

HEAT EXCHANGERS



HEAT EXCHANGER SELECTION GUIDE



To aid in selecting the best heat exchanger for your application, contact McLean for your free copy of our Selection Software, or download it from our web site at <http://www.mcleanthermal.com>.

The following sizing procedure applies to uninsulated, sealed, gasketed enclosures in indoor locations. For special applications involving solar load, non-metallic enclosures and outdoor applications, contact McLean.

In general it is recommended that the average "Air In" rating be used when selecting a heat exchanger. However, it may be possible to use a lower rated heat exchanger by locating the most heat sensitive components in line with the "Air Out" opening of the heat exchanger. Actual performance may vary due to the airflow impedance caused by the electronics configuration.

Step #1

Step #2

Step #3

Solution

$$(\text{Watts} \div \Delta T^{\circ}\text{F}) - (0.22 \times \text{Area ft.}^2) = \text{Watts}^{\circ}\text{F (required heat exchanger performance)}$$

Help Note: To convert Watts/ $^{\circ}\text{F}$ to Watts/ $^{\circ}\text{K}$: Watts/ $^{\circ}\text{K}$ = Watts/ $^{\circ}\text{F}$ x 1.8

Or use this equation to determine temperature rise in an enclosure (T_i) given the use of a particular heat exchanger you have selected:

$$T_i = \frac{T_o + \text{Internal heat load (Watts)}}{\text{Heat Exchanger Performance (Watts}^{\circ}\text{F} + (0.22 \times \text{Area ft.}^2))}$$

Step #1

Determine the internal heat load in Watts.

Help Note: 1 Watt = 3.413 BTU/Hr. If unknown, please contact the factory.

Step #2

Determine the ΔT ($^{\circ}\text{F}$) which is the temperature difference between the maximum temperature outside the enclosure (T_o) and the maximum allowable temperature inside the enclosure (T_i).

$$T_i - T_o = \Delta T$$

Help Note: 1 $^{\circ}\text{K}$ ΔT = 1.8 $^{\circ}\text{F}$ ΔT

Step #3

Calculate the exposed surface area of the enclosure:

$$2(h' \times w') + 2(h' \times d') + 2(w' \times d') = \text{Area ft.}^2$$

Help Note: 1 M^2 = 10.76 ft.^2

How To Read Model Numbers

XR 29-08 1 6-012

1 2 3 4 5 6

1. XR = Heat Exchanger Family
2. 29 = This is the approximate height of the heat exchanger (i.e. 29 = 29" high).
3. 08 = Air In: efficiency rating based on air entering the heat exchanger from the enclosure.
4. 1 = 115 Volt, or 2 = 230 Volt
5. 6 = 50/60 Hz
6. 012 = Unique set of numbers for each heat exchanger which identifies the accessories on a model.

COMPACT TO MID-SIZE Heat Exchangers

4 - 84 W/°F
7 - 151 W/°K

PROAIR
The Ultimate Line



FEATURES

- ProAir heat exchangers use our unique counterflow aluminum core for high efficiency and high performance heat transfer except for the XR20 and the XR29-08 which use a modified heat pipe core.
- Top quality ball bearing fans and impellers make these units run quietly and with increased reliability.
- Streamline aesthetics with no visible mounting rails. The slim design allows for mounting to narrow or shallow enclosures.
- Filter less design for low maintenance and easy cleaning.
- Mounts front, side, top, inside, outside, vertically, or horizontally.
- Four fasteners allow simple removal of front cover for easy access.
- Each unit is 100% functionally tested.

  **TYPE 12** **TYPE 3R**

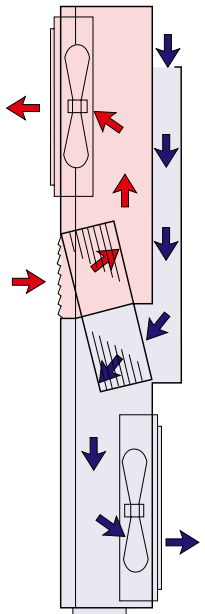
UL/cUL listing and CE standard on all models. UL50 TYPE 12 approval on all models and TYPE 3R approval on XR29-18, XR47 & XR60 models when mounted externally and in a vertical position. Please contact the factory.

OPTIONS

	XR-20	XR-29	XR-47	XR-60
Special Voltage (DC)	✓	✓	✓	✓

MCLEAN CLOSED-LOOP COOLING

Within the heat exchanger, the recirculated clean enclosure air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust and other contaminants.



■ Ambient air flow
■ Clean air flow

PROAIR™ XR20								
4 W ⁰ F (7 W ⁰ K)			H x W x D: 20"(508) x 7.5" (190.5) x 3" (76.2)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR20-0416-012	115	50/60	0.6	1	140/60	4(7)	9(16)	12/5
XR20-0426-012	230	50/60	0.3	1	140/60	4(7)	9(16)	12/5

PROAIR™ XR29-08								
8 W ⁰ F (14 W ⁰ K)			H x W x D: 29.5"(749.3) x 10.00" (254.0) x 3.1" (78.7)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR29-0816-012	115	50/60	0.6	1	140/60	8(14)	30(54)	27/12
XR29-0826-012	230	50/60	0.3	1	140/60	8(14)	30(54)	27/12

PROAIR™ XR29-18								
18 W ⁰ F (32 W ⁰ K)			H x W x D: 29.66"(753.4) x 10.24" (260.1) x 5.92" (150.4)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR29-1816-012	115	50/60	1	1	140/60	18(32)	34(61)	34/15
XR29-1826-012	230	50/60	0.6	1	140/60	18(32)	34(61)	34/15

PROAIR™ XR47-24								
24 W ⁰ F (43 W ⁰ K)			H x W x D: 47.16"(1197.9) x 10.24" (260.1) x 5.92" (150.4)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR47-2416-012	115	50/60	1.5	1	140/60	24(43)	44(79)	51/23
XR47-2426-012	230	50/60	0.8	1	140/60	24(43)	44(79)	51/23

PROAIR™ XR47-35								
35 W ⁰ F (63 W ⁰ K)			H x W x D: 47.16"(1197.9) x 15.24" (387.1) x 5.92" (150.4)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR47-3516-012	115	50/60	1.5	1	140/60	35(63)	77(139)	63/29
XR47-3526-012	230	50/60	0.8	1	140/60	35(63)	77(139)	63/29

PROAIR™ XR60-55								
55 W ⁰ F (99 W ⁰ K)			H x W x D: 59.66"(1515.4) x 15.24" (387.1) x 5.92" (150.4)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR60-5516-012	115	50/60	6.7	1	140/60	55(99)	138(248)	91/41
XR60-5526-012	230	50/60	3.4	1	140/60	55(99)	138(248)	91/41

PROAIR™ XR60-84								
84 W ⁰ F (151 W ⁰ K)			H x W x D: 59.66"(1515.4) x 15.24" (387.1) x 9.92" (252.0)					
Model	Voltage	Hz	Full load Amps	Phase	Max F/C Air Temp	"Air In" W/F(W/K)	"Air Out" W/F(W/K)	Shipping Weight Lbs/Kgs
XR60-8416-012	115	50/60	6.7	1	140/60	84(151)	210(378)	115/52
XR60-8426-012	230	50/60	3.4	1	140/60	84(151)	210(378)	115/52

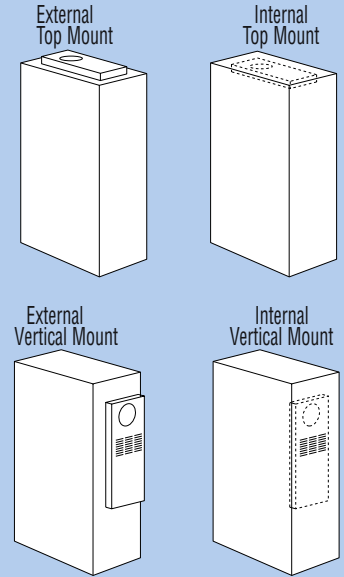
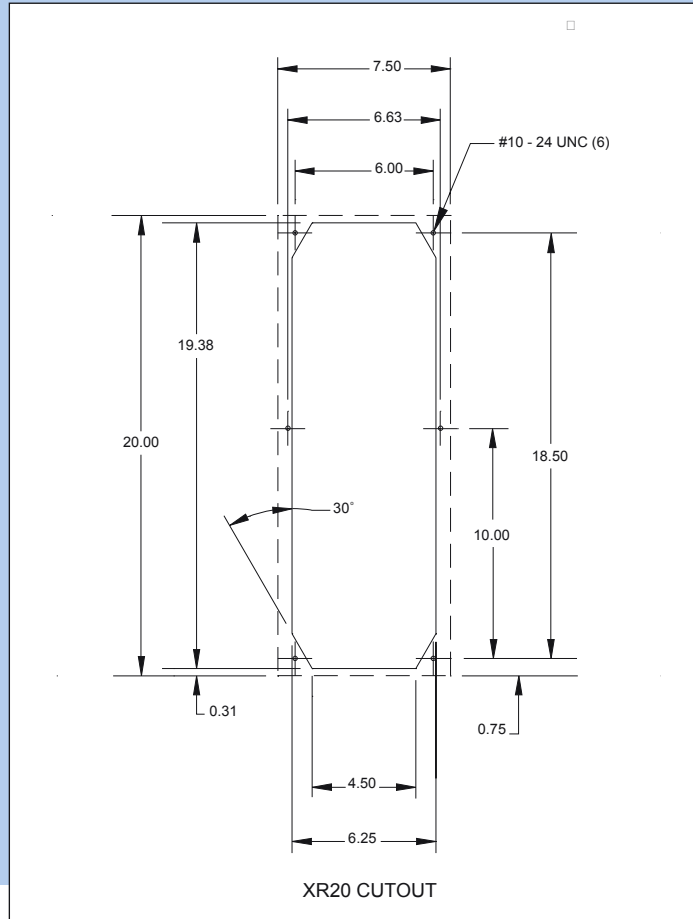
IMPORTANT NOTE.

"Air In": Efficiency rating based on air entering the heat exchanger from the enclosure.
 "Air Out": Efficiency rating based on air exiting the heat exchanger into the enclosure.
 Note: All units are rated at 100°F/38°C ambient temperatures with 1500W internal heat load. Heat exchanger efficiency will decrease as ambient temperature and/or internal heat load decreases.

PROAIR™ XR20

CUT-OUT NOTES

1. Cut-out shown is for external mounting of heat exchanger only. For internal mounting, cut-out must be inverted 180 degrees.
2. Dash lines represent heat exchanger.
3. Only the four corner mounting holes are required when used on narrow panels (approximately 8") and panels that are otherwise rigid.
4. Cut-out dimensions for standard product only.

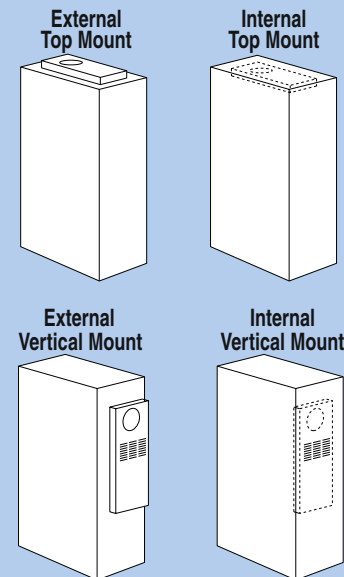
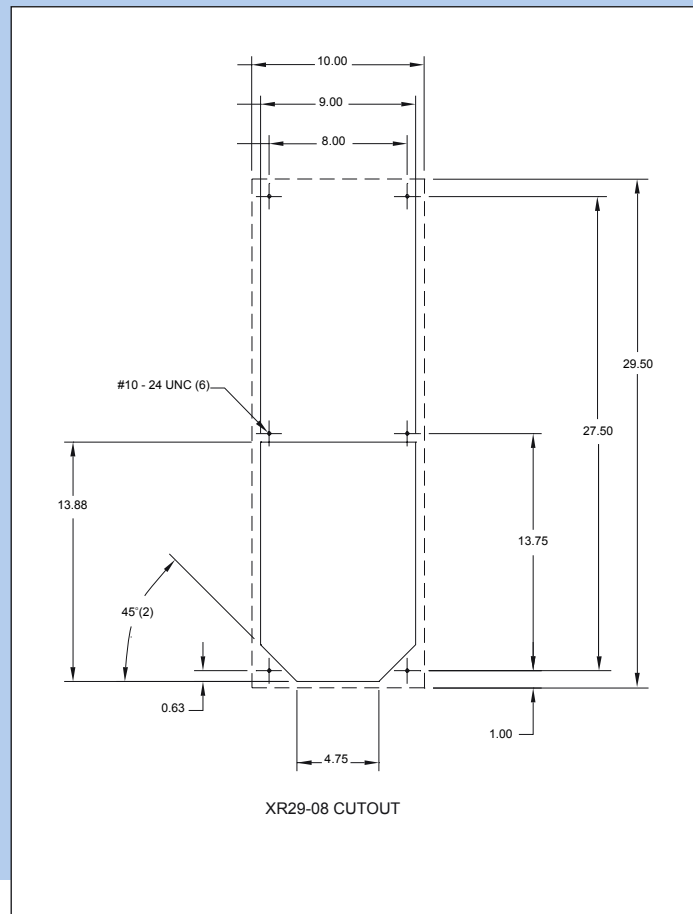


*Note: Internal mounting requires inverting the heat exchanger.

PROAIR™ XR29-08

CUT-OUT NOTES

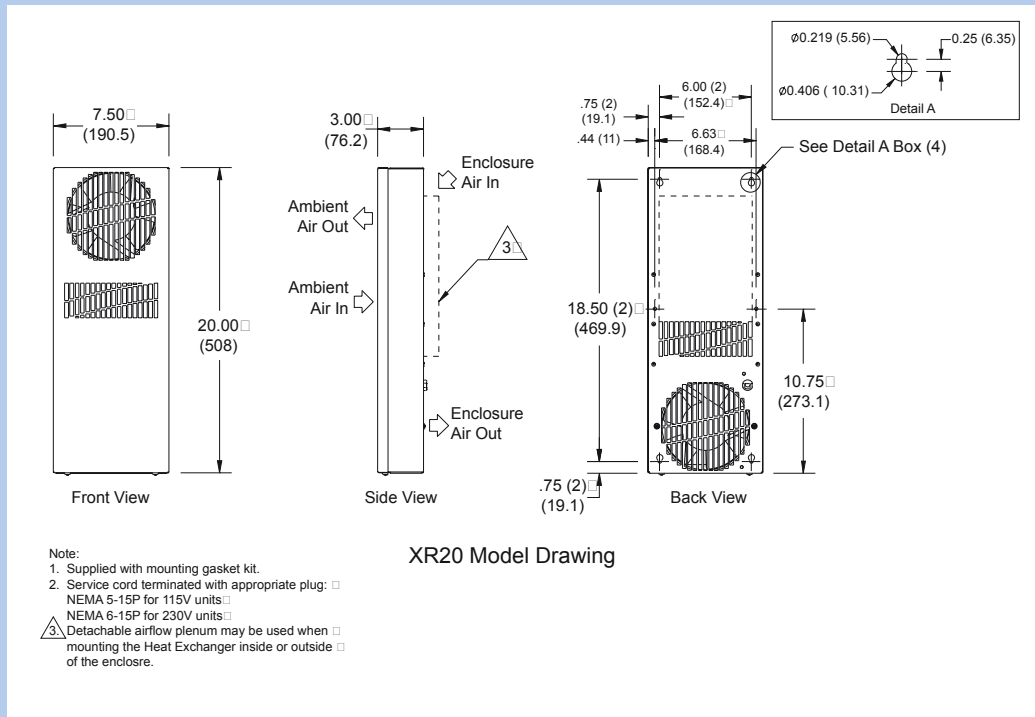
1. Cut-out shown is for external mounting of heat exchanger only. For internal mounting, cut-out must be inverted 180 degrees.
2. Dash lines represent heat exchanger.
3. Only the four corner mounting holes are required when used on narrow panels (approximately 12") and panels that are otherwise rigid.
4. Cut-out dimensions for standard product only.



*Note: Internal mounting requires inverting the heat exchanger.

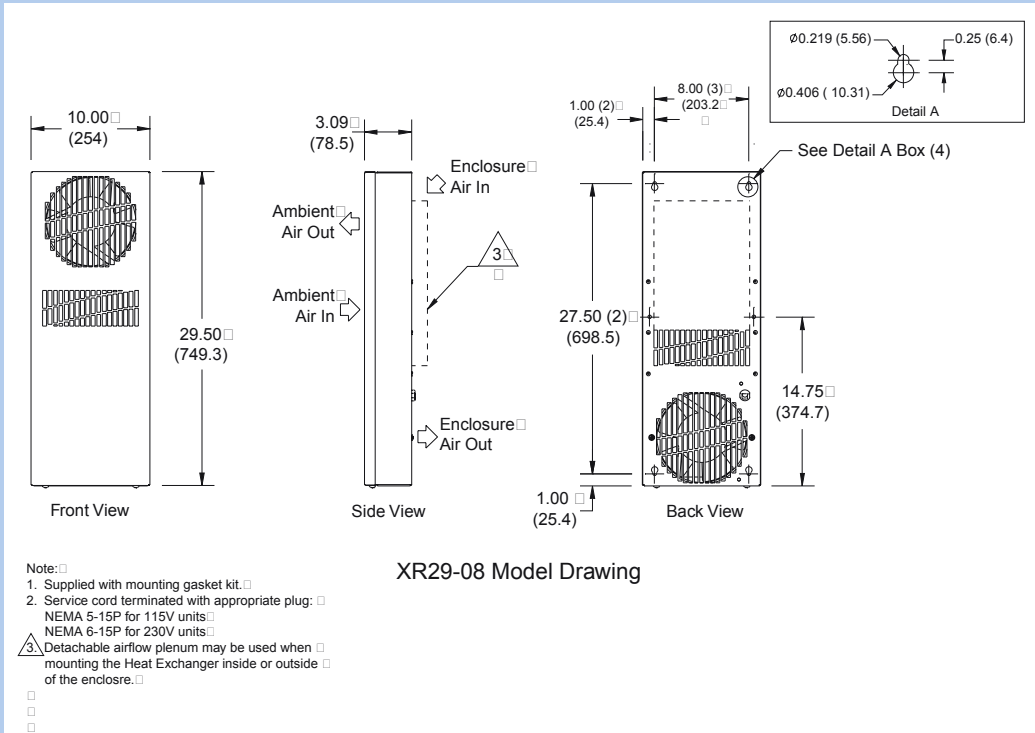
DESIGN NOTES

1. Gasket kit for mounting to enclosure included.
2. Service cord terminated with appropriate plug cap.
3. Equipped with latches on bottom of unit which allow removal of front cover for exchanger core cleaning.
4. Detachable airflow plenum may be used when mounting the heat exchanger inside or outside of the enclosure.



DESIGN NOTES

1. Gasket kit for mounting to enclosure included.
2. Service cord terminated with appropriate plug cap.
3. Equipped with latches on bottom of unit which allow removal of front cover for exchanger core cleaning.
4. Detachable airflow plenum may be used when mounting the heat exchanger inside or outside of the enclosure.

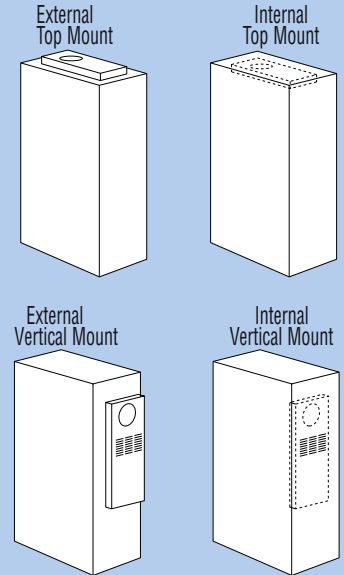
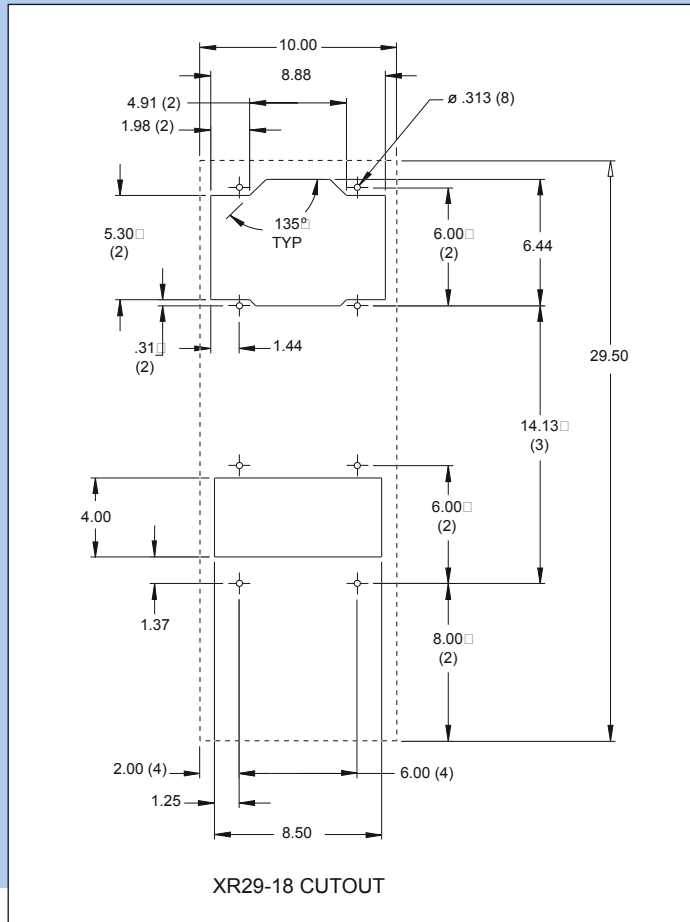


PROSOL™ HEAT EXCHANGERS
 XR-20, XR-29, XR-47, XR-60

RFQALC XR29-18

CUT-OUT NOTES

1. Cut-out shown is for external mounting of heat exchanger only. For internal mounting, cut-out must be inverted 180 degrees.
2. Dash lines represent heat exchanger.
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4. Cut-out dimensions for standard product only.

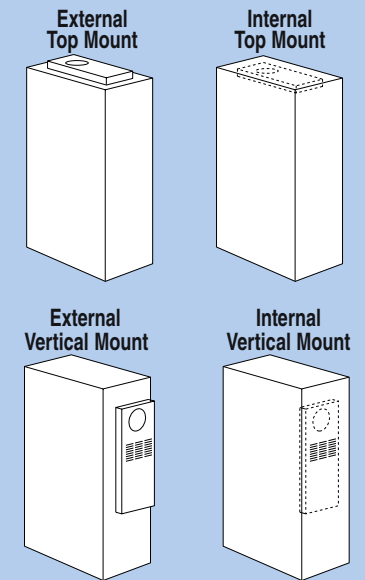
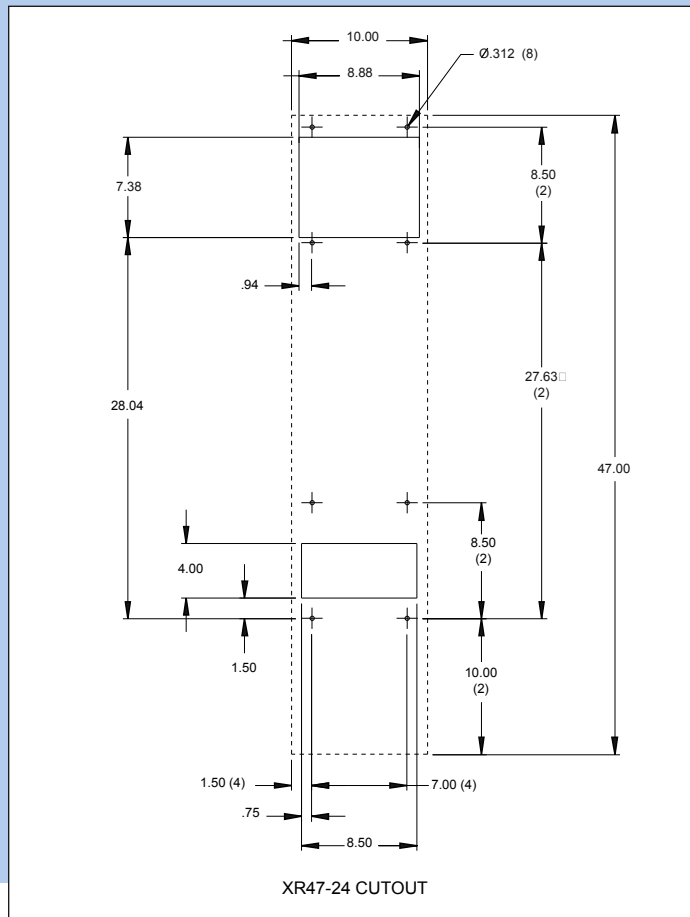


*Note: Internal mounting requires inverting the heat exchanger.

RFQALC XR47-24

CUT-OUT NOTES

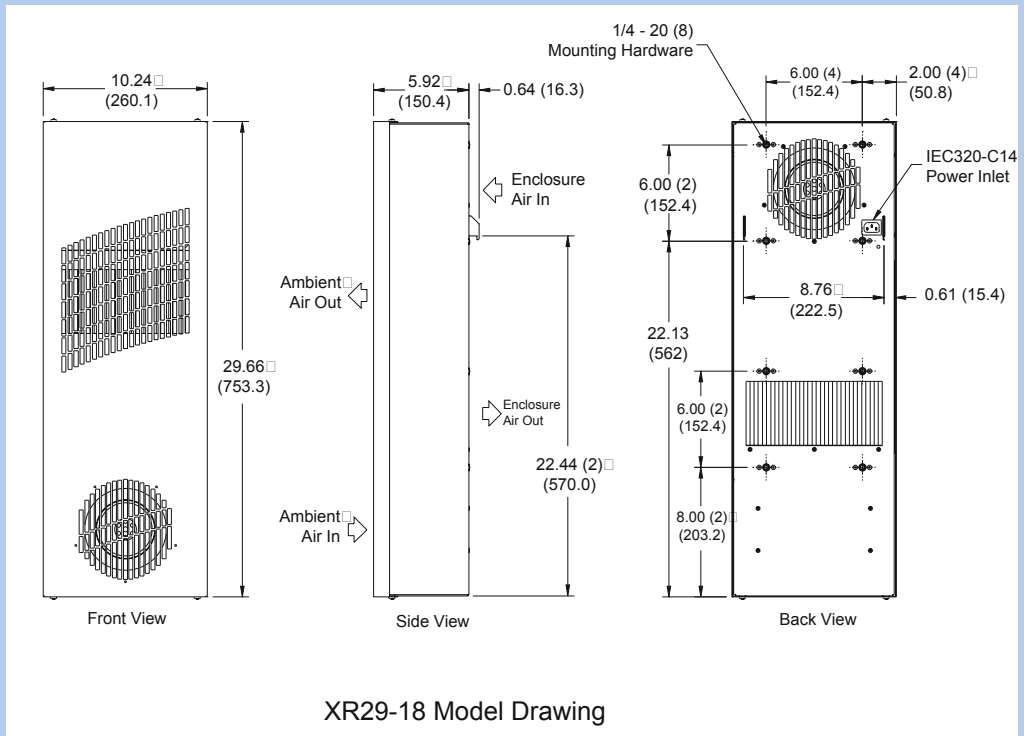
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2. Dash lines represent heat exchanger.
3. Only the four corner mounting holes are required when used on narrow panels (approximately 12") and panels that are otherwise rigid.
4. Cut-out dimensions for standard product only.



*Note: Internal mounting requires inverting the heat exchanger.

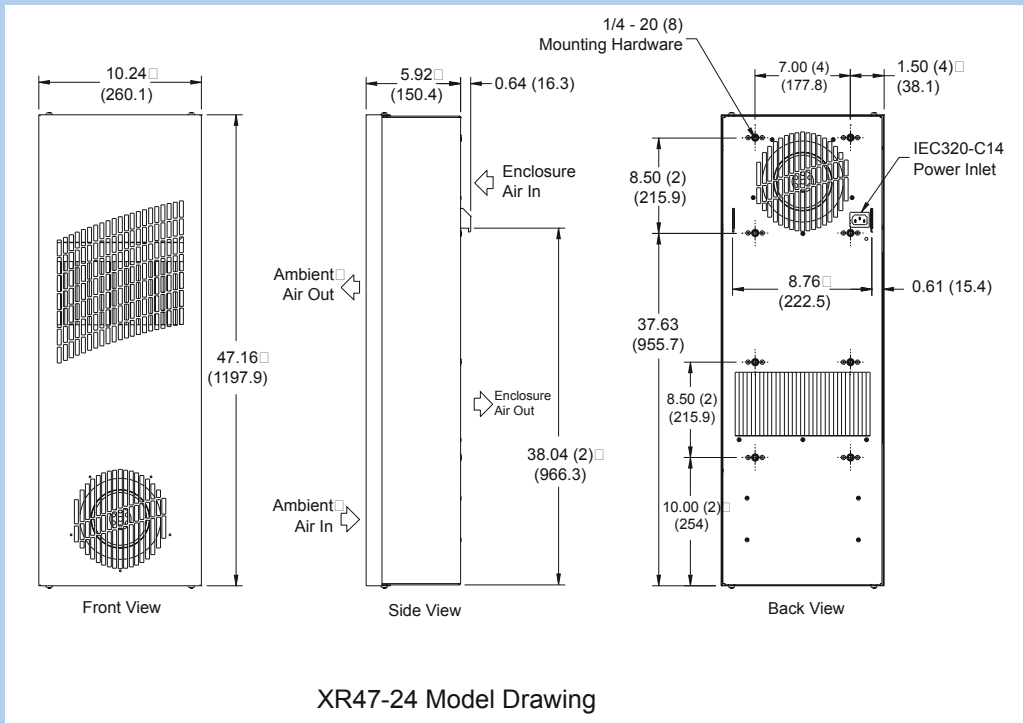
DESIGN NOTES

1. Gasket kit for mounting to enclosure included.
2. Service cord terminated with appropriate plug cap.
3. Equipped with latches on bottom of unit which allow removal of front cover for exchanger core cleaning.
4. Detachable airflow plenum may be used when mounting the heat exchanger inside or outside of the enclosure.



DESIGN NOTES

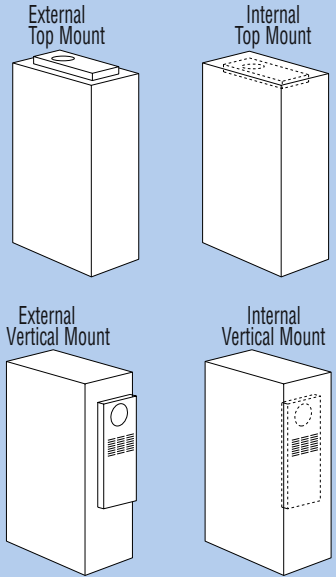
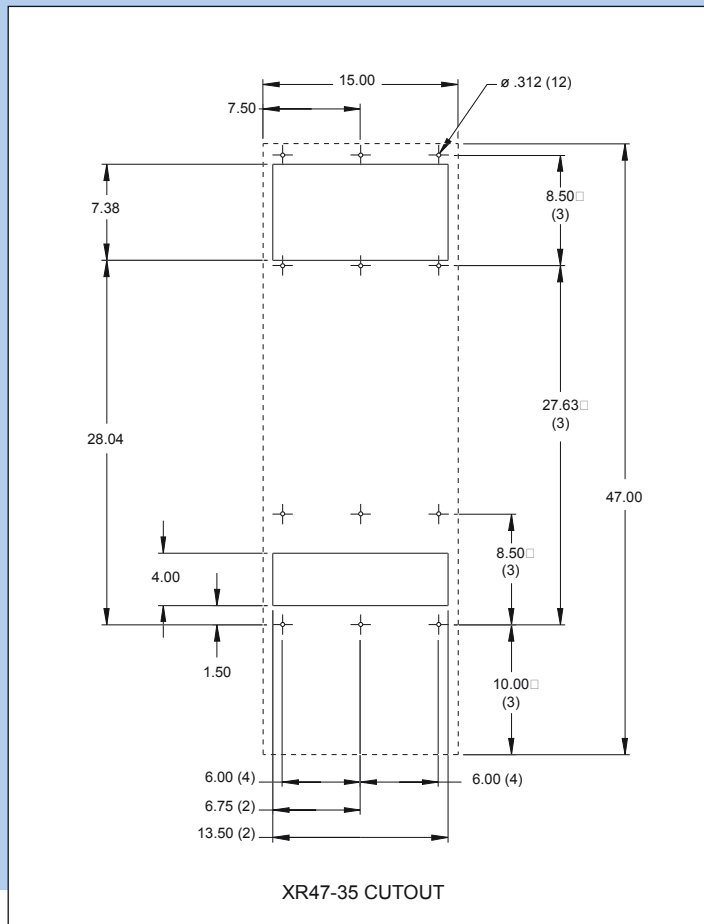
1. Gasket kit for mounting to enclosure included.
2. Service cord terminated with appropriate plug cap.
3. Equipped with latches on bottom of unit which allow removal of front cover for exchanger core cleaning.
4. Detachable airflow plenum may be used when mounting the heat exchanger inside or outside of the enclosure.



RFQAIR™ XR47-35

CUT-OUT NOTES

1. Cut-out shown is for external mounting of heat exchanger only. For internal mounting, cut-out must be inverted 180 degrees.
2. Dash lines represent heat exchanger.
3. Only the four corner mounting holes are required when used on narrow panels (approximately 8") and panels that are otherwise rigid.
4. Cut-out dimensions for standard product only.

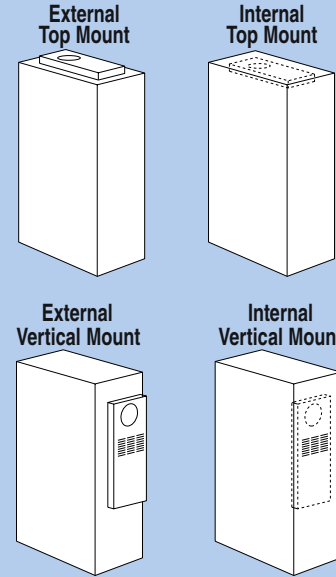
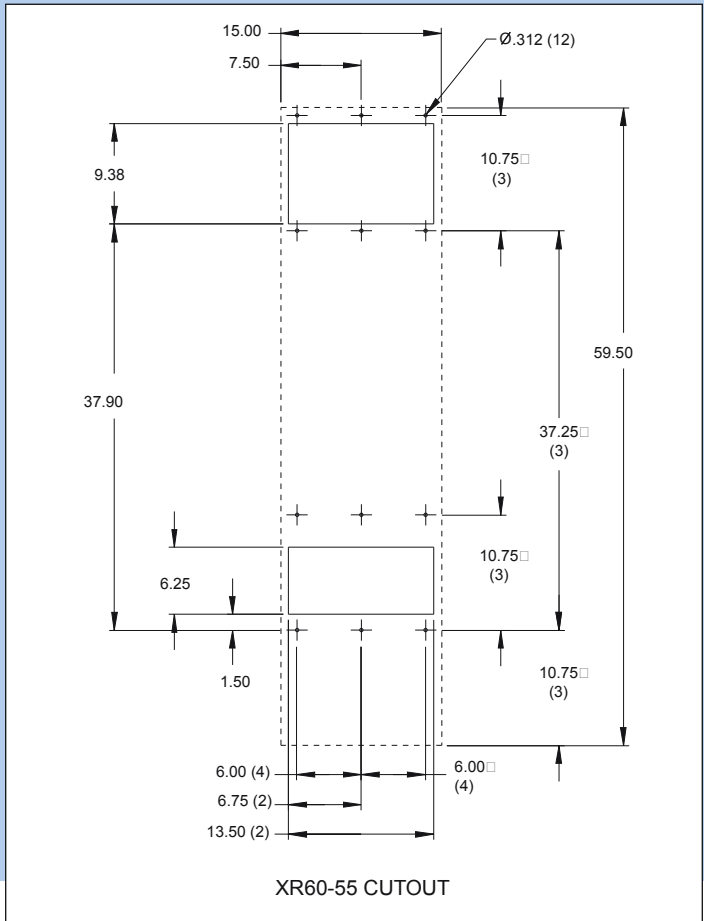


*Note: Internal mounting requires inverting the heat exchanger.

RFQAIR™ XR60-55

CUT-OUT NOTES

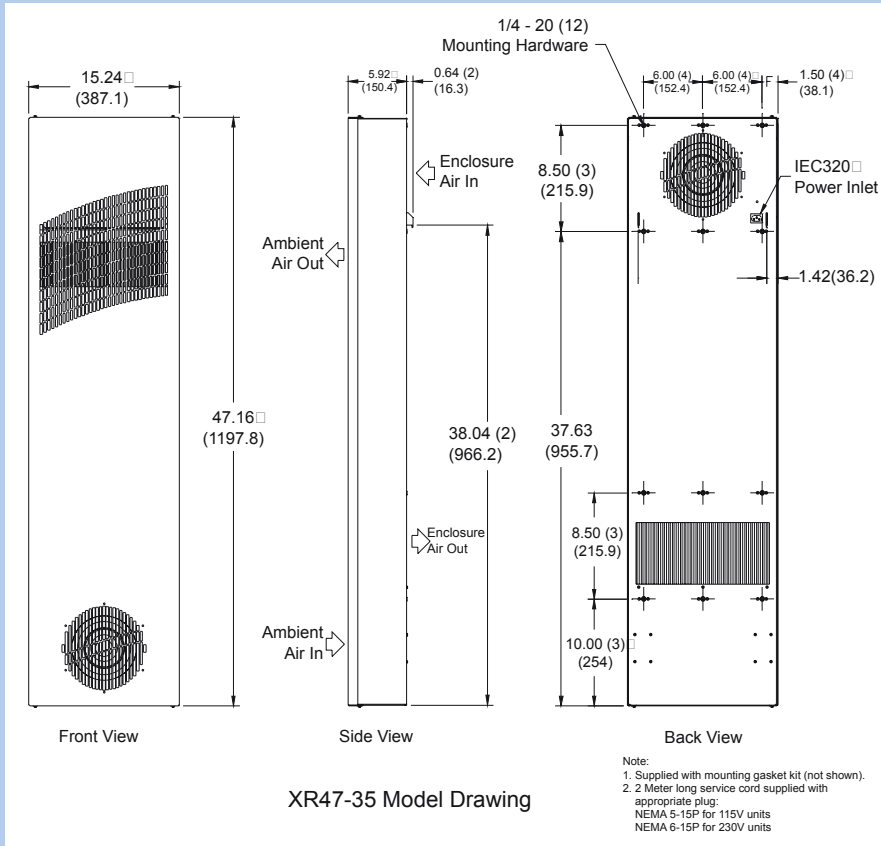
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2. Dash lines represent heat exchanger.
3. Only the four corner mounting holes are required when used on narrow panels (approximately 12") and panels that are otherwise rigid.
4. Cut-out dimensions for standard product only.



*Note: Internal mounting requires inverting the heat exchanger.

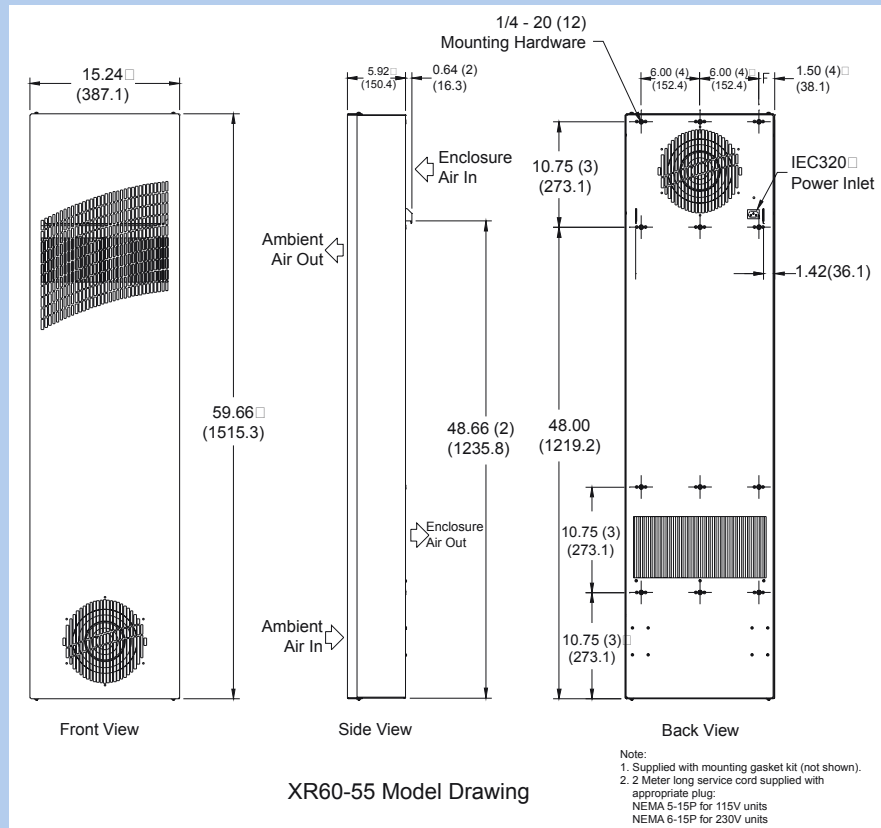
DESIGN NOTES

1. Gasket kit for mounting to enclosure included.
2. Service cord terminated with appropriate plug cap.
3. Equipped with latches on bottom of unit which allow removal of front cover for exchanger core cleaning.
4. Detachable airflow plenum may be used when mounting the heat exchanger inside or outside of the enclosure.



DESIGN NOTES

1. Gasket kit for mounting to enclosure included.
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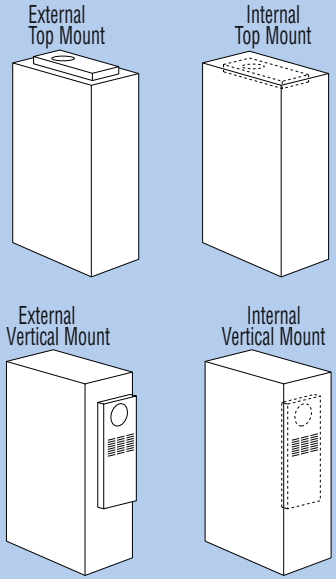
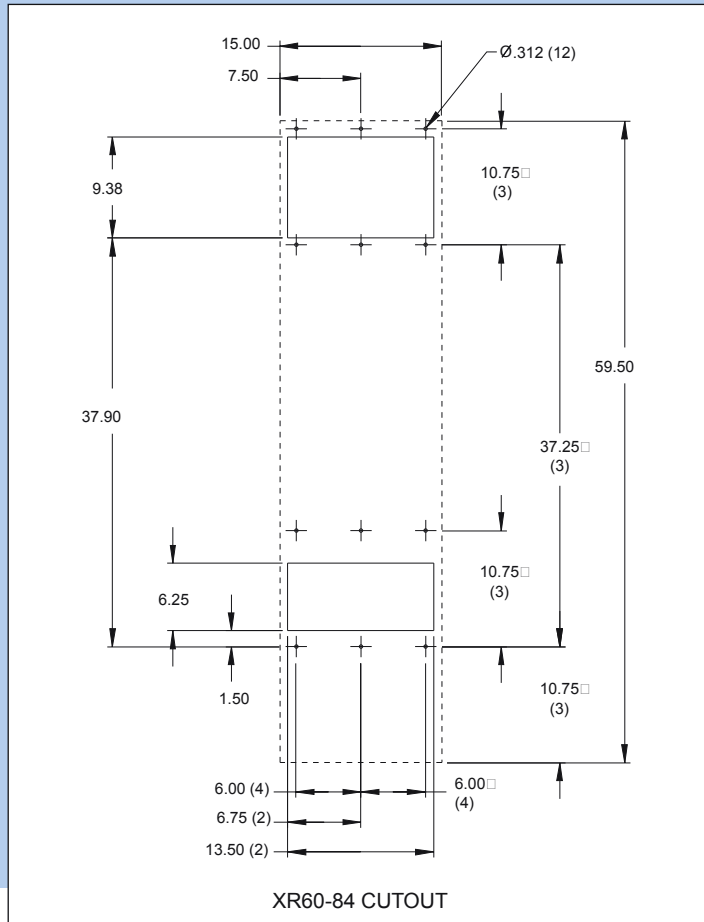


PROTECH™ HEAT EXCHANGERS
 XR-20, XR-29, XR-47, XR-60

RFQ XR60-84

CUT-OUT NOTES

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4. Cut-out dimensions for standard product only.



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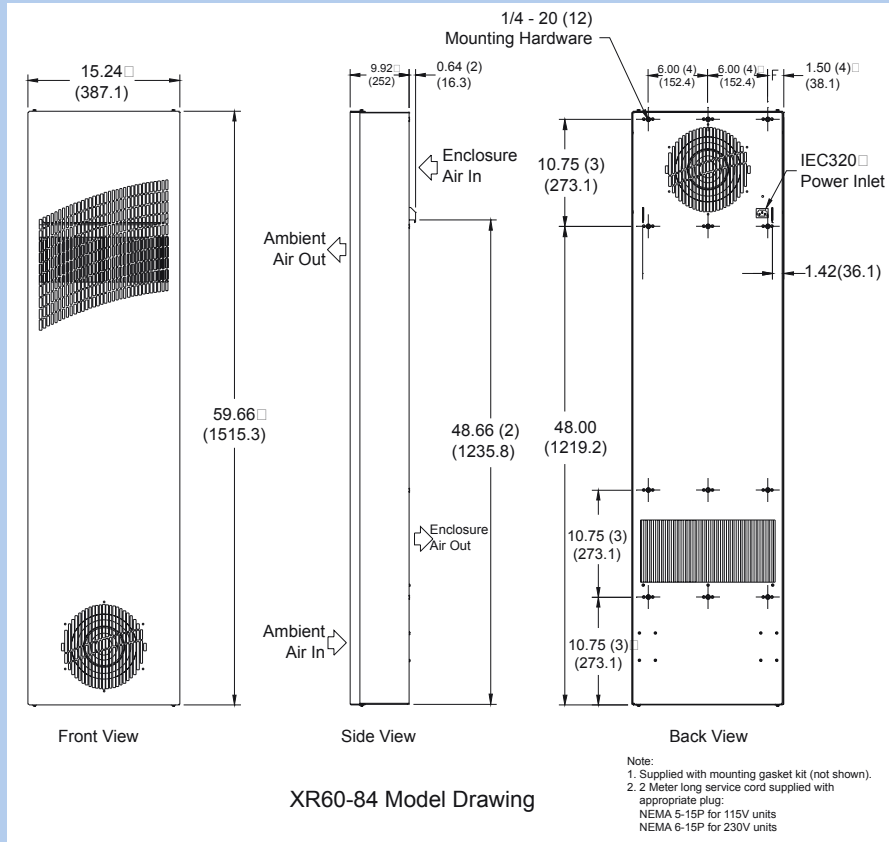
DESIGN NOTES

1. Gasket kit for mounting to enclosure included.

2. Service cord terminated with appropriate plug cap.

3. Equipped with latches on bottom of unit which allow removal of front cover for exchanger core cleaning.

4. Detachable airflow plenum may be used when mounting the heat exchanger inside or outside of the enclosure.



PRO™ HEAT EXCHANGERS
 XR-20, XR-29, XR-47, XR-60