

# **SPACE-RAY**

## **SRB 38 RADIANT BROODER**

### **INSTALLATION AND SERVICING INSTRUCTIONS**

This heater is for use with both Natural Gas and Liquid Petroleum Gas. It must be installed by a Competent Person as stated in the Gas Safety (Installation and Use) Regulations 1984.

Leave these Instructions with the Person/Department responsible for the Safe Installation and Operation of the heater.



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## INSTALLATION, SERVICING AND OPERATING INSTRUCTIONS

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

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# **WARNING**

## 1. Warning Information:

FOR SAFE AND EFFICIENT OPERATION THIS APPLIANCE NEEDS A FREE SUPPLY OF FRESH AIR.

IN THE ABSENCE OF SUFFICIENT OXYGEN CARBON MONOXIDE (CO) WILL BE PRODUCED.

**CARBON MONOXIDE EVEN IN SMALL CONCENTRATIONS CAN CAUSE DEATH**

IN ADDITION CONCENTRATION OF CARBON DIOXIDE (CO<sub>2</sub>) MUST BE LIMITED TO SAFE LEVELS.

ADEQUATE VENTILATION MUST THEREFORE BE PROVIDED AT ALL TIMES, THIS CAN BE ACHIEVED BY HAVING 2 OPENINGS, ONE ABOVE AND BELOW THE HEATERS OF AT LEAST:-

512 Square Centimetres (80 square inches) EACH - PER  
SRB38 HEATER.

BS: 6896:1991. - Installation of Gas Fired Overhead  
Radiant Heaters refers:-

Clause 7.3.1. 7.3.2. and 7.3.3.

The total installation shall be designed, installed and operated such that the concentration of carbon dioxide at positions where person may be present shall not exceed 2,800 p.p.m.

To provide for the above using natural ventilation, high and low level ventilation shall be provided by permanent openings of 46 CM<sup>2</sup>/KW total heat input. The lower level inlet shall be below the appliance(s) and the high level outlet shall be above the appliance(s). The vertical distance between the centre line of the high and low level grilles shall not be less than 3M. The required air flow rate using mechanical ventilation shall be 33 M<sup>3</sup>/h per kW of total rated heat input.

N.B. INSPECT ALL OPENINGS REGULARLY AND CLEAR IF NECESSARY, AS LITTER, DUST, FEATHERS AND OTHER MATTER MAY BLOCK THEM.

# SRB38 BROODER INSTALLATION & SERVICING INSTRUCTIONS

## 2.0 TECHNICAL DATA

### 2.1 SPECIFICATION

Model - SRB38  
Heat Input - 11.13 kW (38,000 Btu/h)

GAS TYPE	NATURAL	PROPANE	PROPANE
Setting Pressure	12.5 mbar (5 in w.g.)	27.5 mbar (11 in w.g.)	35.0 mbar (14 in w.g.)
Jet Size	0 2.7 mm	No. 49	0 1.75 mm
Gas Consumption	40.1 MJ/h (0.38 therm/h)	0.79 kg/h (1.571/h)	0.79 kg/h (1.571/h)

Brooder Weight - 12.0 KG (26.4 lbs)

Mounting Height - Shallow Reflector:-  
1525 mm (60 in)

Deep Reflector:-  
1830 mm (72 in)

Minimum Clearance  
From Combustibles - Side - 900 mm (36 in)  
Below - 900 mm (36 in)  
Shallow Reflector - Above - 230 mm ( 9 in)  
Deep Reflector - Above - 900 mm (36 in)

Electrical Supply  
(No. 2 Control) - 24V 50Hz 16VA (Hold)  
26VA (Inrush)

### 2.2 VENTILATION

It is **IMPORTANT** that correct ventilation at all times is provided in poultry houses heated by Space-Ray brooders.

The temptation particularly during the winter months to close up the poultry houses to conserve heat and save money must be resisted, even during the heating up period prior to the arrival of the stock.

The **WARNING** notice on the facing page contains details of the correct size and position of ventilation openings for the safe and efficient operation of this appliance. It also contains details of the required air flow rate when using mechanical ventilation. If you are in any doubt as to the required ventilation contact SPACE-RAY direct, by telephone or fax.

### 3.0 TO ASSEMBLE BROODER IN KIT FORM

### 3.1 UNPACKING

The Brooder is supplied as follows:-

REF:	QTY.	DESCRIPTION:
1	1	REFLECTOR
2	3	HANGING LUG
3	3	M8 NUT AND WASHER (SHALLOW)M10(DEEP)
4	1	EMITTER ASSEMBLY
5	1	HANGING CHAIN SET
6	2	M6 BOLT, NUT AND WASHER
7	1	CONTROL ARM ASSEMBLY
8	3	M5 NUT AND WASHER

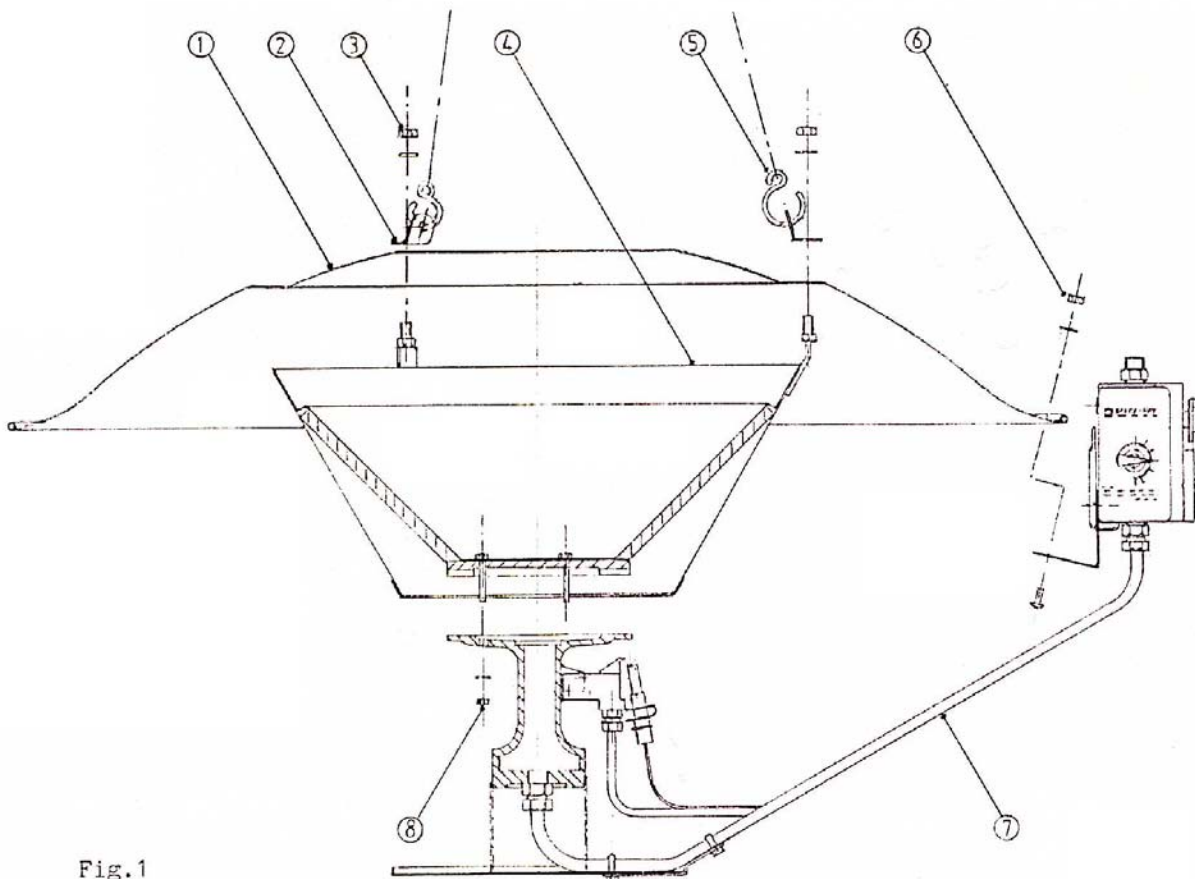


Fig.1

### 3.2. ASSEMBLE EMITTER TO REFLECTOR

- 3.2.1. Stand Emitter Assembly (4) on bench with M8 (Shallow or M10 (Deep) setscrews (large diameter of cone) uppermost.
- 3.2.2. Place reflector (1) over Emitter Assembly (4) such that the 3 x M8 (M10) setscrews pass through the 3 holes in the Reflector.
- 3.2.3. Place one Hanging Lug (2) over each M8 (M10) setscrew with vertical leg facing the center of the reflector and secure with M8 (M10) nuts and washers (3) provided.

### 3.3. ASSEMBLE CONTROL ARM

- 3.3.1. Invert the Emitter/Reflector assembly and place the flame arrester into burner cap, ensuring that the mesh covers the inner face of the burner parts fully. Position the Control Arm Assembly (7) such that the control valve mounting bracket is aligned with 2 holes in the rim of the reflector. Pass the 3 x M5 setscrews protruding from the burner cap through the 3 holes in the burner base and secure with the 3 x M5 Nuts and Washers (8) provided.
- 3.3.2. Attach Control Arm (7) to Reflector (1) by passing 2 x M6 Bolts (6) down through Reflector (1) and Support Bracket, assemble Nuts and Washers (6) and tighten down Nuts.

### 4.0. TO INSTALL BROODER

- 4.1. Select hanging point.
- 4.2. Attach Hanging Chain Set (5) to Hanging Lugs (2) with the large hook to gas inlet side of brooder.
- 4.3. Suspend brooder 1525 mm (60 inches) - Shallow Reflector: 1830 mm (72 inches) Deep Reflector, above floor (litter) level.
- 4.4. Connect ON/OFF ball valve, attached to end of Connecting Kit hose to gas supply pipe.
- 4.5. Connect plain end of Connecting Kit hose to gas control valve inlet connection.

**N.B. DO NOT CONNECT TO OLD GAS TAPS. THIS COULD CAUSE BAD COMBUSTION.**

IMPORTANT:

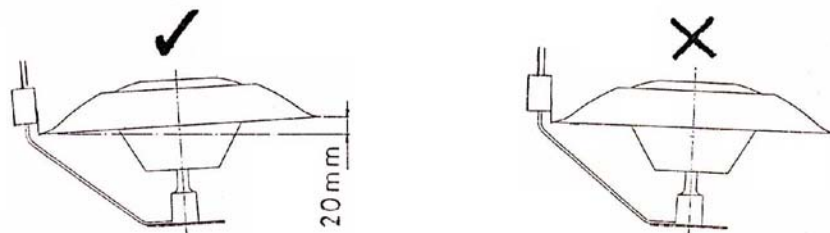


Fig 2. Brooder must be suspended with reflector approximately 20 mm lower at control side.

## 5.0. BROODER IGNITION

### 5.1. Lighting (All Controls)

5.1.1. Turn on gas taps.

5.1.2. On initial operation, slacken hose connection to control valve inlet and purge air from gas line. Tighten hose connection to control valve inlet.

5.1.3. Ensure all gas connections are sound.

**N.B. DO NOT USE NAKED FLAME TO TEST FOR GAS SOUNDNESS.**

### 5.2. NO. 1 CONTROL & NO. 9 CONTROL

5.2.1. Turn gas cock dial on control valve to PILOT position, depress dial and apply lighted taper to pilot burner.

5.2.2. Hold dial in for 60 seconds after lighting pilot. Release dial. If pilot flame fails to establish, repeat procedure.

5.2.3. If pilot flame fails to establish after second attempt, refer to fault finding chart.

5.2.4. When pilot flame established, turn gas cock dial to ON position and set thermostat to call for heat. Main burner will ignite.

5.2.5. To turn OFF main burner, turn gas cock dial to pilot position.

5.2.6. To turn OFF pilot, press in gas cock dial and turn to OFF position.

5.2.7. If the brooder is to be taken down for inspection or maintenance turn the ON/OFF ball valve on the connecting kit hose to the OFF position and disconnect the hose from the control valve inlet.

### NO. 9 CONTROL

Thermostat Range	Control Knob Position						
	1	2	3	4	5	6	7
°C	21	26	30	33	39	43	47
°F	70	79	86	91	102	109	117

Temperature versus Control Knob position

### 5.3. NO. 2 CONTROL

5.3.1. Depress flame failure valve button and apply lighted taper to pilot burner.

5.3.2. Hold button in for 30 seconds after lighting pilot. Release button. If pilot fails to establish, repeat procedure.



- 5.3.3. If pilot flame fails to establish after second attempt, refer to fault finding chart.
- 5.3.4. When pilot flame is established, switch on 24V electrical supply to main burner valve and adjust thermostat to call for heat. Main burner will ignite.

#### **5.4. MBC & MOD CONTROL**

- 5.4.1 Depress flame failure valve button and apply lighted taper to main burner.
- 5.4.2 Hold button in for 30 seconds after lighting burner. Release button. If burner fails to establish, repeat procedure.
- 5.4.3 If burner flame fails to establish after second attempt, refer to fault finding chart.
- 5.4.4 When main burner flame established adjust central thermostat on Multi brooder Control Unit (MBC) or individual thermostat (MOD) to desired temperature.

#### **6.0. MAINTENANCE**

##### **6.1. General Maintenance**

- 6.1.1 During the brooding period the air filter should be brushed at regular intervals to shed dust from the filter element.
- 6.1.2. At the end of each crop, clean the brooder as follows:-
- 6.1.3. Unscrew burner gas tube nuts at outlet from valve and burner base and remove burner tube/pan assembly.
- 6.1.4. Unscrew jet holder from base of burner, unscrew main jet from jet holder and clean by soaking in acetone and blowing through with airline applied to outlet end of orifice.

**N.B. DO NOT ATTEMPT TO CLEAN JET BY PASSING WIRE THROUGH ORIFICE.**

Apply thread sealant (Calor-tite or similar) to jet and replace.

- 6.1.5. Slide air filter element off burner base and clean by brushing and blowing through with air line.
- 6.1.6 Use small brush to clear venturi of accumulated dust, and clear burner cap and ports by directing air line up through base of burner.

In extremely dirty conditions or where ports have become partially blocked through lack of regular maintenance, unscrew 3 x M5 Nuts (8) securing burner base to burner cap and remove burner base. Brush ports in burner cap and ensure burner base is clean.

6.1.7 Brush both inside and outside surfaces of perforated emitter with large brush to remove any burnt dust particles.

## **6.2. PILOT - NO. 1 CONTROL**

6.2.1 Unscrew pilot burner gas tube nut from jet holder in base of burner frame, and unscrew jet holder from pilot burner frame. Unscrew jet from jet holder and clean by soaking in acetone and blowing with air line applied to outlet end of orifice.

**N.B. DO NOT ATTEMPT TO CLEAN JET BY PASSING WIRE THROUGH ORIFICE.**

6.2.2. No. 1 Control:

Slacken brass screw clamping thermogenerator to pilot burner frame, draw out thermogenerator and clean. Clean pilot burner frame using small brush and air line.

To change thermogenerator slacken 2 setscrews securing thermogenerator cable to control valve and withdraw cable.

## **6.3. PILOT - NO. 2 CONTROL**

6.3.1 Unscrew pilot burner gas tube nut from jet holder in base of burner frame, and unscrew jet holder from pilot burner frame. Unscrew jet from jet holder and clean by soaking in acetone and blowing with air line applied to outlet end of orifice.

**N.B. DO NOT ATTEMPT TO CLEAN JET BY PASSING WIRE THROUGH ORIFICE.**

6.3.2. No. 2 Control:

Unscrew upper lock nut securing thermocouple to pilot burner frame, draw out thermocouple and clean. Clean pilot burner frame using small brush and air line.

To change thermocouple, unscrew tube nut securing capillary tube to flame failure valve, and withdraw capillary tube from valve.

## **6.4. THERMOCOUPLE - MBC CONTROL AND MOD CONTROL.**

Clean thermocouple using small brush. To change thermocouple, unscrew upper locknut securing thermocouple to bracket and draw out. Unscrew tube nut securing capillary tube to flame failure valve and withdraw capillary tube from valve.

## **7.0 FAULT FINDING**

### **7.1 PILOT/MAIN BURNER FAILS TO IGNITE**

7.1.1. Gas turned OFF.

7.1.2. Blocked pilot/main jet.

7.1.3. Faulty valve.

### **7.2 GAS IGNITES BUT FLAME NOT ESTABLISHED**

7.2.1. Flame failure valve not depressed correct length of time.

7.2.2. Faulty flame failure valve.

7.2.3. Thermocouple not positioned close enough to flame.

7.2.4. Thermocouple electrical connection to valve not tight (No. 1).

7.2.5. Thermocouple capillary tube nut not tight (No. 2, No. 9, MBC & MOD).

7.2.6. Faulty thermogenerator (No. 1) or thermocouple (No. 2, No. 9, MBC & MOD).

7.2.7. Low gas pressure.

7.2.8. Partially blocked jet.

7.2.9. Kink in hose.

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