



# INFRARED HEATER CATALOG ELECTRIC & GAS

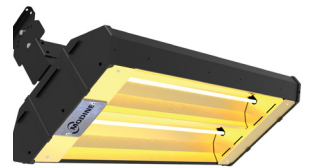
## ELECTRIC UNITS



MEQ

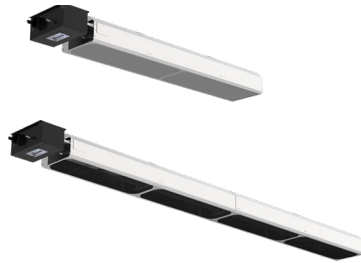


MES



MEL

## GAS UNITS



MRS & MRL



IPT



IHR



OHP



Infrared Heating Defined

Advantages of Infrared Heating

Typical Applications

Electric Infrared

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- MEL - High Intensity, Commercial Grade Heater 8

Gas Infrared

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**Infrared Heating Defined**

Infrared heating systems rely upon the transfer of radiant energy from hot heat exchanger surfaces (up to 1850°F for high intensity heaters) through the air to cooler surfaces, without the use of an air mover. Since radiant energy always travels in a straight line from its source, people and objects within a direct line-of-sight of the heat exchanger become warmed immediately.

While capable of being used for total building heating or large area heating, they are ideally suited for spot heating applications. Spot heating involves small areas such as loading dock doors and single person work cells.

**Advantages of Infrared Heating**

- No air mover, reducing electricity and maintenance costs while increasing worker comfort from the absence of drafts and annoying fan noise.
- Quick temperature recovery, as only objects need to be heated, not large volumes of air.
- Significant energy savings through use of zone control and/or spot heating, which heats objects without the need to heat large air volumes.

**Typical Applications**

The following are examples of applications that can benefit from high-intensity infrared heating:

- Manufacturing facilities
- Vehicle repair centers
- Warehouses and loading docks
- Aircraft hangars
- Indoor tennis courts
- Indoor golf driving ranges
- Emergency vehicle garages
- Indoor stadium seating areas

The following are examples of applications that can benefit from low-intensity infrared heating:

- Manufacturing facilities
- Vehicle repair centers
- Warehouses and loading docks
- Aircraft hangars
- Tennis courts
- Car washes
- Golf driving ranges
- Covered walkways
- Emergency vehicle garages
- Stadium seating areas
- Vestibules

See Infrared Design and Engineering Guide 9-200 for additional application information.

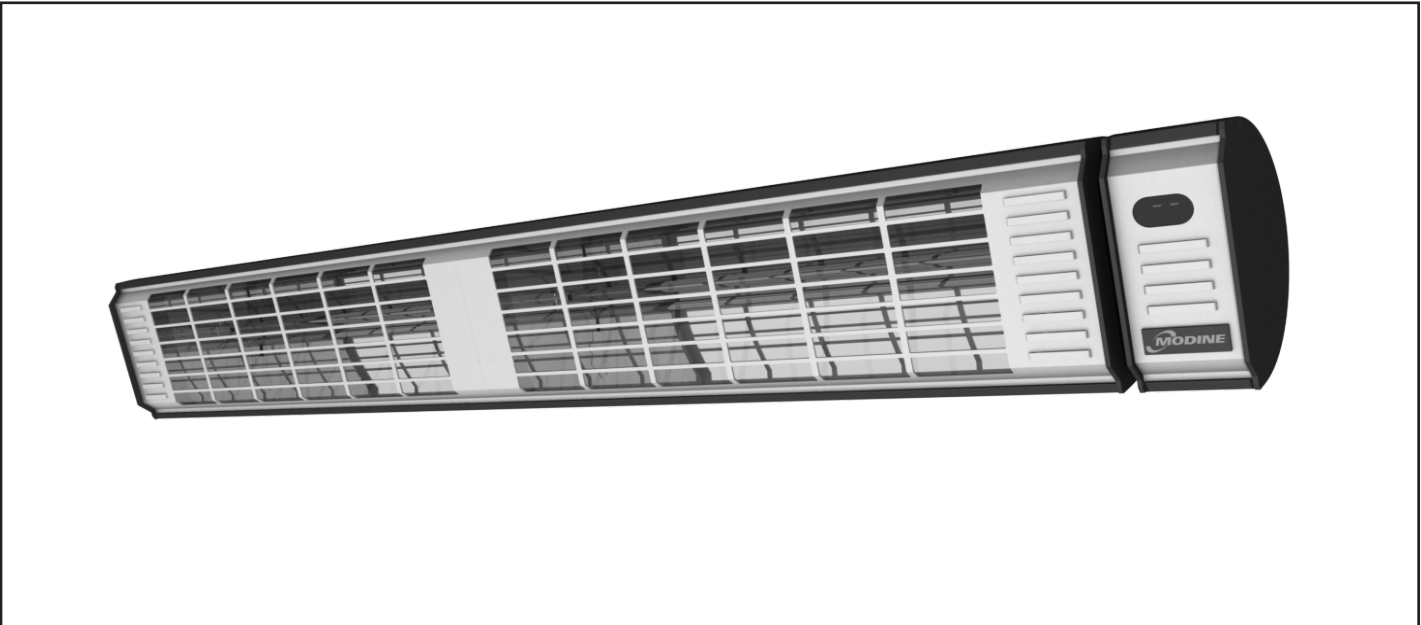


**! WARNING**  
 ANY gas-fired unit in areas where chlorinated, halogenated or acid vapors are present in the atmosphere.

**! WARNING**  
 Do not install in potentially explosive or flammable atmosphere laden with dust, sawdust, or similar airborne materials.

As Modine Manufacturing Company has a continuous product improvement program, it reserves the right to change design and specifications without notice.

Figure 6.1 - Construction Features - Model MEQ



FEATURES	BENEFITS
1. High-intensity, low light Tungsten bulb	1. Supplies instantaneous, directional heat for indoor and outdoor applications
2. Extruded aluminum black powder-coated housing	2. Resists corrosion and deformation over time
3. Filtered bulb	3. Evenly distributes heat that and reduces visible light output
4. Powerful infrared performance	4. Reduces wasted energy by warming people and objects and not the air between them
5. Durable construction	5. For indoor and outdoor use. Note: Do not use models above 1500W for indoor residential applicaitons
6. Onboard controls and remote control	6. Allow for integration with other systems or stand alone capibility with 6 heat settings

Ideal for light commercial and residential applications

For use in non-hazardous areas only  
 Heaters include ip 65 rating and are approved for outdoor use

Table 12.1 Model Nomenclature & Available Models - 28", 40" and 46"

Model	Material Type	Power (W)	Voltage (V)	Amps	BTU/h
MEQ15A01	Powder coated extruded aluminum	1500	120	12.5	5,115
MEQ30A12		2250/3000	208/240	10.8/12.5	7,673/10,230
MEQ48A12		3605/4800	208/240	17.3/20	12,293/16,368

Table 12.1 - Heater Dimensions

Model	Length (in)	Width (in)
MEQ15A01	27.6	6.6
MEQ30A12	39.6	6.6
MEQ48A12	46.3	6.6

Figure 12.1

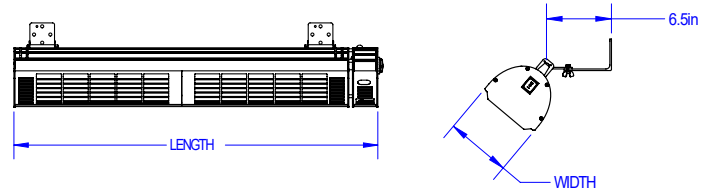
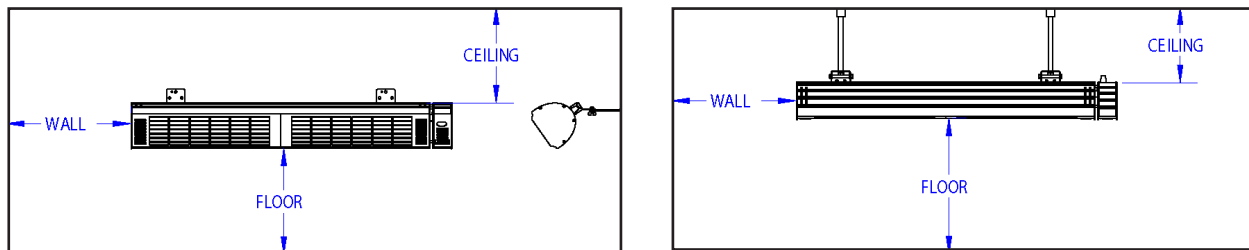


Table 12.2 - Clearance and Mounting Options

Model	Floor	Ceiling (Wall Mount)	Ceiling (Ceiling Mount)	End	Side	Mounting Option
MEQ15A01	6' 7"	12"	N/A	18"	18"	Wall
MEQ30A12	8'	12"	12"	18"	18"	Wall or Ceiling
MEQ48A12	8'	12"	12"	18"	18"	Wall or Ceiling

Figure 12.2

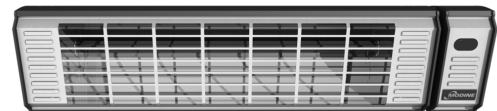


Heater coverage area may be reduced in highly exposed areas. Contact dealer for specifying support.

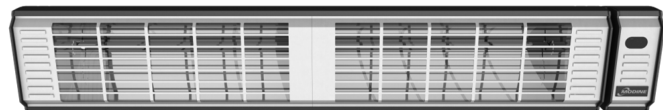
Always maintain 6' front clearance to combustibles, keep combustibles away from the sides and rear.

MEQ15A01 only available with wall mount

MEQ15A01



MEQ30A12



MEQ48A12

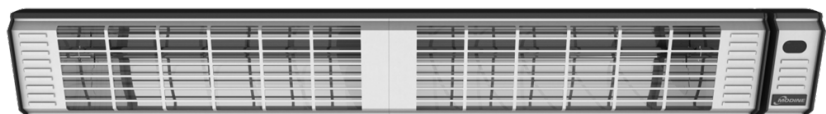


Figure 7.1 - Construction Features - Model MES



FEATURES	BENEFITS
1. Long wave radiant infrared heat	1. Provides consistent and powerful heat in areas with less outdoor exposure
2. Extruded aluminum black powder-coated housing	2. Resists corrosion and deformation over time
3. Zero light emission	3. Keeps the ambiance of your environment intact
4. Architectural design with low clearance brackets	4. For an aesthetic fit in your favorite area
5. Completely silent operation	5. For indoor and outdoor commercial and residential use

Ideal for residential and some light commercial applications

No light radiant heater for use in enclosed or semi -enclosed outdoor spaces in moderate climates. Installer, specifier or engineer should target 8' mounting height to bottom of heater for optimal performance.

Table 13.1 Model Nomenclature & Available Models - 32" and 66"

Model	Material Type	Power (W)	Voltage (V)	Amps	BTU/h
MES15A01	Powder coated extruded aluminum	1500	120	12.5	5,115
MES32A11		3200	208	15.4	10,912
MES32A12		3200	240	13.3	10,912

Table 13.1 - Heater Dimensions

Model	Length (in)	Width (in)
MEQ15A01	32.5	6.8
MEQ30A12	66	6.8
MEQ48A12	66	6.8

Figure 13.1

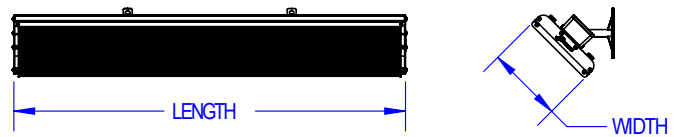
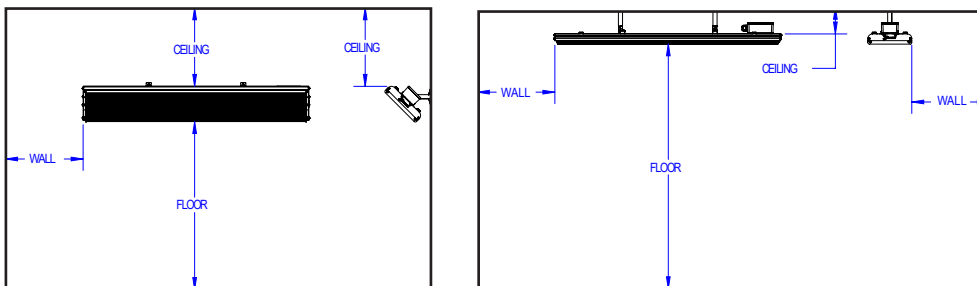


Table 13.2 - Clearance and Mounting Options

Model	Floor	Ceiling (Wall Mount)	Ceiling (Ceiling Mount)	End	Side	Mounting Option
MEQ15A01	6' 7"	8"	4"	18"	18"	Wall or Ceiling
MEQ30A12	6' 7"	8"	4"	18"	18"	Wall or Ceiling
MEQ48A12	6' 7"	8"	4"	18"	18"	Wall or Ceiling

Figure 13.2



MES15A01



MES32A11  
MES32A12

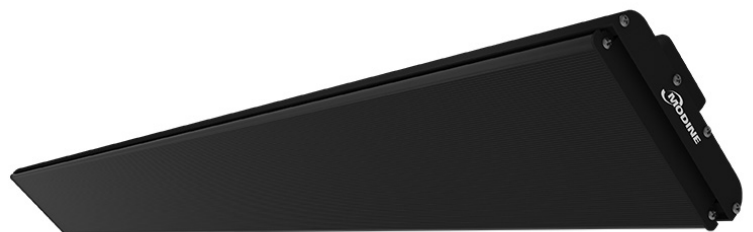


Figure 4.1 - Construction Features - Model MEL



FEATURES	BENEFITS
1. High-end quality and compact, aesthetic design	1. Superior Comfort
2. Black powder-coated housing	2. Reduced Energy Consumption
3. Single, double, or triple lamp models	3. Durability
4. Gold colored anodized aluminum reflectors reduce light glare	4. Even Heat Distribution
5. High temperature nylon louvered end caps	5. Outdoor Tested & Approved
	6. Long Lamp Life Expectancy

Ideal for commercial and industrial applications



Table 10.1 Model Nomenclature

Series	Material Type	Lamp Quantity	Voltage
MEL-24	B = Black Powder Coat with Black Nylon End Caps	1	120 277
MEL-33		2	208 480
MEL-46		3	240 575

Table 10.2 - Available Models and Specifications - 24" and 33"

Series	Lamp Type	Voltage*	Total Amps	Total Watts	BTU/h
MEL-24B1-120	H.O. Medium Wave	120V	11.30	1,360	4,641
MEL-24B1-208	H.O. Medium Wave	208V	6.53	1,360	4,641
MEL-24B1-240	H.O. Medium Wave	240V	5.66	1,360	4,641
MEL-24B1-277	H.O. Medium Wave	277V	4.90	1,360	4,641
MEL-24B1-480	H.O. Medium Wave	480V	2.83	1,360	4,641
MEL-24B2-120	H.O. Medium Wave	120V	22.60	2,720	9,281
MEL-24B2-208	H.O. Medium Wave	208V	13.06	2,720	9,281
MEL-24B2-240	H.O. Medium Wave	240V	11.32	2,720	9,281
MEL-24B2-277	H.O. Medium Wave	277V	9.80	2,720	9,281
MEL-24B2-480	H.O. Medium Wave	480V	5.66	2,720	9,281
MEL-24B3-208	H.O. Medium Wave	208V	19.59	4,080	13,922
MEL-24B3-240	H.O. Medium Wave	240V	16.98	4,080	13,922
MEL-24B3-277	H.O. Medium Wave	277V	14.70	4,080	13,922
MEL-24B3-480	H.O. Medium Wave	480V	8.49	4,080	13,922
MEL-33B1-208	H.O. Medium Wave	208V	10.20	2,125	7,251
MEL-33B1-240	H.O. Medium Wave	240V	8.85	2,125	7,251
MEL-33B1-277	H.O. Medium Wave	277V	7.67	2,125	7,251
MEL-33B1-480	H.O. Medium Wave	480V	4.42	2,125	7,251
MEL-33B2-208	H.O. Medium Wave	208V	20.40	4,250	14,502
MEL-33B2-240	H.O. Medium Wave	240V	17.70	4,250	14,502
MEL-33B2-277	H.O. Medium Wave	277V	15.34	4,250	14,502
MEL-33B2-480	H.O. Medium Wave	480V	8.84	4,250	14,502
MEL-33B3-277	H.O. Medium Wave	277V	23.01	6,375	21,752
MEL-33B3-480	H.O. Medium Wave	480V	13.26	6,375	21,752

\* Heaters are configured at the factory for single phase wiring. If three phase service is desired, it must be wired as such as wired as such in the field by a trained installer / electrical contractor.

Table 11.1 - Available Models and Specifications - 46"

Series	Lamp Type	Voltage*	Total Amps	Total Watts	BTU/h
MEL-46B1-277	H.O. Medium Wave	277V	11.55	3,200	10,919
MEL-46B1-480	H.O. Medium Wave	480V	6.66	3,200	10,919
MEL-46B1-575	H.O. Medium Wave	575V	5.56	3,200	10,919
MEL-46B2-277	H.O. Medium Wave	277V	23.10	6,400	21,838
MEL-46B2-480	H.O. Medium Wave	480V	13.32	6,400	21,838
MEL-46B2-575	H.O. Medium Wave	575V	11.12	6,400	21,838
MEL-46B3-480	H.O. Medium Wave	480V	19.98	9,600	32,757
MEL-46B3-575	H.O. Medium Wave	575V	16.68	9,600	32,757

\* Heaters are configured at the factory for single phase wiring. If three phase service is desired, it must be wired as such as wired as such in the field by a trained installer / electrical contractor.

Figure 11.1 - Heater Dimensions

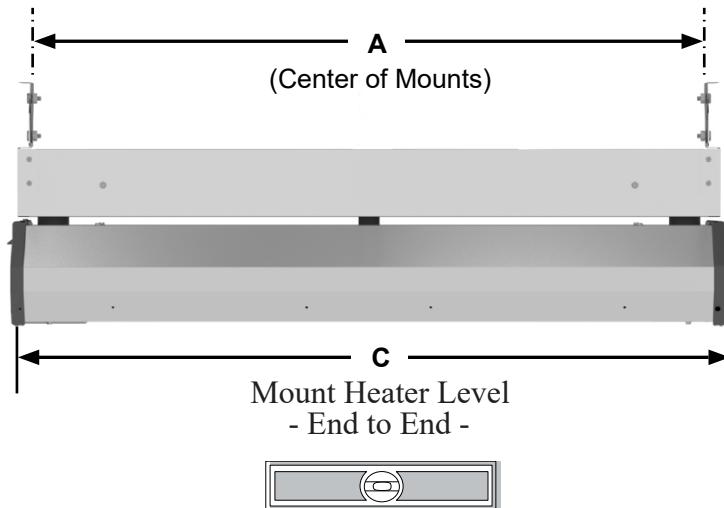
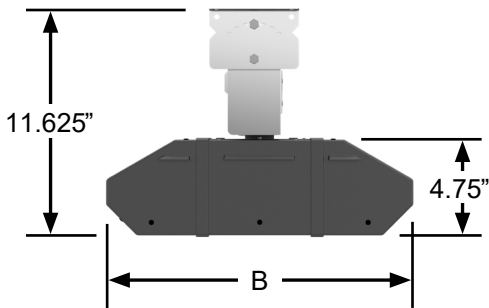


Table 11.2 - Physical Dimensions (Inches)

Model No.	A	B	C
MEL-24B1	23.50	9.625	24.50
MEL-24B2	23.50	15.25	24.50
MEL-24B3	23.50	21.00	24.50
MEL-33B1	32.50	9.625	33.50
MEL-33B2	32.50	15.25	33.50
MEL-33B3	32.50	21.00	33.50
MEL-46B1	45.50	9.625	46.50
MEL-46B2	45.50	15.25	46.50
MEL-46B3	45.50	21.00	46.50

Figure 11.2 - Mounting Centers

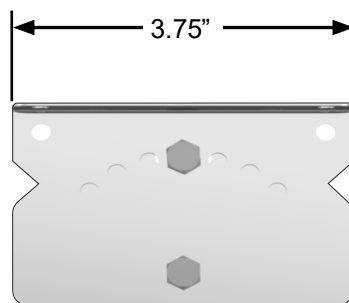
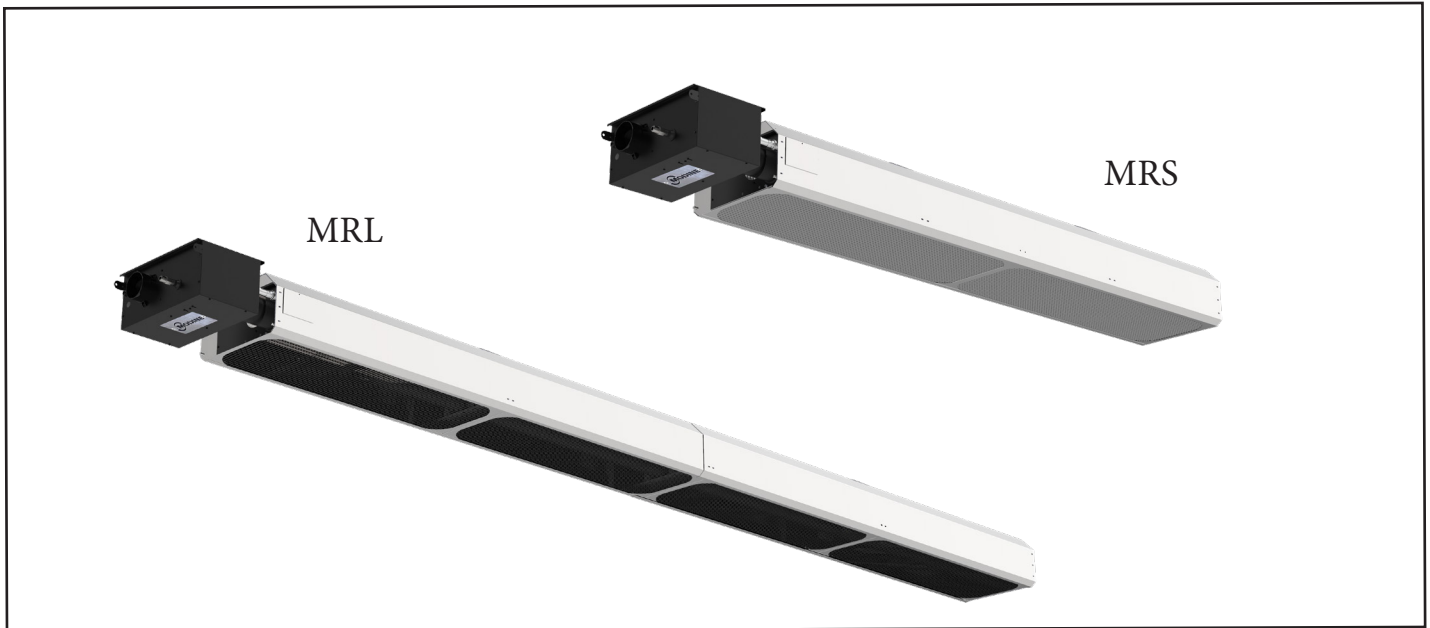


Figure 4.1 - Construction Features - Model MRS & MRL



FEATURES	BENEFITS
1. Aluminum housing & decorative modular grill	1. True outdoor performance and weather resistance for years to come
2. Modular, easy install design	2. Allows for installation in minutes
3. Patented two-stage heating operation	3. Provides adaptability to the environment and prevents overfiring
4. Available in two lengths and four output levels	4. Simply choose the unit that fits your applicaiton, or use mulitple units together to heat larger spaces
5. Stainless steel flexible gas connector included	5. For easy contractor pull in reliability
6. Self-diagnostic LED and microprocessor based circuitry	6. Enhanced safety and greater reliability



MRS Specifications

Model Number	Gas Type	BTU/h (High Fire)	BTU/h (Low Fire)	Length	Unit Weight (lbs.)	Recommended Mounting Height*	Radiant Surface Area (sq. ft.)
MRS-15-50N	Natural	50,000	35,000	108"	115	9' to 16'	20.2
MRS-15-50P	Propane	50,000	45,000	108"	115	9' to 16'	20.2

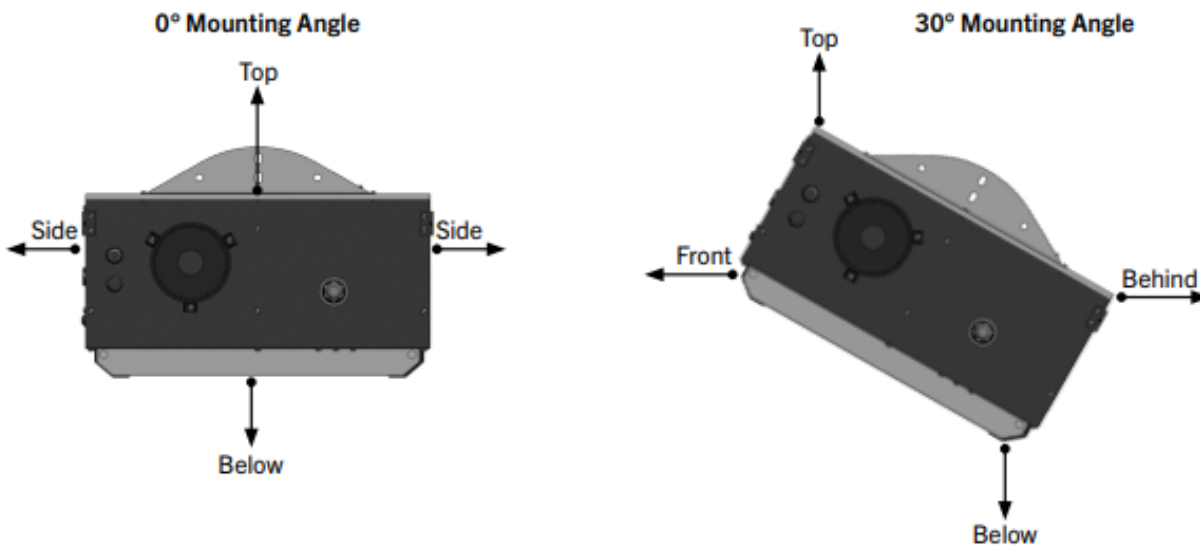
\* Typical or recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

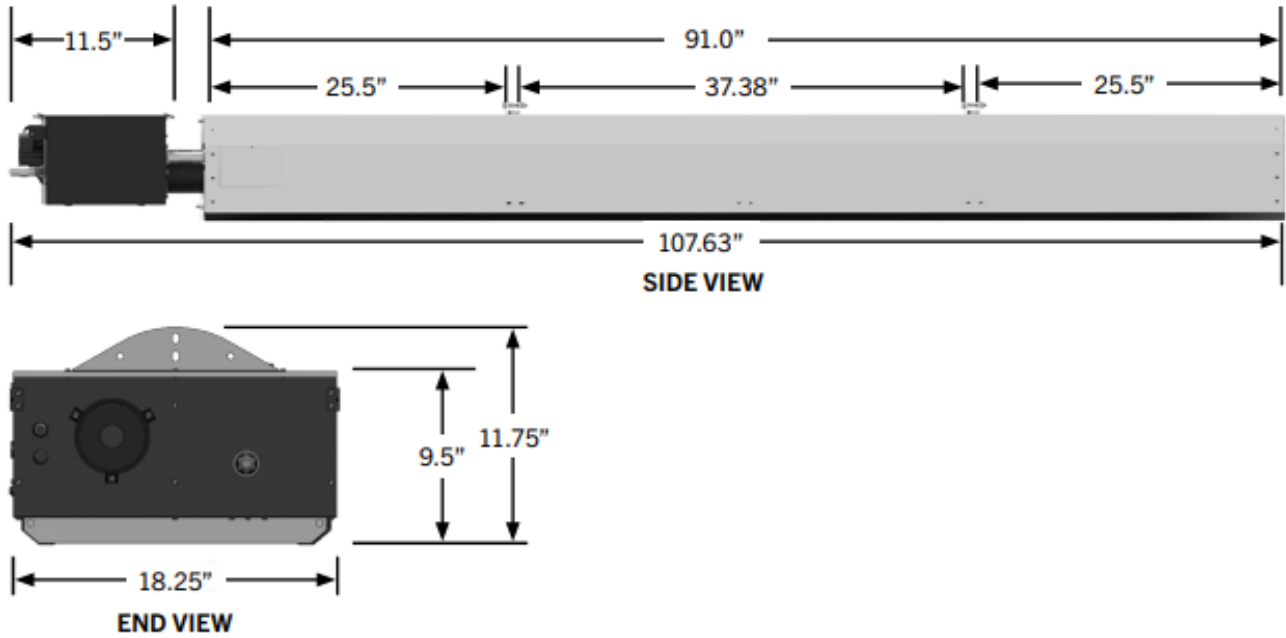
Chart 2.2 • Clearances to Combustible Materials in Inches (see Figure 2.1)

Model Number	Mounting Angle*	Sides		Top	Below	End
		Front	Behind			
MRS-15-50[N, P]	0°	14	14	10	50	12
	30°	25	10	12	40	12

\* Heaters mounted on an angle between 0° and 30° must maintain clearances posted for 0° or 30°, whichever is greater.

Figure 2.1 • Mounting Angles





**Chart 3.1 • Recommended Mounting Heights and Coverages for MRS Series Heaters**

Max. Input (BTU/h)	Typical or Recommended Mounting Height*	Coverage Area Straight Config. (LxW)	Distance Between Heaters (ft.) Dim. A	Distance Between Heater Rows Dim. B	Max. Distance Between Heaters and Wall - Dim. C
50,000	9' - 16'	16' x 10'	10' - 20'	20' - 40'	16'

\*Factory recommended mounting heights are listed as a guideline. If infrared heaters are mounted too low or too high, they may result in discomfort due to excessive heat or lack of heat. Modine generally recommends observing the recommended mounting heights to optimize comfort conditions. However,

## Specifications

Chart 1.1 • MRL Specifications

Model Number	Gas Type (Select One)	BTU/h (High Fire)	BTU/h (Low Fire)	Length	Unit Weight (lbs.)	Recommended Mounting Height*	Radiant Surface Area (sq. ft.)	36" Baffle Sections
MRL-30-065	Nat. or Prop.	65,000	50,000	16'-4"	170	9' to 16'	26.7	4
MRL-30-080	Nat. or Prop.	80,000	52,000	16'-4"	170	9' to 16'	26.7	4
MRL-30-100	Nat. or Prop.	100,000	65,000	16'-4"	170	9' to 16'	26.7	4

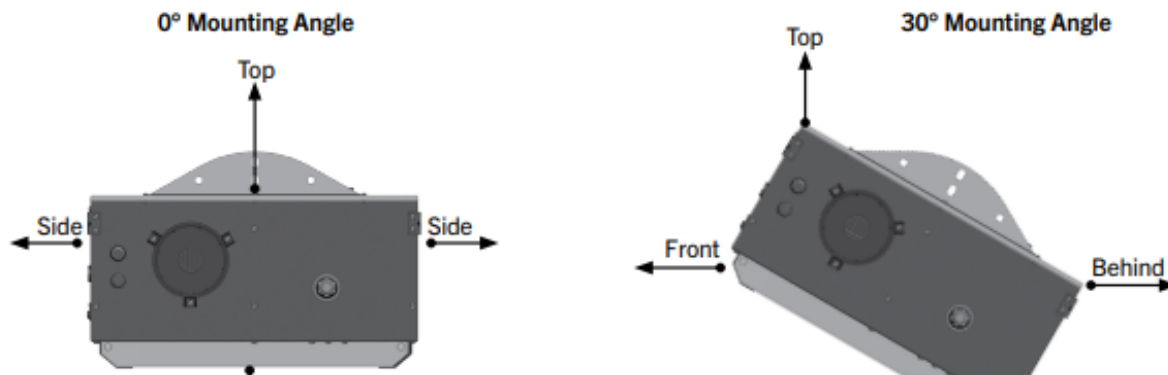
\* Typical or recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

Chart 2.2 • Clearances to Combustible Materials in Inches (see Figure 2.1)

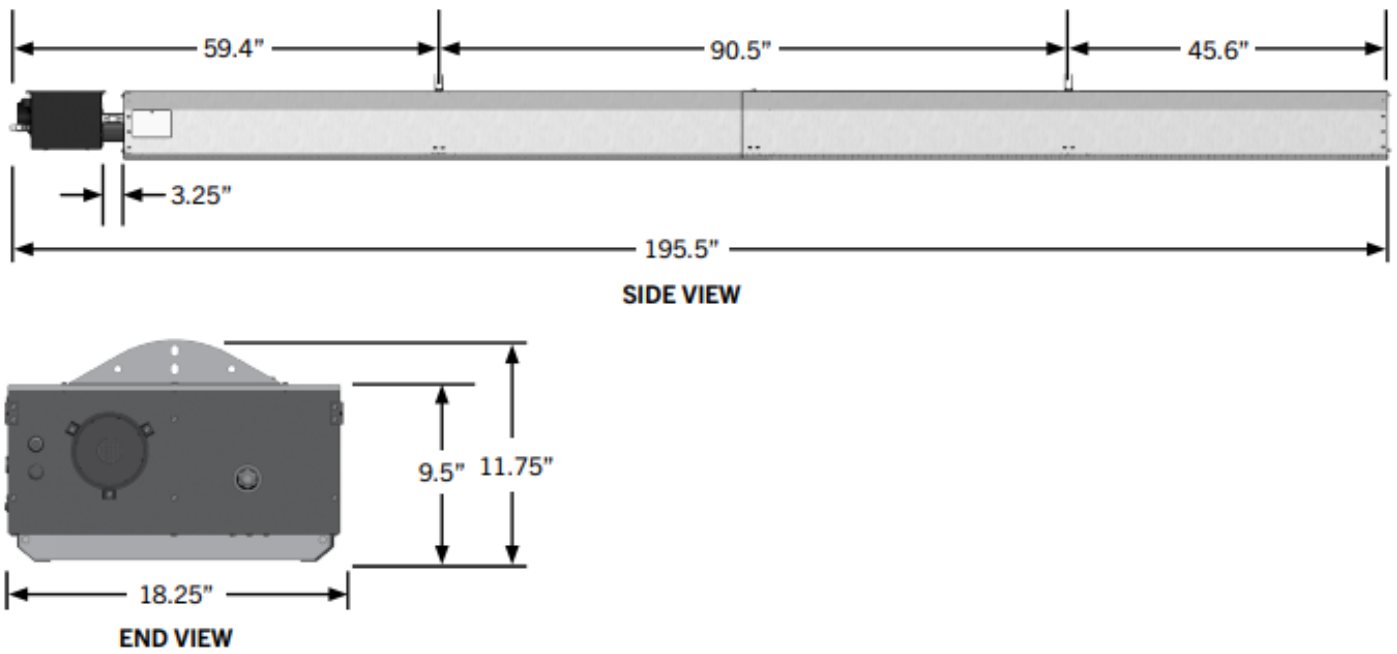
Model Number	Mounting Angle*	Sides		Top	Below	End
		Front	Behind			
MRL-30-65 [N, P]	0°	25	25	6	60	12
	30°	36	10	9	47	12
MRL-30-80 [N, P]	0°	25	25	6	60	12
	30°	36	10	9	47	12
MRL-30-100 [N, P]	0°	25	25	6	77	12
	30°	45	10	9	64	12

\* Heaters mounted on an angle between 0° and 30° must maintain clearances posted for 0° or 30°, whichever is greater.

Figure 2.1 • Mounting Angles



**Figure 3.1 • Heater Dimensions**

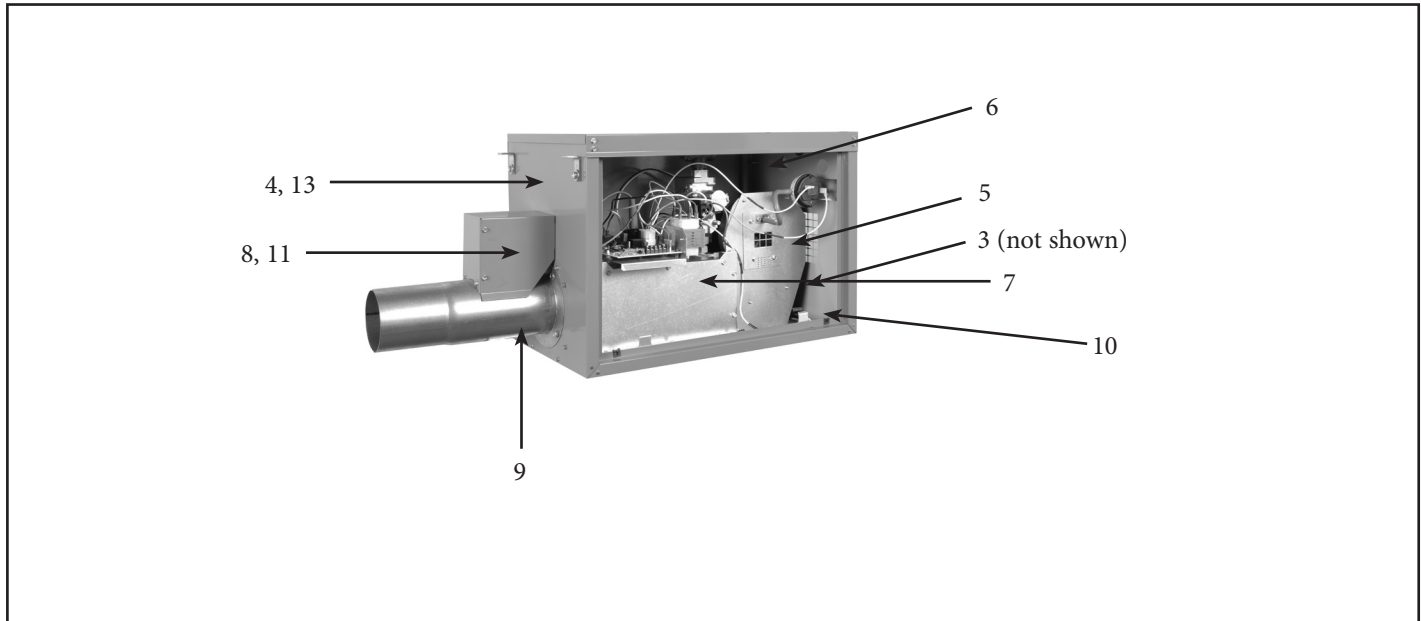


**Chart 3.1 • Recommended Mounting Heights and Coverages for MRL Series Heaters**

Max. Input (BTU/h)	Typical or Recommended Mounting Height*	Coverage Area Straight Config. (LxW)	Distance Between Heaters (ft.) Dim. A	Distance Between Heater Rows Dim. B	Max. Distance Between Heaters and Wall - Dim. C
65,000	9' - 16'	26' x 12'	10' - 20'	20' - 40'	16'
80,000	9' - 16'	26' x 12'	10' - 20'	20' - 40'	16'
100,000	9' - 16'	26' x 12'	10' - 20'	20' - 40'	16'

\* Factory recommended mounting heights are listed as a guideline. If infrared heaters are mounted too low or too high, they may result in discomfort due to excessive heat or lack of heat. Modine generally recommends observing the recommended mounting heights to optimize comfort conditions. However, certain applications such as spot heating, freeze protection, outdoor patio heating or very high ceilings may result in the heaters being mounted outside of the factory recommended mounting heights.

Figure 9.1 - Construction Features



Features	Benefits
1. Heat-treated darkened aluminized steel tubes	1. Heat-treated darkening increases both radiant heat output for more heat near the end of the tube system and eliminates the scratching and flaking that can occur with painted tubes. Aluminized steel provides corrosion resistance for longer life.
2. Polished aluminum reflectors	2. Direct radiant heat from the tubes to the desired area, for increased comfort over wider areas.
3. Removable side-access panels on both sides of the burner box	3. Can be removed completely while accessing either side of the unit.
4. Durable polyester-powder paint	4. Maintains life-long new appearance.
5. Permanently-lubricated combustion blower motor	5. Reduces maintenance.
6. 180 degree-rotating gas valve	6. Allows convenient access from either side of the burner box.
7. Sealed burner compartment	7. Allows manifold pressure adjustments during unit operation, which increases ease of installation and service.
8. Flame sensor and ignitor mounted externally to the combustion chamber	8. Improve service access.
9. Flame observation window on underside of combustion chamber	9. Provides a convenient visual check of unit operation from ground level.
10. Gas valve operation light on back panel on the unit	10. Indicates that the combustion blower is operating.
11. Four-trial separate flame sensor	11. Provides reliable ignition.
12. System approval for vented and common vented installation	12. Maximizes installation flexibility.
13. Weatherproof, water-resistant casing	13. Maximizes application flexibility for both indoor and outdoor installation.
14. ETL design certification	14. Assures that the unit conforms to national safety standards.

Ideal for commercial and industrial applications

Table 17.1 - Performance

Input MBH	50	60	75	100	125	150	175	200
Certified Tube Lengths (ft.)	20, 30	20, 30, 40	20, 30, 40	30, 40, 50 <sup>ⓐ</sup>	40, 50, 60	50, 60	50, 60, 70 <sup>ⓑ</sup>	50, 60, 70 <sup>ⓑ</sup>
Recommended Mounting Height (ft.) <sup>ⓑ</sup>	10 - 12	10 - 12	12 - 14	12 - 14	15 - 22	15 - 22	18 - 28	20 - 30
Recommended Tube System Application <sup>ⓑ</sup>	Spot or Area Heating	U-Tube						
	Total Building Heating	Straight Tube						

<sup>ⓑ</sup> Recommended Mounting Height and Tube System Applications are meant as a general guide and are adjusted to meet the requirements of the actual application. The applications are as follows:

- Spot or Area Heating is an application where occupant comfort is the goal and occupant(s) are either relatively stationary (Spot - Example: small work cell or dispersed over a slightly wider range than with Spot Heating (Area - Example: assembly line). Mounting height is typically at the low end of the range shown above.
- Total Building Heating is an application where average space temperature is to be maintained, however due to the significant temperature gradient differences on long straight tube systems, areas may exist where direct occupant comfort is not achieved.

<sup>ⓐ</sup> IPT 100 not available for Propane Gas operation at 50 ft. tube system length.

<sup>ⓑ</sup> IPT 75 not available for Propane Gas operation at 40 ft. tube section length.

Table 17.2 - Utilities

Electrical Rating	Gas Connection (inch)	Minimum Gas Inlet Pressure (" W.C.)	Maximum Gas Inlet Pressure ("W.C.)	Manifold Gas Pressure (' W.C.)	Tube/Vent Diameter (inch)
60Hz/1Ph	1/2 NPT	7.0 (natural gas) 11.0 (propane gas)	14.0	3.5 (natural gas-single stage) 2.5 (natural gas-two stage) 10.0 (propane gas-single stage) 6.2 (propane gas-two stage)	4 (O.D.)

Table 17.3 - Combustible Material Clearances <sup>ⓑ</sup><sup>ⓐ</sup><sup>ⓓ</sup>

IPT			
Combustible Material Clearances (inches)			
Input MBH	"A" <sup>ⓑ</sup>	"B" <sup>ⓐ</sup>	"C" <sup>ⓓ</sup>
50/60	9	54	20
75/100/125	9	76	24
150/175/200	12	106	38

- <sup>ⓑ</sup> Clearance to each end and above the U-Tube is 12 inches.
- <sup>ⓐ</sup> In inverted applications, clearance from radiant tube end is 36" in all directions.
- <sup>ⓓ</sup> Refer to Figures 11.1 through 11.3.

Figure 17.1 - Combustible Material Clearances - Straight Tube

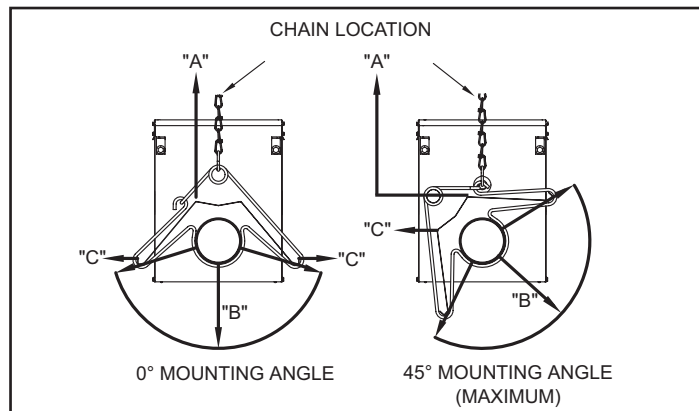


Figure 17.2 - Stacking Height

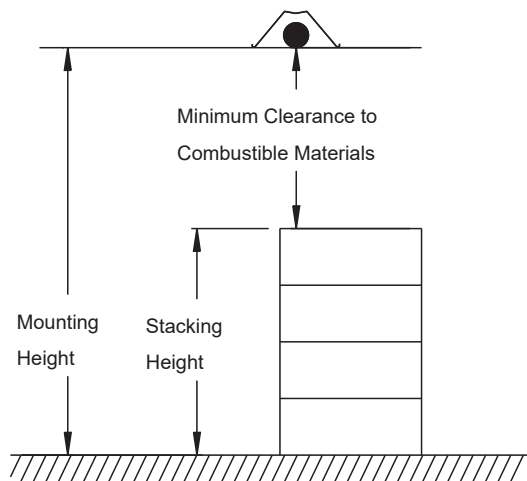


Figure 17.3 - Combustible Material Clearances - U-Tube

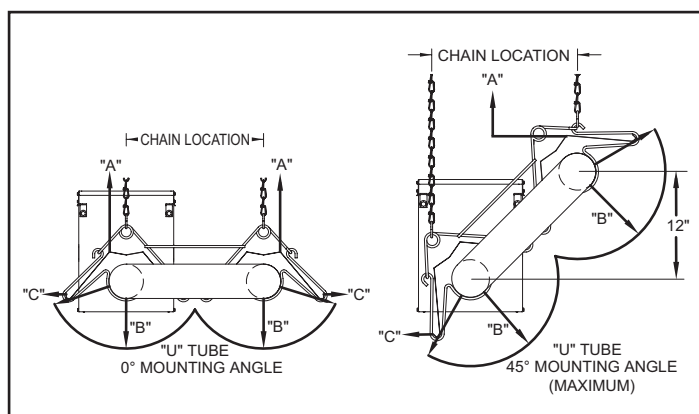


Figure 18.1 - Casing Dimensions

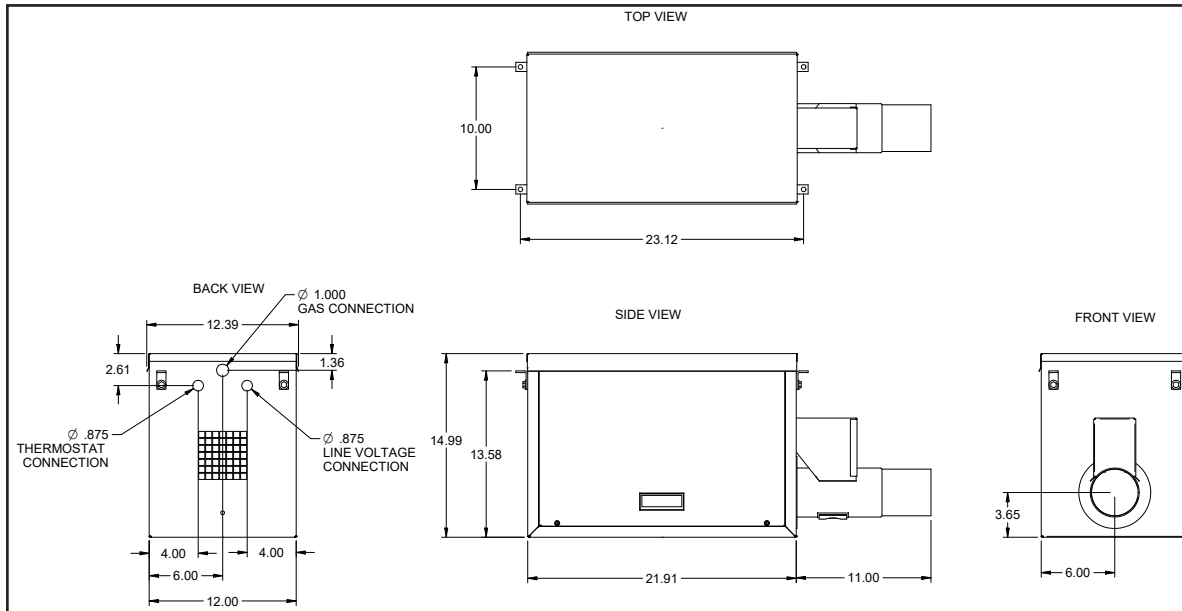


Figure 18.2 - Burner and Tube System Dimensions

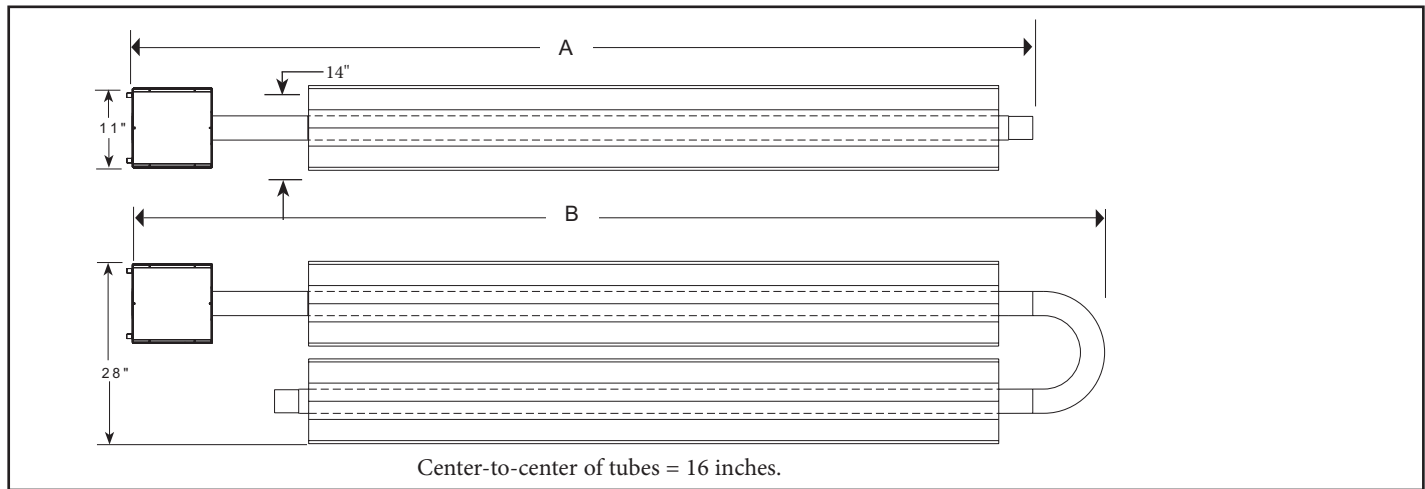


Table 18.1 - Tube Systems Data

Tube Length (ft.)	Straight Tube		U-Tube System	
	System Length "A" (ft.)	System Weight (lb.)	System Length "B" (ft.)	System Weight (lb.)
20	23	78	13	89
30	33	112	18	132
40	43	146	23	157
50	53	180	28	200
60	63	214	33	225
70	73	252	38	277

Table 18.2 - Burner Shipping Weights

Model	Shipping Wt. (lb.)
All Burners	43



**General**

Contractor shall furnish and install Modine model \_\_\_\_\_ low intensity infrared heater(s). The low intensity infrared system shall be straight tube \_\_\_\_\_, U-tube \_\_\_\_\_ configuration. Performance shall be as indicated on the equipment schedule in the plans. The infrared heater(s) shall be certified for indoor and outdoor installations. Infrared heater(s) shall have ETL design certification for use in both the US and Canada.

**Casing**

The controls, combustion air blower and burner shall be housed in a water-resistant casing, providing weatherproof protection. The burner and control box casing shall be constructed of not less than 20 gauge aluminized steel. After forming, the casing parts shall be cleaned of all oils and a phosphate coating applied prior to painting. The phosphated parts shall then be finished with an electrostatically applied, gray-green polyester powder paint finish. The applied polyester powder paint shall be baked on to provide an attractive finish on all of the exposed casing parts.

**Heat Exchanger**

The heat exchanger tubes and combustion chamber shall be constructed of 16 gauge, 4" O. D. aluminized steel, and the first combustion tube for gas inputs 150,000 Btuh and greater shall be 16 gauge 4" O. D. 409 Aluminized Stainless Steel. The last heat exchanger tube shall incorporate a turbulator baffle for maximum efficiency of heat transfer.

The heat exchanger tubes must be used in conjunction with reflectors. The reflector can be adjusted from 0° to 45° from the horizontal plane. Reflectors shall be of bright polished aluminum.

**Controls**

Input power to the infrared heater(s) shall be 115V/60Hz/1ph. Heater(s) shall be equipped with a direct four-trial (three re-trial), 100% shut-off electronic ignition control system with a separate flame sensor. Infrared heater(s) shall be equipped with a 115V/25V control transformer. Thermostat shall operate on 25V. Heater(s) will be equipped with a pre-purge mode, a differential pressure switch, and an indicator light to prove proper operation of the gas valve. All controls shall be rated for a maximum inlet pressure of 1/2 PSI gas pressure.

Controls shall be designed for natural \_\_\_\_\_, propane \_\_\_\_\_ gas having a specific gravity of \_\_\_\_\_, a Btu content of \_\_\_\_\_ Btu/ft<sup>3</sup> at \_\_\_\_\_ feet elevation.

**Motor**

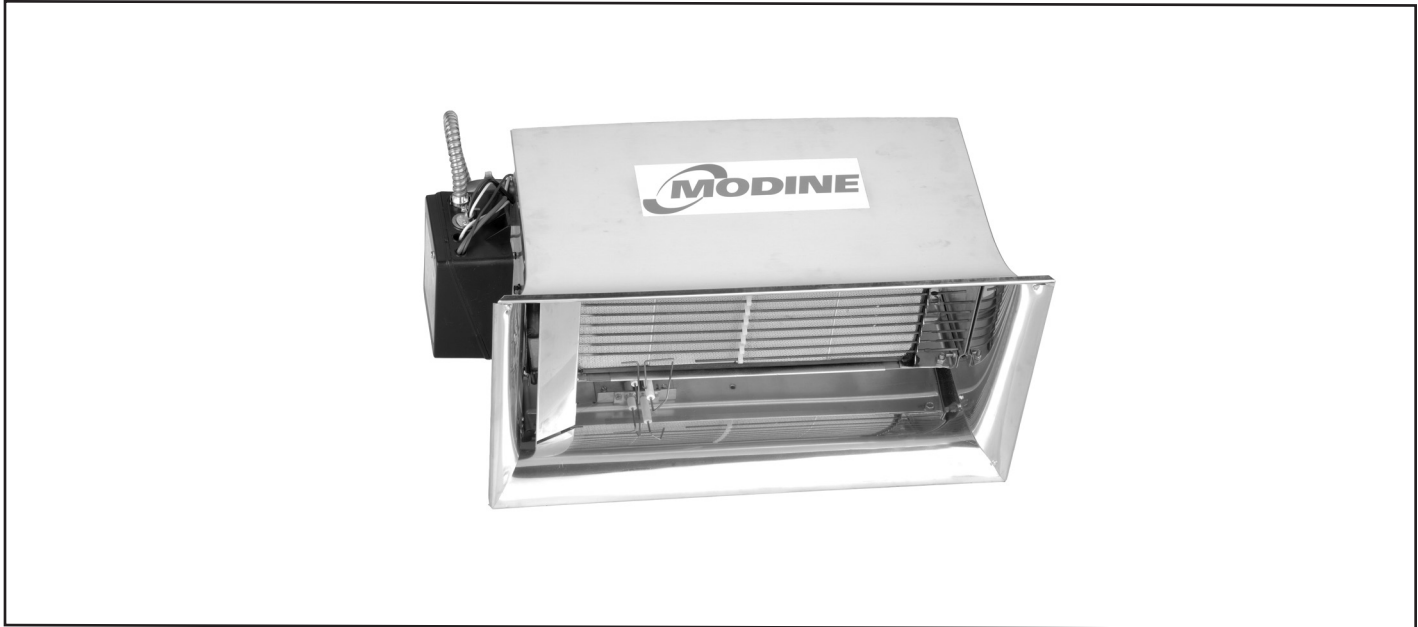
Each heater shall have a single motor. The combustion air blower motor shall be totally enclosed in the control box and the motor shall be protected by a thermal overload switch. The motor shall be .03 H.P., 115 volt, 60 Hz, single phase, with an operating speed of 3000 rpm.

Figure 20.1 - Model Number Designations

DIGIT SEQUENCE	1, 2, 3	4, 5, 6	7	8, 9	10, 11
MODEL NUMBER	<b>IPT</b>	<b>200</b>	<b>S</b>	<b>01</b>	<b>11</b>
MODEL PREFIX: IMPROVED PRESSURE TUBE: IPT	MODEL SIZE: MBH INPUT: 50, 60, 75, 100, 125, 150, 175, 200			CONTROL CODE: 11: SINGLE STAGE, NATURAL GAS 21: SINGLE STAGE, PROPANE GAS 12: TWO STAGE, NATURAL GAS 22: TWO STAGE, PROPANE GAS	
IGNITION TYPE: S: DIRECT SPARK			POWER CODE: 01: 115V/60HZ/1PH		



Figure 5.1 - Construction Features - Model IHR



FEATURES	BENEFITS
1. High temperature cordierite-based grooved ceramic tiles with perforations along both the top and bottom of the grooves	1. Increased temperature and surface area to provide maximum heat transfer while maintaining lower gas input ratings.
2. Polished aluminum reflectors	2. Efficiently direct radiant heat to the desired area, for increased comfort over wider areas.
3. 16 gauge aluminized steel frame	3. Provides support for simple chain mounting.
4. No air mover is utilized	4. Eliminates fan noise, drafts, maintenance and reduces electrical energy costs.
5. Input ranges from 30,000 Btu/hr through 160,000 Btu/hr in Natural or Propane gas	5. Wide input range to accommodate a variety of heating requirements
6. Direct spark or self-energizing standing pilot ignition	6. Maximize application flexibility.
7. 115V, 25V, or millivolt controls	7. Accommodate a wide range of electrical inputs.
8. Externally-mounted controls	8. Allow convenient access to gas valve, control system, transformer, and gas orifices, increasing ease of installation and service.
9. Burners are replaced by removing one fastener	9. Eliminates the removal of the unit from its mounted position for service.
10. CSA design certification for indoor, unvented operation in commercial and industrial installations	10. Assures that the unit conforms to national safety standards.

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Table 14.1 - Performance and Dimensional Data

Model	Gas Controls <sup>③④</sup>	Input Rating (Btu/hr)		Recommended Mounting Height (ft.) <sup>①</sup>		Dimensions (in) <sup>k</sup>		Ship Wt. (lbs)	Radiating Area (sq. in.)
				Standard Reflector	Parabolic Reflector	A	B		
		Natural	Propane	30° Angle	30° Angle				
IHR 30	Single Stage or Millivolt	30,000		12 - 14	12 - 15	12 3/4	14 1/4	44	85
IHR 60	Single Stage or Millivolt	60,000		14 - 16	18 - 21	19 1/8	15 1/4	60	170
IHR 90	Single Stage or Millivolt	90,000		16 - 18	21 - 25	26 5/8	15 1/4	81	255
IHR 130	Single Stage or Millivolt	130,000		21 - 24	26 - 32	32	15 1/4	55	340
IHR 160	Single Stage or Millivolt	160,000		24 - 28	29 - 35	38 1/2	15 1/4	65	425

① See Table 11.1 for allowable mounting angles.

k See Figure 10.1.

③ Single stage controls are direct spark ignition with 100% safety shutoff and are available as either 115V or 24V

④ Millivolt thermostat and 35 feet of wire.

Figure 14.1 - Unit Dimensional Drawing

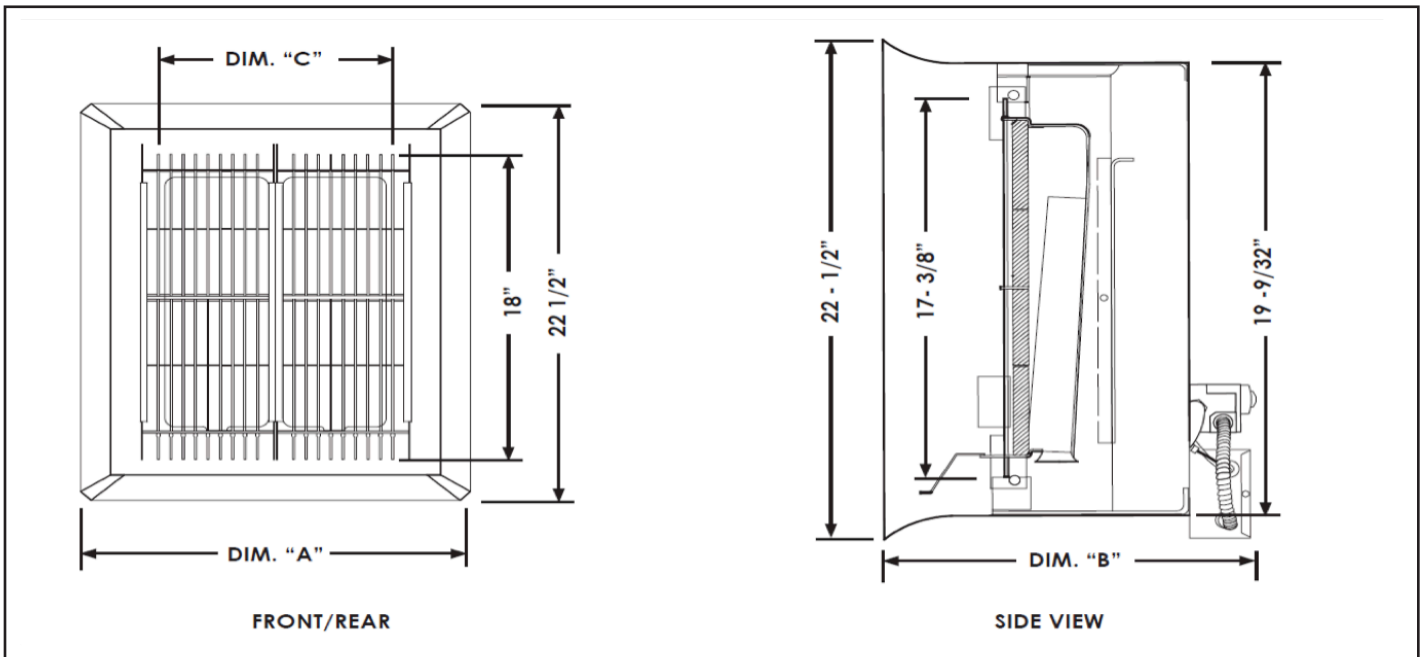


Table 15.1 - Allowable Mounting Angle Range

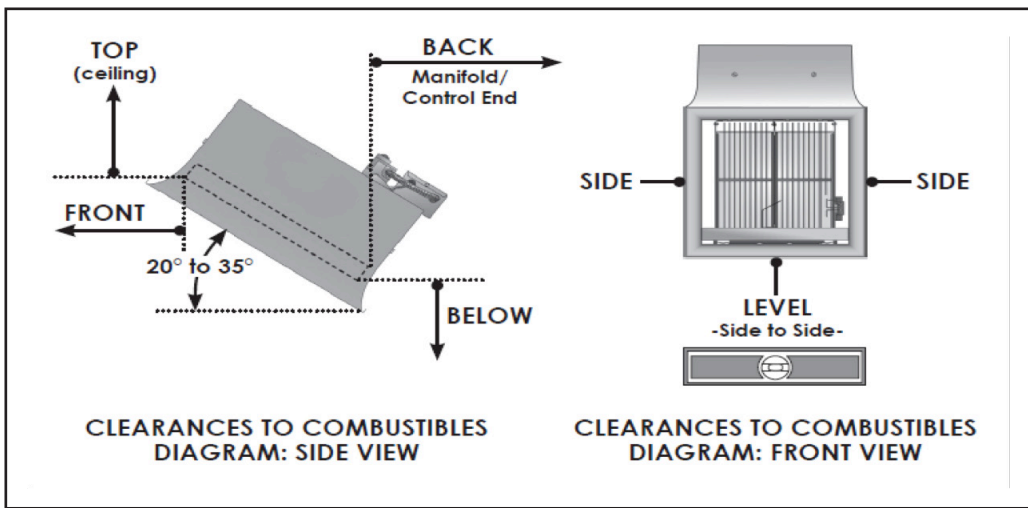
Model Size	Allowable Mounting Angle Range
30 - 160	20° - 35°

Table 15.2 - Clearances to Combustible Materials (See Figure 11.3)

Model Sizes	30	60	90	130	160
Side of Heater	30	32	48	48	50
Back of Heater	18	18	30	30	32
Top of Heater	28	40	42	52	60
Below Front	72	72 <sup>Ⓞ</sup>	98	120	132

ⓄClearance is 80 in. when heater is fitted with a parabolic reflector.

Figure 15.3 - Clearances to Combustibles (See Table 11.2)



**General**

The heater reflector housing shall be constructed of one-side bright polished aluminum. The emitter shall be composed of a perforated ceramic tile on which combustion takes place on the surface. The burner plenum shall be constructed of aluminized steel of one-piece drawn construction. The heater shall be of a modular design employing multiple burners to achieve the specified input.

- The venturi is constructed of stainless or aluminized steel.
- The secondary re-radiating rods shall be constructed of high temperature stainless steel alloy placed in close proximity of the ceramic burner face.
- Parabolic reflectors shall be used when units are installed in high mounting applications or when focusing of the infrared heating pattern is desirable.
- Protective screens shall be used in facilities where debris may damage the heater.

**Burner**

The ceramic burner face shall operate at a temperature range of 1660 degrees F to 1810 degrees F and shall incorporate a secondary re-radiating surface of stainless steel rods to obtain optimum operating temperature and radiant output.

**Reflectors**

The heater reflector housing shall be constructed of one-side bright polished aluminum. The emitter shall be composed of a perforated ceramic tile on which combustion takes place on the surface. The burner plenum shall be constructed of aluminized steel of one-piece drawn construction. The heater shall be of a modular design employing multiple burners to achieve the specified input.

- The venturi is constructed of stainless or aluminized steel.
- The secondary re-radiating rods shall be constructed of high temperature stainless steel alloy placed in close proximity of the ceramic burner face.
- Parabolic reflectors shall be used when units are installed in high mounting applications or when focusing of the infrared heating pattern is desirable.
- Protective screens shall be used in facilities where debris may damage the heater.

**Controls**

Heater(s) shall be equipped with (check one):

- Heaters shall be equipped with one of the following control systems:

Standing Manual Pilot System with 100% safety shut-off of pilot and main burner in case of pilot outage, operating with no external electrical connection but on milli-voltage generated by the pilot flame (NMV-2 or PMV-2).

Direct Spark Ignition System with direct spark ignition of the main burner through a solid state ignition module operating a spark electrode. Loss of power causes 100% safety shut-off of main burner(s). System operates on 120 or 24 volts (NFS-2 or PFS-2). 24V/60Hz/1ph with 6VA maximum power consumption.

Controls shall be exterior mounted for easy accessibility.

All controls shall be rated for a maximum inlet pressure of 1/2 PSI gas pressure. Controls shall be designed for Natural gas having a specific gravity of 0.60, a Btu content of 1050 Btu/ft3 (Alternate: Propane gas having a specific gravity of 1.53, a Btu content of 2500 Btu/ft3) at 0-2000 feet elevation.

**Accessories**

The following field installed accessories shall be included (check those that apply):

Chain mounting set - 5' chain set with 4 "S" hooks. Preset mounting angle of 30°.

Horizontal parabolic reflector - Directs rays directly downward. Can be used for matching horizontal mounting specifications.

Full parabolic reflector - Directs rays in a more focused pattern. Typically used in high mounting applications.

Full parabolic reflector with screen - Directs rays in a more focused pattern. Outer screen protects ceramic grids from objects striking the heater.

DR heater screen - Screen slips on the outside of the reflectors and protects the ceramic grids.

Warning plaque - Hung below heater, restates the clearance to combustible warning.

Figure 19.1 - Model Number Designations

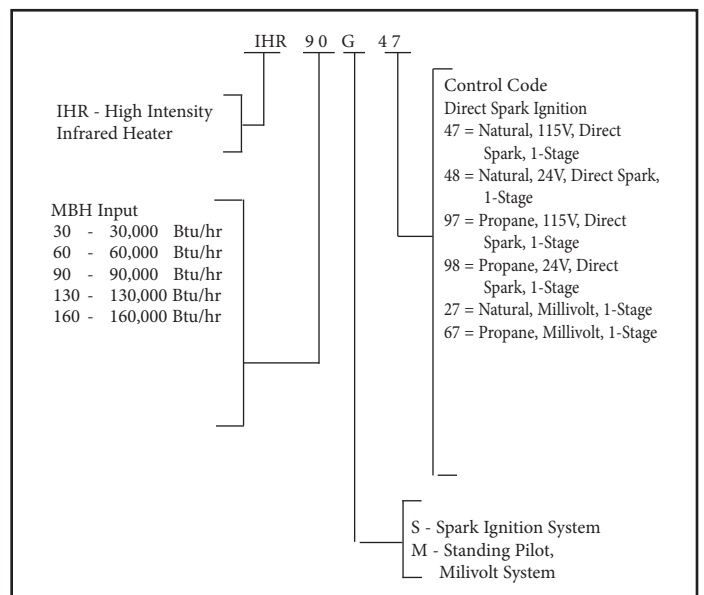


Figure 8.1 - Construction Features - Model OHP



Features	Benefits
1. ETL Design Certified to ANSI Z83.26 Standard	1. Assures that the unit conforms to national safety standards.
2. Decorative stainless steel windscreen eggcrate grille	2. Prevents wind disturbance.
3. Wind and rain protected design	3. Input range to accommodate a variety of heating requirements.
4. 31,000 and 34,000 BTU inputs.	4. Flexible fuel type offering.
5. No Fan Design.	5. Eliminates fan noise, drafts, maintenance and reduces electrical energy costs.
6. Easy access to critical components	6. Allow convenient access to gas valve, control system, transformer, and gas orifices, increasing ease of installation and service.
7. Direct spark or self-energizing standing pilot ignition	7. Maximize application flexibility.
8. Brushed 430 Stainless Steel Housing	8. Provides maximum corrosion resistance.

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Table 16.1 - Performance and Dimensional Data

Model	Housing	BTU/Hr input	Ship Weight	Recommended Mounting Heights ①	Approx. Area Heated	Control Voltage
OHP 31	430 SS	31,000	59 lbs	8.0' to 12.0'	8' x 8'	24 vac
OHP 34	430 SS	34,000	59 lbs	8.5' to 13.0'	9' x 9'	24 vac

①Clearance is 80 in. when heater is fitted with a parabolic reflector.

Figure 16.1 - Unit Dimensional Drawing

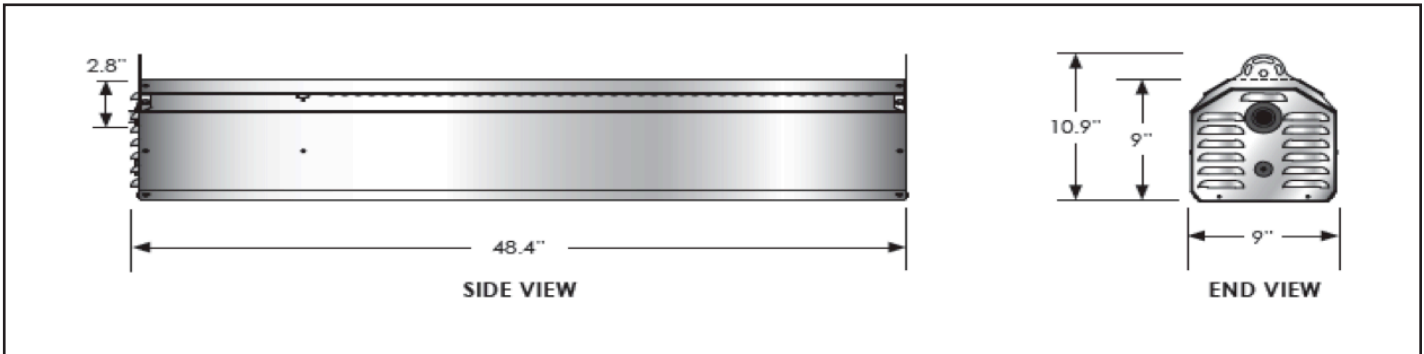
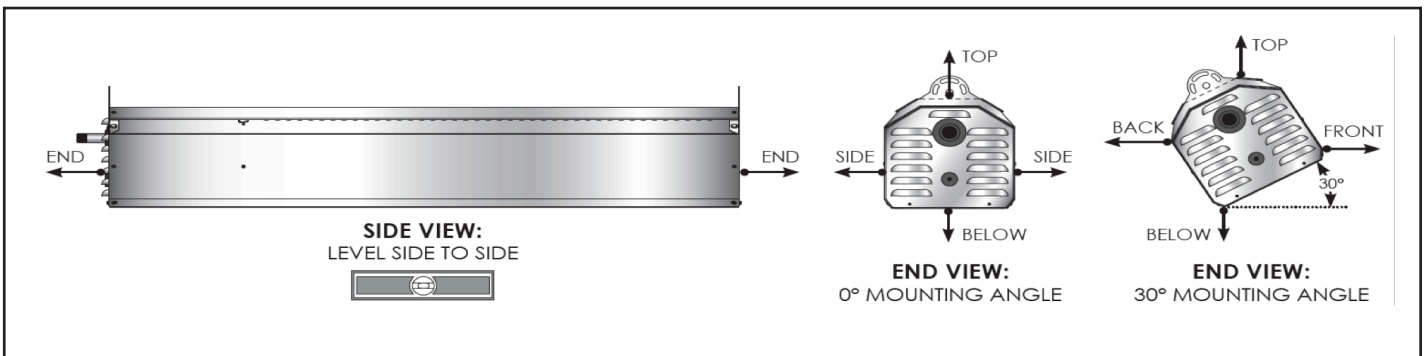


Table 16.2 - Clearances to Combustible Materials

Model Sizes	BTU'Hr	Voltage	Mounting Angle ①	Side	Back	Top	Below	End(s)	Front
31,000 (N,P)	31,000	24 vac	0°	18	N/A	13	48	12	N/A
			30°	N/A	18	18	40	12	36
34,000 (N)	34,000	24 vac	0°	18	N/A	13	48	12	N/A
			30°	N/A	18	18	40	12	36

①Heaters mounted on an angle between 1° to 30° must maintain clearances posted for 0° or 30°; whichever is greater.

Figure 16.2 - Clearance to Combustibles



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