



# CX3 SERIES TUBE HEATERS

## SUBMITTAL DATA – SINGLE STAGE, LOW CLEARANCE LOW INTENSITY INFRARED TUBE HEATERS & ACCESSORIES

SUBMITTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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JOB TITLE: \_\_\_\_\_ CONTRACTOR: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE #: \_\_\_\_\_

CITY: \_\_\_\_\_ ADDRESS: \_\_\_\_\_

STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_ CITY: \_\_\_\_\_

STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

ENGINEER: \_\_\_\_\_

LOCAL REPRESENTATIVE: \_\_\_\_\_

NOTES: \_\_\_\_\_

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QTY.	MODEL # <sup>1</sup>	TAG	INDICATE GAS TYPE	BTU/h INPUT	STRAIGHT LENGTH	U-TUBE LENGTH	STANDARD WEIGHT	TYP. OR RCMD. MOUNTING HEIGHTS <sup>2</sup>
	<b>CX3-30-50</b>		N or P	50,000	31' - 5"	17'-9" <sup>3</sup>	185 lbs.	10' to 15'
	<b>CX3-30-60</b>		N or P	60,000	31' - 5"	17'-9" <sup>3</sup>	185 lbs.	11' to 18'
	<b>CX3-30-75</b>		N or P	75,000	31' - 5"	17'-9" <sup>3</sup>	185 lbs.	12' to 20'
	<b>CX3-30-80</b>		N or P	80,000	31' - 5"	17'-9" <sup>3</sup>	185 lbs.	12' to 20'
	<b>CX3-30-85</b>		N or P	85,000	31' - 5"	17'-9" <sup>3</sup>	185 lbs.	13' to 23'
	<b>CX3-40-50</b>		N or P	50,000	41' - 1"	22'-9"	215 lbs.	10' to 15'
	<b>CX3-40-60</b>		N or P	60,000	41' - 1"	22'-9"	215 lbs.	11' to 18'
	<b>CX3-40-75</b>		N or P	75,000	41' - 1"	22'-9"	215 lbs.	12' to 20'
	<b>CX3-40-80</b>		N or P	80,000	41' - 1"	22'-9"	215 lbs.	12' to 20'
	<b>CX3-40-85</b>		N or P	85,000	41' - 1"	22'-9"	215 lbs.	13' to 23'
	<b>CX3-50-80</b>		N or P	80,000	50' - 9"	27'-5" <sup>4</sup>	260 lbs.	13' to 23'
	<b>CX3-50-85</b>		N or P	85,000	50' - 9"	27'-5" <sup>4</sup>	260 lbs.	13' to 23'

<sup>1</sup>All models are approved for CNG/LNG applications that require to meet the NFPA-30A code for maximum surface temperatures of 750°F.

<sup>2</sup>Typical or recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from this data.

<sup>3</sup>Model requires 5EA-SUB accessory package when installing in a 'U' configuration.

<sup>4</sup>Model requires C30-5EA-SUB accessory package when installing in a 'U' configuration.

### DETROIT RADIANT PRODUCTS CO.



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### VISIT OUR WEBSITE FOR:

- Product Specs
- Parts Support
- Dealer Locator
- Applications
- CAD/Revit Library
- Design Guidelines
- Theory of Infrared
- and More!

# CX3 SPECIFICATIONS

## APPROVALS

- CSA Design Certified
- Commercial/Industrial Approval
- Indoor approval
- Outdoor approval with OD-Kit
- Meets NFPA-30A code requirements

## BURNER CONTROL BOX

- Sight glass for burner inspection
- Totally enclosed components
- Serviceable while in operation
- Coated enameled steel
- Operational indicator lights

## GAS CONNECTION

- 7/8 in. flare-M FPT connection to 1/2 in. x 24 in. (304) SS flex connector provided.

## GAS SUPPLY (Inches W.C.)

- Manifold pressure: Nat 3.5; Prop 10.0
- Min. inlet pressure: Nat 5.0; Prop 11.0
- Max. inlet pressure: Nat 14.0; Prop 14.0

## POWER SUPPLY

- 120 VAC, 60 Hz GRD, 1 Ph., 3-wire
- 60 in. grounded power cord
- Ignition current - 4.8 amps
- Running current - 1.1 amps

## CONTROLS

- Air proving safety switch
- Silicon carbide hot surface ignition
- Pre- & post-purge controls
- Flame rod sensing
- 24 V thermostatic control voltage
- Self-diagnostic LED

## REFLECTOR

- Highly polished aluminum
- Two end caps included
- Reflector tension springs
- Continuous overlap design
- One reflector center support per reflector

## COMBUSTION & RADIANT TUBES

- 16 ga. 5" O.D. aluminized treated steel combustion chamber with liner.
- 16 ga. 4" O.D. aluminized treated steel radiant emitter tubes.
- All tubes coated with high temperature, corrosion resistant black coating, .95 emissivity
- Slip-fit swaged tube connection.
- Turbulator baffle

## COMBUSTION AIR INLET & VENTING

- Preset 4 in. combustion air inlet collar
- Sidewall or roof venting

## LIMITED WARRANTY

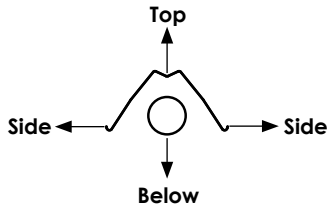
- 3 year - Burner box components
- 5 years - Combustion and radiant tubes
- 10 years - Burner

# CX3 CLEARANCES TO COMBUSTIBLES (IN INCHES)

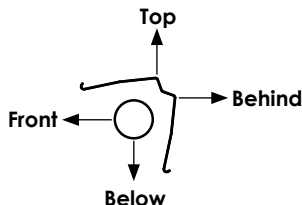
MODEL NO.	MOUNTING ANGLE <sup>5</sup>	SIDE			
		FRONT	BEHIND	TOP	BELOW
CX3 (30, 40) - 50, 60, 75 [N,P]	0°	16	16	6	43
	45°	36	9	10	33
w/1 side shield	0°	33	9	6	43
	0°	9	9	6	46
w/2 side shields 20 ft. from burner	0°	9	9	6	32
	0°	16	16	6	43
CX3 (30, 40, 50) - 80, 85 [N,P]	0°	16	16	6	43
	45°	36	9	10	33
w/1 side shield	0°	33	9	6	43
	0°	9	9	6	46
w/2 side shields 20 ft. from burner	0°	9	9	6	32
	0°	9	9	6	32

<sup>5</sup>Heaters mounted on an angle between 0° and 45° must maintain clearances posted for 0° or 45°, whichever is greater.

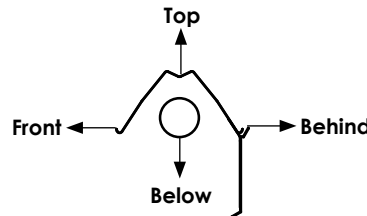
0° Mounting Angle



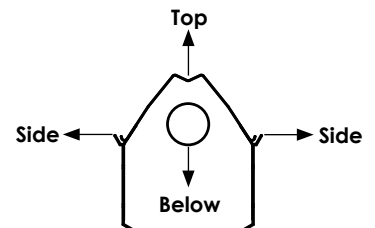
45° Mounting Angle



0° w/ 1 Side Shield



0° W/ 2 Side Shields

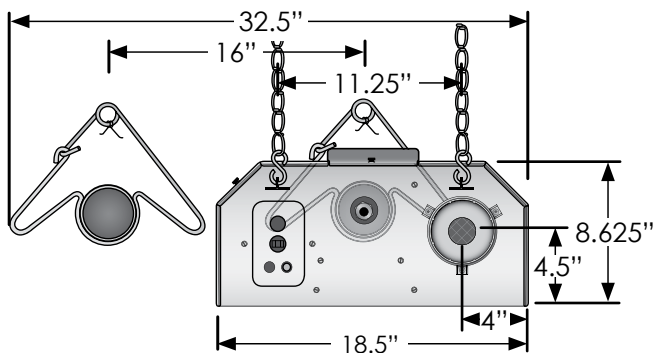


Read and understand the installation, operation, and maintenance manual prior to installing or servicing this unit.

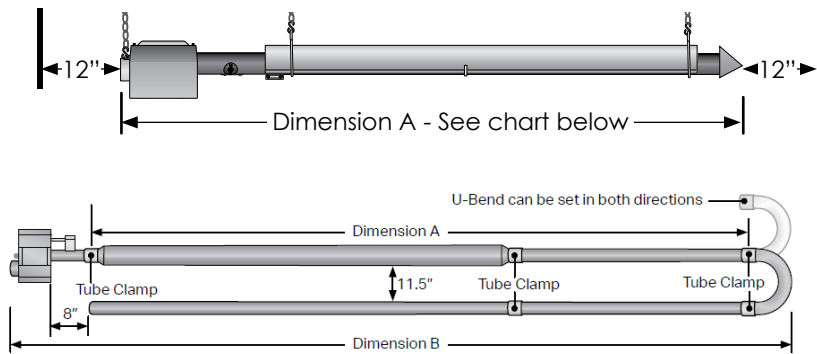
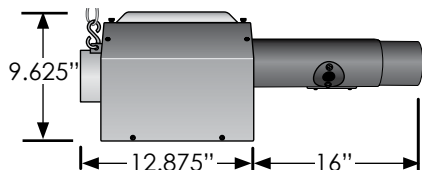
In locations used for the storage of combustible materials, signs must be posted adjacent to the heater's thermostat specifying maximum permissible stacking heights.

# CX3 SERIES FIELD DATA

**Burner Control Box with U-Bend - End View**



**Side View**



MODEL NUMBER	DIMENSION A STRAIGHT	DIMENSION B U-TUBE
CX3-30	31' - 5"	17' - 9" <sup>6</sup>
CX3-40	41' - 1"	22' - 9"
CX3-50	50' - 9"	27' - 5" <sup>7</sup>

<sup>6</sup>with C30-5EA-SUB  
<sup>7</sup>with 5EA-SUB

## OPTIONAL ACCESSORIES

QTY.	PART #	DESCRIPTION	NOTES
	10EA	10'x4" Tube & Reflector Extension	Optional 10 ft. extension package. Maximum of one per unit.
	4-DSK	4" Sidewall Vent Kit	Required for all single sidewall vents. No roof venting.
	6-DSK	6" Sidewall Vent Kit	Required for all common sidewall vents. No roof venting.
	BK	Angle Mounting Bracket 15-30-45 Deg.	Rotates reflector to preset mounting angles.
	E6	90 Degree, 4" Radiant Elbow	Used for making a L-shaped heater. Maximum of two per unit.
	PG	Protective Guard	Protects heat exchanger from contact or objects. Each 5 ft. in length.
	PLQ	Warning Plaque	Hung below heater, restates the clearance to combustible warning.
	REP	Reflector & Elbow Package	Reflector and accessories used to configure heater in a 'L' shape.
	RTVP-4	4" Rooftop Vent Package	Used to single vent vertically through the roof.
	RTVP-6	6" Rooftop Vent Package	Used to common vent vertically through the roof.
	RUP	Reflector & 'U' Bend Package	Reflector and accessories used to configure heater in a 'U' shape.
	SMB	Single Mount Bracket	Provides units with 'U' bend uniform mounting points. One per 10 ft.
	SSE	Side Shield Extension	Reflector side guard used to lower side clearances. Each 5 ft. in length.
	TF1B	180 Degree, 4" Radiant 'U' Bend	Used for making a U-shaped heater. Maximum of one per unit.
	THCS	Tube Heater Chain Set	5 ft. chain set with two S-hooks used for hanging heater.
	TR60	5'x4" Tube & Reflector Extension	Optional 5 ft. extension package. Maximum of two per unit.
	WIV-4	4" Combustion Air Intake - Sidewall Cap	Used to duct fresh (cold) air 0-30 ft. to a heater. Sidewall only.
	WVE-GALV	4" Unvented Exhaust Termination Cap	Required on all units when operating unvented.
	Y	4"x6"x4" Aluminized Common Vent Fitting	Used for joining two heaters on one vent. Same thermostat required.
	YSM	4"x6"x4" Galvanized Common Vent Fitting	Used for joining two heaters on one vent. Same thermostat required.

### OPTIONAL UPGRADES

- SILSEAL** Protects internal burner box components against contaminants.
- C30-5EA-SUB** Substitute one 10 ft. radiant tube and reflector for two 5 ft. pieces. This is ideal for making U-shaped heaters from **30 ft.** models. Maximum of one per heater.
- 5EA-SUB** Substitute one 10 ft. radiant tube and reflector for two 5 ft. pieces. This is ideal for making U-shaped heaters from **50 ft.** models. Maximum of one per heater.
- OD-KIT** For use when applying heaters outdoors.

### STAINLESS STEEL UPGRADES

- SSRAO** 10 ft. Reflector Section.
- SSC-##** Tube Clamps (## = heater length).

**NOTE:** Refer to the Tube Heater Accessory List (LPKTH) for detailed specifications and limitations on any of the above options.

# CX3 WRITTEN SPECIFICATIONS

## PRODUCTS

### 1. TUBULAR INFRARED HEATERS

- A. Basis-of-design product: Subject to compliance with requirements, provide Detroit Radiant Products Company; **Re-Verber-Ray® CX3 Series**.
- B. Fuel type: Burner shall be designed for [natural] [propane] gas having characteristics same as those of gas available at project site.
- C. Combustion chamber: Shall be 5 inch O.D. 16 ga. aluminized treated steel, with liner (for the operating surface temperature to not exceed 750°F as set forth by the NFPA-30A code) finished with a high emissivity rated, corrosion resistant, black coating with an emissivity level documented at .95 or higher.
- D. Emitter tube: Shall be 4 inch O.D. 16 ga. aluminized steel finished with a high emissivity rated, corrosion resistant, black coating with an emissivity level documented at .95 or higher.
- E. Burner type: Unit shall be a positive pressure power burner with a combustion fan upstream of the burner and exhaust gases for component longevity, maximum combustion efficiency, and energy transfer. Negative pressure (pull through) type appliances will not be allowed.
- F. Fan enclosure: Combustion fan shall be totally housed inside burner control box and not exposed. Appliances with exposed combustion/exhauster fans shall not be permitted.
- G. Burner: Stainless steel venturi burner. The flame anchoring screen shall have a minimum temperature rating equivalent to 430 grade stainless steel. Non stainless steel burners shall not be permitted.
- H. Tube connections: The heater's combustion chamber and radiant emitter tube shall incorporate a 4 inch slip-fit, interlocking connection in which the upstream tube slides into the next tube and is held by a bolted clamp. A butted tube connection system shall not be permitted.
- I. Ignition system: Hot surface silicon carbide capable of temperatures achieving 2,400°F. Igniter shall be readily accessible and serviceable without the use of tools. Spark ignition systems shall not be permitted.
- J. Reflectors: Shall be .025 polished aluminum with a multi-faceted design which includes reflector end caps. Reflector shall have a polished bright finish with clear visual reflection ability. (A sample will be required at time of submittal). Reflector shall have a minimum of 7 sheet metal bends in its fabrication to optimize downward radiation. Reflectors shall be rotatable from 0° to 45° when required. The heater's reflector hanging system shall be designed to permit expansion while minimizing noise and/or rattles. (A 304 grade stainless steel reflector material shall be used when specified for harsher environments).
- K. Control box: Heater's exterior control chassis shall be constructed of corrosion resistant enameled steel.
  1. The heater's top cover shall be constructed of ABS plastic material.
2. Air intake: An air intake collar shall be supplied as part of the burner control assembly to accept a 4 inch O.D. supply duct.
3. The heater's control compartment shall be accessible without the use of tools and serviceable while heater is operating.
4. Outdoor modifications are required for any application that will be placed in a space defined as outdoors. The rating label shall bear the outdoor certification approval.
- L. Heaters shall be equipped with a sight glass allowing a visual inspection of igniter and burner operation from the floor. Sight glass visible only at appliance level shall not be permitted.
- M. The heaters shall utilize a downstream turbulator baffle for maximum heat transfer.
- N. Heater shall be supplied with a stainless steel flexible gas connector.
- O. Burner Safety Controls:
  1. Heater controls shall include a safety differential pressure switch to monitor combustion air flow, as to provide complete burner shutdown due to insufficient combustion air or flue blockage.
  2. The heater shall incorporate a self-diagnostic ignition module, and recycle the heater after an inadvertent shutdown.
  3. The heater's control system shall be designed to shut off the gas flow to the main burner in the event either a gas supply or power supply interruption occurs.
  4. The heater's blower motor shall be thermally protected and the motor's impeller shall be balanced.
  5. Heater control assembly shall include two indicator lights. One indicator shall validate air flow. One indicator light shall indicate valve operation.
  6. The heater's air flow control system shall provide a 45 second pre-purge prior to initiating burner operation and a 90 second post-purge upon completion, effectively removing all products of combustion from heat exchanger and/or radiant tubes.
  7. No condensation shall form as a result of combustion in the combustion chamber or radiant tubes while at operating temperatures.
  8. Thermostat control shall be single stage operating on 24 volts.
- P. Venting: Shall be per manufacturer approval and specifications.
- Q. Thermostat: Devices and wiring are specified in Division 23 Section "Instrumentation and Control for HVAC."
  1. Thermostat: single-stage, digital programmable wall-mounting type with 50°F to 90°F (10°C to 32°C) operating range.