962 Main Street
Jay, ME 04239
Ph : 207-645-5109

Submittal

Job: 1523
667 Congress
667 Congress Street
Portland, ME

Spec Section No: M6.0
Submittal No: 1
Revision No: 1
Sent Date:

Spec Section Title:

Submittal Title: E-Heaters

*EH-19 was revised to a ceiling mount; otherwise all other e-heaters remain the same

Contractor:
Ranor Mechanical
Wes Sirois

Contractor's Stamp

GC (Primary):
PC Construction

Architect's Stamp

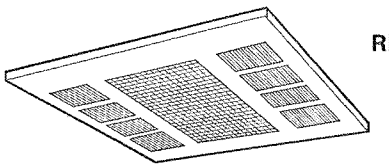
Engineer's Stamp

2016.06.24 14:56:34 -04'00'

CDF 500 SERIES
FAN FORCED
CEILING MOUNTED HEATER
SUBMITTAL SHEET

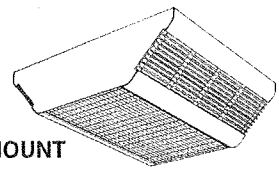
A Marley Engineered Products Brand
470 Beauty Spot Rd. E, Bennettsville, SC 29512

CAPACITIES
4KW Field Convertible to 3KW or 2KW 208V, 1Ø or 3Ø, 240V, 1Ø or 3Ø 277V, 1Ø
5KW Field convertible to 3.8KW or 2.5KW 208V, 1Ø or 3Ø; 240V, 1Ø or 3Ø; 277V, 1Ø



RECESSED MOUNT

c UL us
FILE #E21609



SURFACE MOUNT

ITEM	QTY.	CATALOG NUMBER	TAG	HEATER KW	HEATER VOLTS	HEATER PHASE Ø	AMPS	CONTROL CKT. VOLTS	MOTOR RPM	AIR FLOW CFM	AIR FLOW F RISE	BUILT-IN CONTROLS
6	1	CDF-548	EH-19	2	208	1	9.6			300	42	

ACCESSORIES AND CONTROLS

ITEM	QTY.	CAT. NO.	TAG	DESCRIPTION
6	1	CDFRENW	EH-19	Recessed, White Ceiling Fram

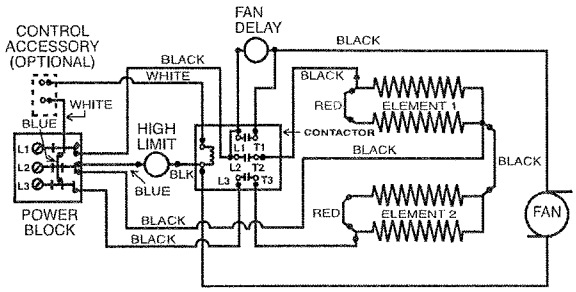
SUBMITTED BY:	DATE:
HVAC Products	6/22/16

APPROVED BY:	DATE:

CDF 500 SERIES

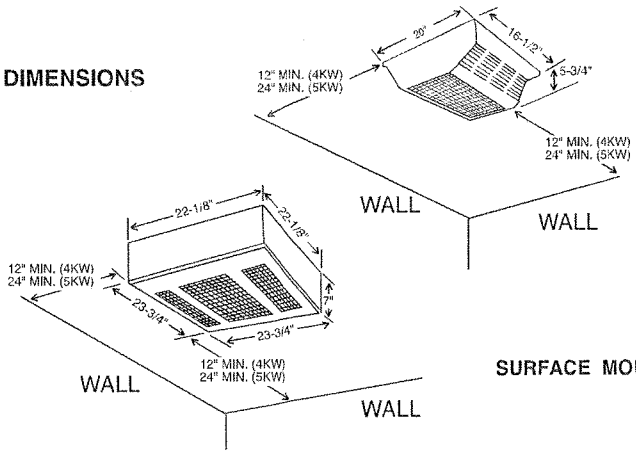
QMARK®
A Marley Engineered Products Brand
470 Beauty Spot Rd. E, Bennettsville SC 29512

ELECTRICAL WIRING
Standard Factory Wired Diagram



CAUTION: Field wiring must be #10 AWG. min. rated 90°C. min.

DIMENSIONS



SURFACE MOUNT

RECESSED MOUNT

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

The heating equipment shall include an electric, ceiling-mounted type CDF Series 500 fan-forced air heater suitable for large area heating as manufactured by QMark, a Marley Engineered Products Brand, Bennettsville, SC. Heater shall be UL listed.

The heater shall be designed for surface, recess, or T-Bar mounting. For surface mounting, a QMark CDF-SE surface enclosure shall be used. For T-Bar mounting, a QMark CDF-RE recess enclosure shall be used. For recessed mounting in a permanent ceiling, a QMark CDF-RE recess enclosure and CDF-TK trim kit shall be used.

The heaters shall be factory wired for single-phase operation and field convertible to three-phase operation by removing one jumper wire.

The heaters should be factory wired for full wattage and field convertible to 75% or 50% wattage by the removal of one or two wires respectively.

HEATER SECTION - The heater section shall consist of a 20 gauge steel chassis on which are mounted the heating elements, fan motor and blade, fan control, thermal cutout, and 3-pole contactor. Heater section shall be completely prewired.

HEATER ELEMENTS - The heating elements shall be guaranteed for five years and shall be of non-glowing design consisting of 80/20 NiCh resistance wire, enclosed in a steel sheath, to which steel plate fins are brazed. The elements shall cover the entire air intake area to ensure uniform heating of all discharged air.

MOTOR AND CONTROLS - The fan motor shall be impedance-protected, permanently lubricated, and with totally-enclosed rotor. Fan control shall be bi-metallic, snap-action type and shall activate the fan immediately and continue to operate the fan after the thermostat is satisfied and until all heated air has been discharged. Thermal cutout shall be bi-metallic snap-action type designed to automatically shut off the heater in the event of overheating and reactivate the heater when temperature returns to normal.

OPERATIONAL CONTROLS - Thermostat, disconnect switch, and all interlock relays shall be installed within the heater enclosure.

RECESS ENCLOSURE - The back box shall be designed for duty as a recessed rough-in box in masonry, T-Bar, or frame ceiling construction. The back box shall be 20 gauge galvanized steel and shall contain knockouts through which field wiring leads are brought. Enclosures to recess into a maximum 7 inches of ceiling space.

The louvered recess faceplate shall be of 20 gauge cold rolled steel, phosphatized, then electrostatically painted Navajo white by a baked enamel process.

SURFACE ENCLOSURE - The surface mounting plate shall be designed for duty as a rough-in box on masonry, T-Bar, or frame ceiling construction. The surface mounting plate shall be 20 gauge galvanized steel and shall contain knockouts through which field wiring leads are brought. Enclosure to extend a maximum of 6 inches into the heated space.

The louvered surface wrapper shall be contoured aluminum extrusion and 20 gauge sheet metal combination with rounded corners. The surface wrapper shall be electrostatically painted Navajo white by a baked enamel process.

**QMark reserves the right to change specifications without prior notice.*

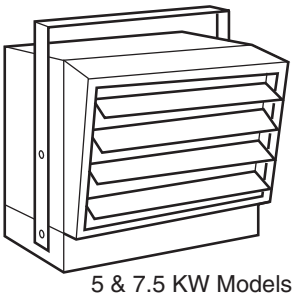
SPECIFICATIONS:

CAT. NO.	MOUNTING	KW[1]	BTU/HR (000)	MOTOR RPM	VOLTS	PHASE[2]	AMPS[3]	CFM	F T
CDF-548	HEATER				208	1 - 3	19.2/14.4/9.6		
CDF-542	SECTION	4/3/2	13.7/10.2/6.8	1400	240	1 - 3	16.7/12.5/8.3	300	42
CDF-547	ONLY				277	1	14.4/10.8/7.2		
CDF-558	HEATER				208	1 - 3	24.0/18.3/12.9		
CDF-552	SECTION	5/3.8/2.5	17.1/13.0/8.5	1400	240	1 - 3	20.8/15.8/10.4	300	45
CDF-557	ONLY				277	1	18.1/13.7/9.0		
CDF-SE	Surface Mounting Enclosure only - To be used with above heater sections. Dimensions: 20"L x 16-1/2"W x 5-3/4"D.								
CDF-RE	Recess Mounting Enclosure only - To be used with above heater sections. Dimensions: 23-3/4"L x 23-3/4"W x 7"D.								
CDFSENW	Surface mounted Northern White - To Be Used With Above Heater Section. Dimensions: 20"L x 16 1/2"W x 5 3/4"D.								
CDFRENW	Recessed mounted Northern White - To Be Used With Above Heater Sections. Dimensions: 23 3/4"L x 23 3/4W x 7"D.								
OPTIONAL ACCESSORIES					FIELD INSTALLED KITS				
CDF-T[4]	Thermostat SPST. Range 45 to 95 Degrees F.								
CDF-24R	Relay (Time Delay 45 - 60 sec. to close when energized) requires 24 volt supply from remote source.								
CDF-R12	Relay (Time Delay 45 - 60 sec. to close when energized) requires 120 volt supply from remote source.								
CDF-DS	Power Disconnect Switch (3-Pole) 30 amps, 600 volts, 3 phase, 60 Hz.								
CDF-TK	Trim Ring for mounting on permanent ceiling (cannot be factory installed).								
CDF-TR4	208 240 Primary Transformer/24V sec. and 24V holding coil control relay.								
CDF-TR7	277V Primary Transformer/24V sec. and 24V holding coil control relay.								

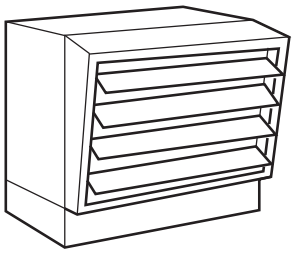
[1]Factory wired for highest wattage, field convertible to lower wattages.
[2]Factory wired 1 Phase, field convertible to 3 Phase.
[3]On dual-phase units, maximum amp draw is listed.
[4]CDF-T, CDF-PE mount in same location - only one can be used for any application.

QMARK
A Marley Engineered Products Brand

SUBMITTAL SHEET
IUH SERIES
INDUSTRIAL UNIT HEATERS



5 & 7.5 KW Models



10 & 30 KW Models

c UL us
File # E21609

CAPACITIES
5, 7.5, 9.6, 10, 15 KW 208, 240, 480, 600V
1Ø or 3Ø 20, 25, 30 KW 480 or 600V 3Ø

JOB NAME: 667 Congress St. Apartments

LOCATION: Portland, Maine

ARCHITECT:

ENGINEER:

CONTRACTOR: Ranor Mechanical

SUBMITTED BY: HVAC Products

DATE:

ITEM	QTY.	CATALOG NUMBER	TAG	HEATER KW	HEATER VOLTS	HEATER Ø	AMPS	CONTROL CKT. MOTOR VOLTS	MOTOR VOLTS	AIR FLOW CFM	AIR FLOW F°RISE	THROW	BUILT-IN CNTRL.
4	2	IUH520	EH11, EH12	5	208	3	13.8	208		270	60	16'	
5	1	IUH1020	EH16	9.6	208	3	27.6	208		500	63	20'	

ACCESSORIES AND CONTROLS

TAG	QTY.	CAT. NO.	DESCRIPTION
	3	CWB1A	Mounting Bracket
	3	UHTA1	Thermostat

SUBMITTED BY:	DATE
HVAC Products	

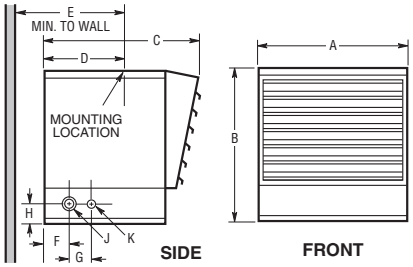
APPROVED BY:	DATE

IUH SERIES

QMARK®
A Marley Engineered Products Brand

470 Beauty Spot Rd. E, Bennettsville, SC 29512
visit www.qmarkmep.com for more info

DIMENSIONS



KW SIZE	A	B	C	D	E	F	G	H	J	K
5-7.5	14"	12 1/2"	12 3/8"	5 1/2"	13"	1 3/4"	1 3/8"	1 1/2"	(2) 1/2", 3/4"	1/2"
10-20	18"	18"	17 1/2"	9 15/32"	*	2"	2 1/2"	2 1/4"	(2) 3/4", 1"	(3) 1", 1 1/4", 1 1/2"
25-30	26"	24"	23 1/8"	9 15/32"	20"	2"	2 3/4"	2 1/4"	(2) 1", 1 1/2"	(3) 1", 1 1/2", 2"

*13" for 10-15 KW units; 16" for 20 KW unit.

CONTROLS & ACCESSORIES

CATALOG NUMBER	DESCRIPTION
IUHCWB1	Combination wall/ceiling bracket for 5KW thru 15KW units.
IUHCWB2	Same as above but for 20KW thru 30KW units.
IUHTA1	Single pole thermostat kit (60-120°F temp. range) for field installation in all units.
IUHTA2	Double pole thermostat kit (60-120°F temp. range) for use with IUH-520 and IUH-524, 3ø.
IUHDS30	3-pole power disconnect switch kit for field installation on all horizontal unit heaters rated 30 amps. or less.
IUHDS63	3-pole power disconnect switch kit for field installation on all horizontal unit heaters 10KW and above rated at 30 to 63 amps.
IUHSW	Summer/Winter fan switch kit for field installation, built-in or remote for all units. Provides summer fan operation.

SELECTION CHART

CATALOG NUMBER	KW. CAP.	BTU/HR.	HTR. VOLT	PHASE	THREADED ROD SIZE	HEATER AMPS 1Ø	HEATER AMPS 3Ø	FAN MTR. HP OR WATTS	CONT. CKT. & FAN MOTOR VOLTAGE	FAN MOTOR RPM	AIR VOL. CFM	AIR TEMP. RISE	THROW	MAX MTG. HT.	. WT. (Lbs.)
IUH-520	5	17.0	208	1-3	1/2"-13 NC	24.0	13.8	6.0W	208	1400	270	60°F	16'	8'	25
IUH-524			240	1-3		20.8	12.0		240						
IUH-548			480	1-3		10.4	6.0		240						
IUH-560			600	3		–	4.8		240						
IUH-724	7.5	25.6	240	1-3	1/2"-13 NC	31.3	18.1	6.0W	240	1400	270	85°F	18'	8'	26
IUH-748			480	1-3		15.6	9.0		240						
IUH-760			600	3		–	7.2		240						
IUH-1020	9.6	34.1	208	1-3	1/2"-13 NC	47.8	27.6	1/10 HP	208	1550	500	63°F	20'	9'	60
IUH-1024	10		240	1-3		43.3	25.7		240						
IUH-1048	10		480	1-3		21.6	12.8		240						
IUH-1060	10		600	3		–	9.6		240						
IUH-1524	15	51.2	240	1-3	1/2"-13 NC	64.1	37.7	1/10 HP	240	1550	750	63°F	28'	11'	66
IUH-1548			480	1-3		32.1	18.8		240						76
IUH-1560			600	3		–	14.5		240						78
IUH-2048	20	68.2	480	1-3	1/2"-13 NC	42.5	24.8	1/10 HP	240	1550	1000	63°F	32'	13'	76
IUH-2060			600	3		–	19.3								78
IUH-2548	25	85.2	480	3	1/2"-13 NC	–	31.1	1/3 HP	240	1550	1300	61°F	34'	14'	134
IUH-2560			600	3		–	24.0								140
IUH-3048	30	102.2	480	3	1/2"-13 NC	–	36.9	1/3 HP	240	1550	1800	53°F	38'	15'	140
IUH-3060			600	3		–	28.9								

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

Furnish and install where indicated on plans, electric unit heaters suitable for small and large areas and UL and CUL listed for wall or ceiling mounting.

The cabinet shall be made of 18 gauge cold rolled steel, welded, and phosphate coated to resist corrosion. Side, front, and back panels shall be removable without dismounting the heater by removing four screws from inside the control compartment, thus permitting full access to the elements and fan motor areas. Individual adjustable louvers with 30 degree downward stops shall be furnished to provide desired control of discharge air. The control compartment shall be located at the bottom of the cabinet and provided with a swing down hinged cover to permit full access for cleaning and servicing without dismounting the heater. All heater and control wiring shall terminate inside the control compartment. The heater shall be provided with combination wall/ceiling bracket for 5.0 KW and 7.5 KW units and shall have capability of full horizontal and vertical positions. The cabinet shall be finished in a neutral grey epoxy paint.

The heating elements shall be of the non-glowing design consisting of 80/20 nickel-chromium resistance wire, embedded in magnesium oxide and enclosed in a metal sheath to which metal plated fins are copper brazed. The elements shall be painted with aluminized paint for corrosion resistance and cover the entire discharge area for uniform heating. The heating elements shall be warranted for five years.

The fan motor shall be totally enclosed, permanently lubricated, impedance protected, and of unit bearing design suitable for horizontal or vertical operation with high starting and running torques. (5.0 & 7.5 KW units) The fan motor shall be totally enclosed, permanently lubricated, thermal protected, and of double bearing design with high starting and running torques. (10 - 30 KW units) The fan blade shall be aluminum and directly connected to the fan motor, designed specifically for unit heater application.

The fan control shall be of the bimetallic snap-action type and shall activate fan motor after heating elements reach operating temperature and continue to operate the fan motor after thermostat is satisfied and until the heating elements cool.

A thermal cutout shall be built into the system to automatically shut off the heater in the event of overheating and reactivate when temperature returns to normal.

The heater shall be provided with a factory installed, heavy duty, 3-pole contactor providing quiet, efficient operation, making external contacts and additional wiring unnecessary.

Optional controls and accessories:

a. Single pole built-in thermostat
b. Three pole built-in disconnect switch (30 amp rated)
c. Three pole built-in disconnect switch (63 amp rated)
d. Summer/Winter built-in fan switch
e. Combination wall/ceiling bracket

Heaters shall be IUH Series as manufactured by QMark, a division of Marley Engineered Products, Bennettsville, SC.

PRODUCT SUBMITTAL SHEET

QMARK® A Marley Engineered Products Brand

Capacities
1500, 1800, 2000, 3000, 3600 4000 or 4800 Watts 120, 208, 240, 277, 347 or 600V 1 or 3 Phase Thermostat Range: 40° - 90° F Air Movement: 100 CFM

CWH3000 SERIES
FAN-FORCED WALL HEATERS

Job Name: 667 Congress St. Apartments

Location: Portland, Maine

Architect:

Engineer:

Contractor: Ranor Mechanical

Submitted By: HVAC Products

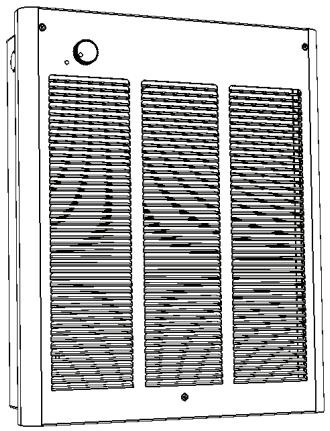
Date: 3.4.16

Submitted By:	Date:
HVAC Products	3.4.16
Approved By:	**Date:**

Item	QTY	Catalog Number	Tag	Watts	Volts	PH	AMPS	Weight
1	2	CWH35083F	EH1, EH2	4800	208	3	13.8	
2	1	CWH34083F	EH3, EH4, EH5	4000	208	3	27.6	
3		CWH3404F	EH6-10, EH14, EH15, EH17-18-20	1500	208	1		

ACCESSORIES

Item	QTY	Part Number	Tag
	3		
	3		

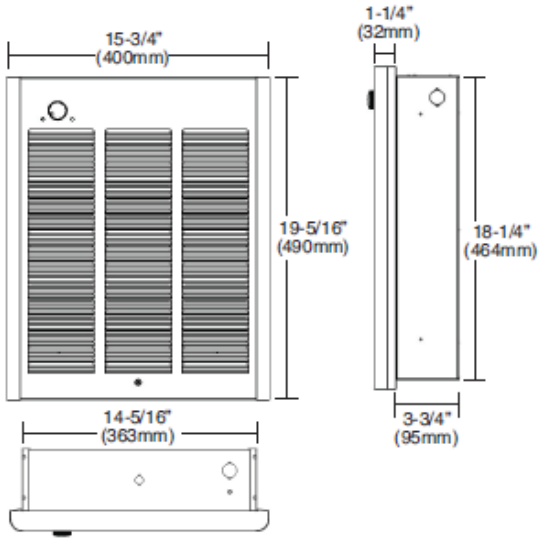


Marley® Engineered Products

470 Beauty Spot Road East
Bennettsville, South Carolina 29512
www.marleymep.com

Catalog Number	Volts	Amps	Watts	Phase	BTU/HR
CWH3150F	120	12.5	1500	1	5115
CWH3180F	120	15.0	1800	1	6138
CWH3404F	240/208	16.7/8.3 - 14.5/7.2	4000/2000 - 3000/1500	1	13,640/6820 - 10,230/5115
CWH3407F	277/240	16.7/8.3 - 14.5/7.2	4000/2000 - 3000/1500	1	13,640/6820 - 10,230/5115
CWH3307F	277	10.8/5.4	3000/1500	1	10230/5115
CWH3408F	208	19.2/9.6	4000/2000	1	13,640/6820
CWH34083F	208	11.1	4000	3	13,640
CWH34043F	240	9.7	4000	3	13,640
CWH3504F	240/208	20/17.3	4800/3600	1	16375/12280
CWH3507F	277/240	20/17.3	4800/3600	1	16375/12280
CWH3508F	208	23.1	4800	1	16,375
CWH35083F	208	13.4	4800	3	16,375
CWH35043F	240	11.6	4800	3	16,375
CWH3203F	347	5.8	2000	1	6820
CWH3206F	600	3.3	2000	1	6820
CWH3153F	347	4.3	1500	1	5115
CWH3156F	600	2.5	1500	1	5115
CWH3303F	347	8.6	3000	1	10,230
CWH3306F	600	5	3000	1	10,230
CWH3403F	347	11.5	4000	1	13,640
CWH3406F	600	6.7	4000	1	13,640
CWH3503F	347	13.8	4800	1	16,375
CWH3506F	600	8	4800	1	16,375

Accessories	
CWH3SM	Surface mounting frame for surface installations
CWH3S1	1" deep surface mounting frame for semi-recessed installation
CWH3S2	2" deep surface mounting frame for semi-recessed installation
LFKSFC	14 gauge security front cover



ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

The heating equipment shall include an electric automatic fan forced air heater suitable for small area heating, as manufactured by QMark®, a Marley Engineered Products® Brand, Bennettsville, SC. The heater shall be designed for wall mounting, recess or surface. Heaters shall be cETLus listed.

BACK BOX: The back box shall be designed as a recessed rough-in box in either masonry or frame installations and is also used when surface mounting frames are used in surface mounting installations. The back box shall be heavy gauge galvanized steel and shall contain knockouts through which power leads enter.

INNER FRAME ASSEMBLY: The heater assembly, which fits into the back box, shall consist of a heavy gauge steel fan panel to which all of the operational parts of the heater are mounted. The inner frame assembly shall be completely pre-wired.

HEATING ELEMENT: The heating element shall be of the non-glowing design consisting of an 80/20 nickel-chromium resistance wire enclosed in a steel sheath to which plate fins are copper brazed. The element shall cover the entire air discharge area to ensure uniform heating of all discharged air. It shall be warrantied for 5 years.

ON/OFF SWITCH: A double-pole, single throw on/off switch shall be mounted on the back box for positive disconnect of power supply. It will be completely concealed behind the front cover.

MOTOR AND CONTROLS: The fan motor shall be totally enclosed, impedance protected, permanently lubricated and with a totally enclosed rotor. Fan control shall be of the bi-metallic, snap-action type and shall activate fan after heating element reaches operating temperature, and continue to operate the fan after the thermostat is satisfied and until all heated air has been discharged. The thermostat shall be single-pole type on all models. Thermal cutout shall be bi-metallic, snap-action type designed to shut off heat in the event of overheating. The fan shall be five-bladed aluminum.

SURFACE MOUNTING FRAME: The surface mounting frame shall be of heavy gauge steel designed to mount around the back box for a finished surface installation. Slot knock outs shall be provided for power supply conduit.

FRONT COVER: The louvered front cover shall be of heavy gauge steel with a powder paint finish. A plug button will be provided to replace the thermostat knob and render the unit tamper-resistant.

FINISH: All sheet metal parts, except the galvanized steel back box, shall be phosphatized, then completely painted by a powder paint process.

**In the interest of continual improvements in product and performance, Marley Engineered Products reserves the right to change specifications without notice.*