

Submittal Data

Series M – Standard Efficiency High Intensity Infrared Heaters



SUPERIOR
RADIANT PRODUCTS

Project _____
 Engineer _____
 Contractor _____
 Model # _____

Date: _____
 Submitted by: _____
 Approved by: _____

General Specification

Fuel Type <i>(check one)</i> <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane	Gas Connection ½" NPT	Accessories Part# CH010 – Chain Kit (20ft of chain, 10 s-hooks) Part# CE014 – Thermostat, Line Volt Part# CE139 – Thermostat, Digital PSD158B Part# CG012 – S/S Gas Flex Connector, ½ x ½ x30" Part# CG052 – Type1-Rubber Gas Flex Connector, ½ x ½ x30" Part# CG011 – Gas Shut-Off Valve ½"
Inlet Gas Pressure Minimum Natural Gas @ 6.5" W.C. LPG @ 12" W . C . Maximum Natural Gas & LPG @ 14" W.C.		Transformers - (Line and Low Voltage ONLY) Part# SE004 – 120/24V, 20VA Hub Mount for 1 heater Part# SE009 – 120/24V, 40VA for up to 2 heaters Part# SE010 – 120/24V, 100VA for up to 5 heaters
Control Line Voltage Low Voltage	Power Supply 24V	

MODEL	Quantity on Project	RATE BTUH	DIMENSIONS			CLEARANCE to COMBUSTIBLES			
			Height	Length	Width	Top	Sides	Rear	Below
M20N		21,000	10.35"	18.90"	17.38"	15"	29"	29"	90"
M20P		23,000							
M40N		45,000	10.35"	33.43"	17.38"	15"	29"	29"	95"
M40P		44,000							
M60N		65,000	10.35"	47.95"	17.38"	15"	32"	32"	100"
M60P		66,000							
M90N		90,000	10.35"	62.48"	17.38"	15"	35"	35"	105"
M90P		90,000							
M120N		125,000	10.35"	91.54"	17.38"	15"	39"	39"	110"
M120P		125,000							



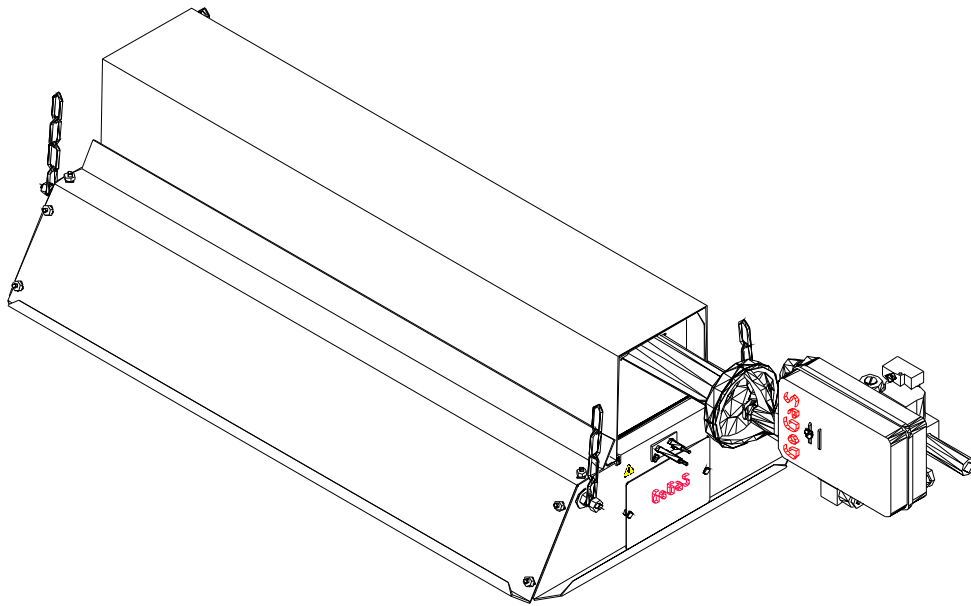


Preface

Superior Radiant Products high intensity heaters represent an efficient and comfortable alternative to conventional heating systems. The infrared gas fired heater is an atmospherically operated infrared heater which converts most of the energy applied (natural gas or LPG) into thermal radiation. The sensible radiation component within the vicinity of persons allows a reduction in the air temperature, thus leading to energy savings.

The Technology

The M series is a high-quality product with ratings from 6 kW (20,500 BTU/h) to 36 kW (125,000 BTU/h). The modern injector burner allows almost pollution-free operation, from the smallest to the largest heater unit, with only one combustion chamber. The stainless steel combustion chamber is integrated in a hood. The hot waste gases collect under the hood and pre-heat the gas-air mixture in the combustion chamber, leading to a maximum degree of radiation. The reflector is made of highly reflecting material and directs the captured radiation towards the vicinity of persons.



Important

These instructions, the layout drawing, local codes and ordinances, and applicable standards such as apply to gas piping and electrical wiring comprise the basic information needed to complete the installation, and must be thoroughly understood along with general building codes before proceeding.

This material is for submittal purpose only and should not replace the Installation and operation manual as the bases for approved installation

Installation Codes

The installation must conform with local building codes or, in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CSA B149.1.

General Installation and Gas Codes/Electrical Codes

If an external electrical source is utilized, the heater, when installed, must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA 70, or current Canadian Electrical Code, CSA C22.1.



Layout Considerations

1. Because high intensity heaters are un-vented, ensure that adequate ventilation will be available; most codes require a minimum of 4 cfm per 1000 BTUH of installed heat capacity in natural gas, 4.5 cfm per 1000 BTUH for propane. Also see section on Ventilation.
2. Check local codes for mounting requirements and the requirement for flexible gas connectors or rigid mounting.

Spot Heating

High intensity heaters are ideal for spot heating applications. The following are key considerations to the success of the application:

1. Minimize any wind in order to maximize the effect of the radiant heat.
2. Placing two smaller heaters opposing each other will be more comfortable than placing one large heater.
3. Hang the heaters back and at an oblique angle (rather than directly overhead) in order to maximize the exposure of the peoples' bodies to radiant heat.

The following charts are intended for guidance only. Specific applications may require other parameters.

Suggested Minimum Mounting Heights				
<u>Heater Input Rate</u>	<u>Mounting Angle</u>			
BTU/hr	0° - 10°		30°	
	ft	m	ft	m
20,000	10 – 15	3 – 4.6	9 – 13	2.7 – 4
40,000	12 – 19	3.7 – 5.9	11 – 17	3.4 – 5.2
60,000	14 – 22	4.3 – 7.3	13 – 19	4 – 5.9
90,000	15 – 24	4.6 – 7.3	14 – 22	4.3 – 6.7
120,000	17 – 29	5.2 – 8.8	16 – 25	4.9 – 7.6

Suggested heat loading for indoor spot heating under stated conditions:

Ambient Air Temperature	BTU/hr per sq. ft of Floor Area to be Heated	
	At 50 ft/min of wind (15.2 m/min)	At 100 ft/min of wind (30.5 m/min)
40°F / 4°C	150—165	165—180
55°F / 13°C	75—88	85—100

Building Heat

Calculate the total heat input required, ensuring the inclusion of any unheated make-up air due to exhaust fans. Use the following chart as guidance to heater placement.

Model/BTUH		M-20	M-40	M-60	M-90	M-120
Heater Mounting Height, ft (m)	Mounting Angle 0°-10°	10-15	12-19	14-22	15-24	17-29
	Mounting Angle 30°	9-13	11-17	13-19	14-22	16-25
Distance of first heater row from outside wall, ft (m)		6 (1.9)	10 (3.1)	12 (3.7)	14 (4.3)	16 (4.9)
Distance between heaters along outside wall*, ft (m)		8-20 (2.5 – 6.1)	15-30 (4.6 – 9.2)	20-40 (6.1 – 12.2)	30-50 (9.2 – 15.2)	40-60 (12.2 – 18.3)
Distance between rows – out-side wall row to next interior row, ft (m)		30-60 (9.2 – 18.3)	50-80 (15.2 – 24.4)	75-110 (22.9 – 33.5)	90-115 (27.5 – 35.0)	100-125 (30.5 – 38.1)
* Distance between heaters along interior rows should be up to twice the indicated number						



ENGINEERING SPECIFICATIONS

Energy supply

Gas connection: ½" NPT female thread

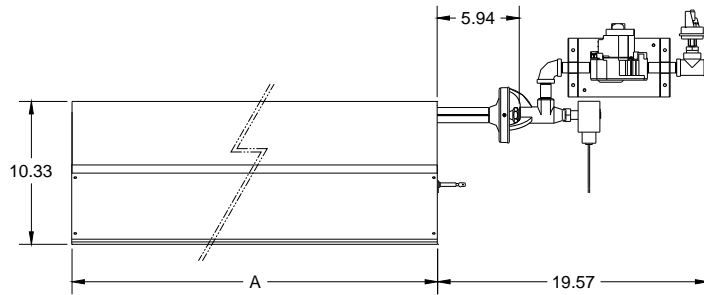
Connection	Gas pressures	
	Maximum	Minimum
Natural Gas	14	6.5" W.C. (0.22 psi)
Propane	14	12" W.C. (0.4 psi)

Electrical connection

Alternating current AC, voltage; 24 V, 60 Hz with L, N and Ground (GND)

Power consumption: 12 W for single-stage infrared heaters

MODEL	"A"
M-20	18.90"
M-40	33.43"
M-60	47.95"
M-90	62.48"
M-120	91.54"



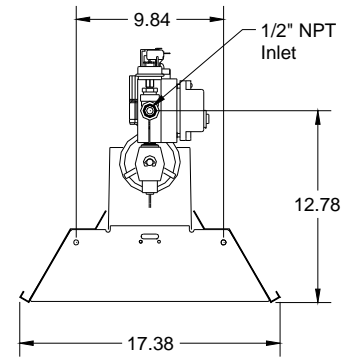
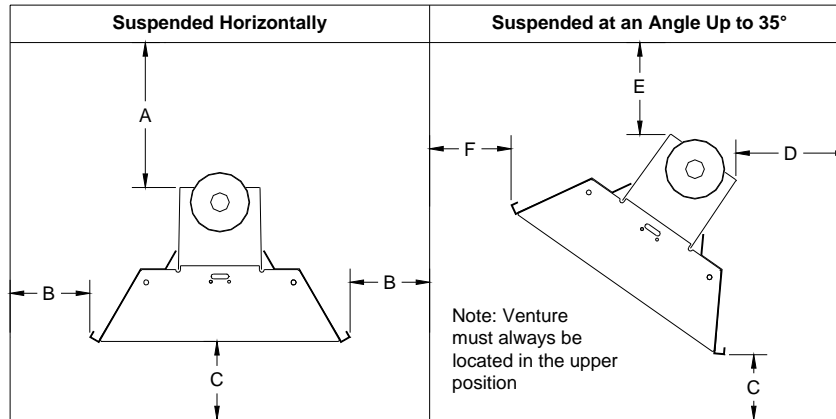
MODEL	Nominal Thermal Load Nat. Gas (Btu / h)	Nominal Thermal Load Propane Gas(Btu / h)	Weight LBS
	M 20	21,000	
M 40	45,000	44,000	56
M 60	65,000	66,000	74
M 90	90,000	90,000	92
M120	125,000	125,000	128

Single Stage

Gas Pressure:	Natural Gas	Propane
Minimum	6.5" W.C.	12" W.C.
Maximum	14" W.C.	14" W.C.
Manifold	5" * W.C.	11" W.C.

*5.25" W.C. for model M 90

Minimum Clearances to Combustibles



MODEL	Suspended Horizontally			Suspended at an Angle up to 30°		
	A	B	C	D	E	F
M 20	15"	29"	90"	10"	24"	65"
M 40	15"	29"	95"	10"	24"	65"
M 60	15"	32"	100"	10"	24"	68"
M 90	15"	35"	105"	10"	24"	70"
M 120	15"	39"	110"	10"	28"	75"

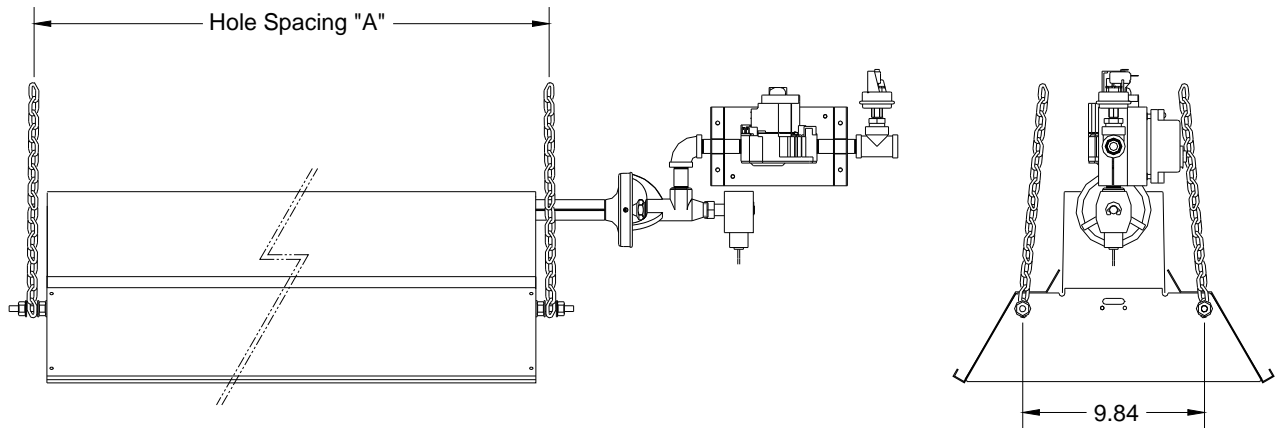


High Intensity Mounting Instructions / Configurations

GoGaS High Intensity Heaters are approved to be operated horizontally and a maximum of 35° inclined angles (as per figure below). Mounting kits are available and can be ordered separately. Use mounting points located on the heater for installations.

Horizontally Mounted High Intensity Heater

Chain

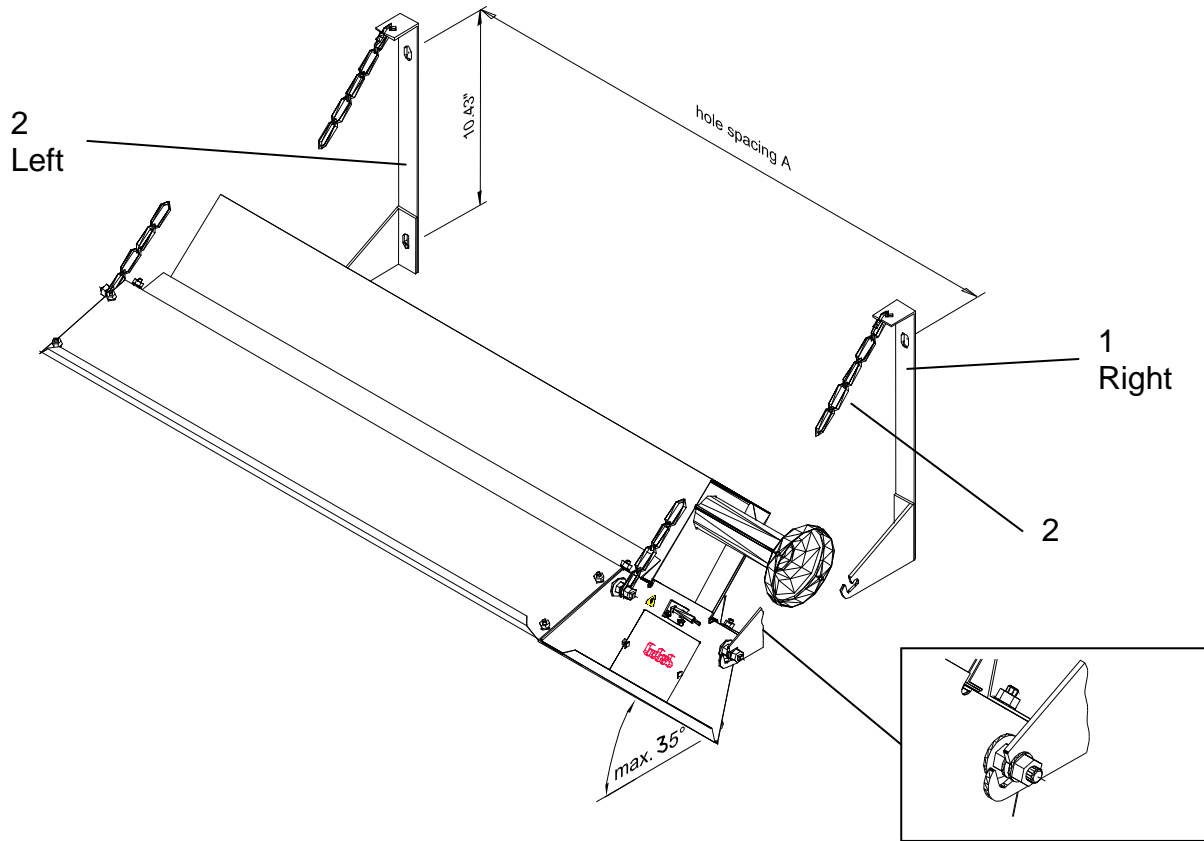


Minimum Mounting Heights (horizontally) relative to Air Temperature

MODEL	air temperature		
	59° F	50° F	41° F
M-20	179.53"	139.37"	124.80"
M-40	226.38"	169.69"	148.82"
M-60	262.20"	192.52"	166.93"
M-90	292.13"	312.20"	182.68"
M-120	342.91"	244.49"	208.66"



Angled high intensity heater



Item	Quantity	Description	Type
1	1 set	Angled suspension	AW 84/II
2	1 set	Accessories	AW 84/II

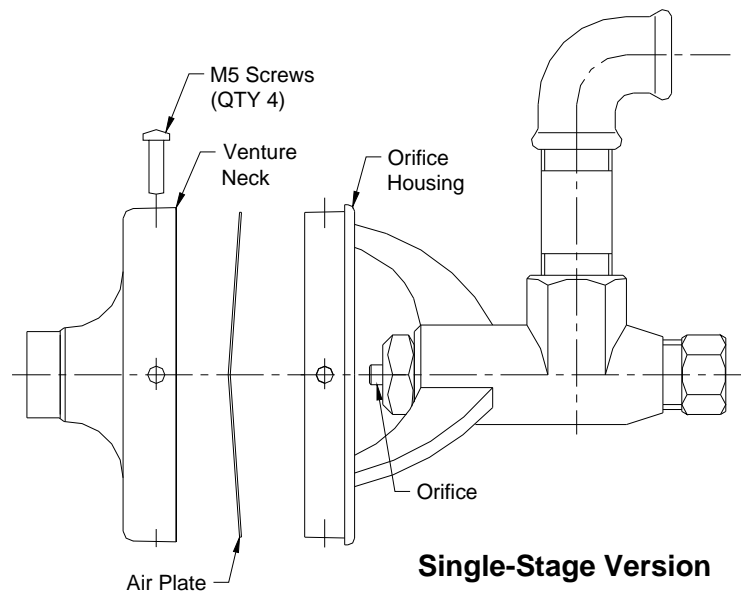
Type	M-20	M-40	M-60	M-90	M-120
Hole spacing A (inches)	19.882	34.409	48.937	63.464	92.52
Weight (pounds)	15.00	29.00	37.50	48.50	68.50

Minimum Mounting Heights (angled at 30°) relative to Air Temperature

MODEL	air temperature		
	59° F	50° F	41° F
M-20	162.60"	127.56"	115.35"
M-40	201.97"	152.76"	135.43"
M-60	232.28"	172.05"	150.79"
M-90	257.87"	188.19"	163.78"
M-120	300.79"	215.75"	185.83"

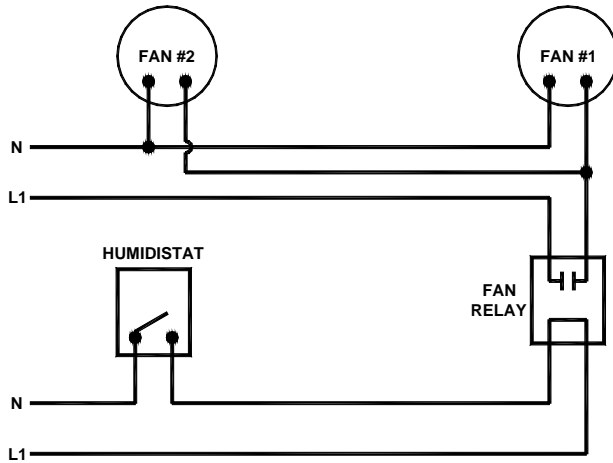
Air Plate Installation Instructions

Single Stage Infrared Heaters



- If mechanical exhaust or humidistat is used in the building, it is typical to interconnect these in the heater circuit as shown in figure below.

Block Diagram for interconnecting Fan / Humidistat



When using a humidistat to control exhaust fans, wire the humidistat to cause the fan to operate on humidity rise NOT humidity fall. Depending on fan horsepower, a relay may or may not be needed.

Single-stage electrical connection / Wiring Diagram

- Connect the electrical lead wires to the gas valve control using these symbols (L1, N, and GND) and make sure to ground the valve.
- Make sure the input voltage going to the control assembly is a 24 V 60Hz AC before connecting to the valve.

WIRING DIAGRAM

