baffle (back end)	X	X	X
6	40621000	End Flue Collar (back end)	X	X	X

7	42132000	Side Flue Collar – SRP08	X		
7a	40616000	Side Flue Collar – SRP15		X	
7b	42418000	Side Flue Collar – SRP22			X
8	42136000	Venturi Assembly (small casting) – SRP08	X		
8a	42505950	Venturi Assembly (large casting) – alternate	X	X	X
8b	40726000	Venturi Assembly (small casting) – SRP15, 22		X	X
9	40666000	Venturi Gasket	X	X	X
10	03339080	Plug, 1/2	X	X	X
11	03333220	Nipple, 1/2 x 6"	X	X	X
12	42043030	Orifice Fitting Asm–Bleed Tube (LP gas only)	X	X	X
13	30203000	Break-Away Fitting 1/8" (LP gas only)	X	X	X
14	42042000	Bleed Tube & Clamp Asm (LP gas only)	X	X	X
15	N/A	Burner Orifice (Nat Gas) -consult factory-	X	X	X
16	N/A	Burner Orifice (LP Gas) -consult factory-	X	X	X
17	41156000	Reverb Baffle Assembly (ignition end)	X	X	X
18	4262586	Gas Valve – Honeywell #VK4105C-1009B	X	X	X
19	4262534	Ignition Control – Honeywell #S4565PD-2004	X	X	X
20	42125000	Reflector Assembly – SRP08	X		
20a	41159000	Reflector Assembly – SRP15		X	
20b	42443000	Reflector Assembly – SRP22			X
21	42429000	End Flue Collar (ignition end)	X	X	X
21a	42468000	End Flue Collar (ignition end) w/bleed tube hole (LP gas only)	X	X	X
22	30216050	Spark Electrode #PSE-GF26	X	X	X
23	03763000	Flame Sensor #PSE-GF3	X	X	X
24	4267925	Hex Nut – 1/4" SS (emitter) –not shown-	X	X	X
25	4267926	Screw – 1/4" x 5/8" SS (emitter) –not shown-	X	X	X
26	42849050	Label, Nameplate	X	X	X
27	43247060	Label, Clearances to Combustibles	X	X	X
28	42604200	Label, Warning	X	X	X
29	42604600	Label, Operating Instructions	X	X	X
30	44201190	Installation Manual (not shown)	X	X	X



17.1) REPLACEMENT PARTS GUIDE (Models SRP30)

Item No.	Part No.	Description
1	40742000	Plenum Box Assembly
2	4262309	Emitter Kit
3	40446080	End Gasket (Qty. 2)
4	40446110	Side Gasket (Qty. 2)
5	40747000	Screen Retainer (Qty. 2)
6	41748020	Reverb Screen
7	41156000	Reverb Baffle Assembly (ignition end)
8	40710020	Reverb Baffle (back end)
9	40621000	End Flue Collar (back end)
10	40744000	Side Flue Collar
11	40726000	Venturi Assembly – Small Casting (Qty. 2)
11a	42505950	Venturi Assembly – Large Casting (Qty. 2) alternate
12	40666000	Venturi Gasket (Qty. 2)
13		
14	03068010	Union Half - Female
15	03068020	Union Half - Male
16	03068030	Union Nut - 1/2
17	42043030	Orifice Fitting Assembly - Bleed Tube (LP gas only)
18	41157000	Reflector Assembly
19	N/A	Main Burner Orifice Nat. Gas (Qty. 2) –consult factory-
20	N/A	Main Burner Orifice LP Gas (Qty. 2) –consult factory-
21	30203000	Break-Away Fitting - 1/8"
22	42042000	Bleed Tube & Clamp Assembly
23	03333060	Nipple, 1/2 x 2"
24	03336080	Tee, 1/2
25	03333020	Nipple, 1/2 x Close
26	4262586	Gas Valve – Honeywell #VK4105C-1009B
27	4262534	Ignition Control – Honeywell #S4565PD-2004
28	42468000	End Flue Collar (ignition end)
29	30216050	Spark Electrode #PSE-GF26
30	03763000	Flame Sensor #PSE-GF3
31	42420000	Manifold Clamp (Qty. 2)
32	04703000	Manifold Support Bracket (Qty. 2)
33	03600040	Compression Sleeve - 5/8 (Qty. 2)
34	03601040	Compression Nut - 5/8 (Qty. 2)
35	03602100	Compression Union - 5/8 Tube x 1/2 NPT (Qty. 2)
36	42432000	Manifold Tubing
37	03339080	Plug, 1/2
38	42849050	Label, Nameplate
39	43247060	Label, Clearances to Combustibles
40	42604200	Label, Warning
41	42604600	Label, Operating Instructions
42	44201190	Installation Manual (not shown)



NOTES:

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