Air Conditioners
Sizing and Selection

Before choosing a thermal management solution, you need to carefully consider the specifics of your application in addition to the following factors:

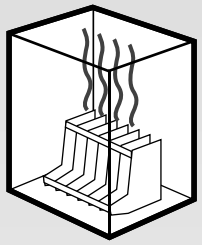
- Fan packages and blowers (page 9.32) may introduce ambient contaminants like oil mist and dust into the enclosure.
- Heat exchangers (page 9.22) cannot cool below the ambient temperature.
- Closed-loop air conditioners (this section) can cool below ambient temperature and reduce humidity without introducing contaminants.
- Simple ventilation devices such as louvers or grilles and filters are appropriate if maintaining a cool, constant temperature is not a critical factor.

Once you have determined the proper form of cooling equipment you need, selecting the required cooling capacity is outlined in this section.

How to Read Catalog Numbers

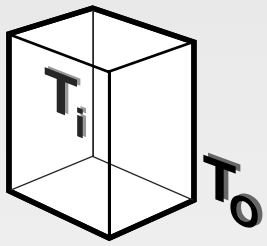
Air Conditioners **CR43-0616-002**
(1) (2) (3) (4) (5)

1. Identifies the type/family of air conditioner and the approximate height (i.e. CR43 = CR family, about 43" high).
2. This is the air conditioner's listed capacity in BTU/Hr. (i.e. 06 = 6000 BTU/Hr.)
3. 1 = 115 Volt, or 2 = 230 Volt
4. 6 = 50/60 Hz or 60 Hz (depending on unit, see Design Data); 5 = 50 Hz
5. Unique set of number for each air conditioner which identifies the accessories on a model.



Help Notes:
WATTS
1 WATT = 3.413 BTU/Hr.

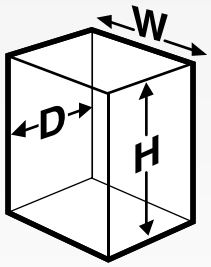
Determine the internal *heat load* produced by equipment as total operating Watts.



Help Notes:
ΔT (Desired Temperature Difference)
1 °K ΔT = 1.8 °F ΔT °K ΔT = °C ΔT

To determine the **ΔT** (°F) which is the temperature difference between the maximum temperature outside the enclosure (T_o) and the maximum desired temperature inside the enclosure (T_i) which can be calculated as:

$T_o - T_i = \Delta T$ for air conditioners.



Help Notes:
AREA (ft^2)
1 M^2 = 10.76 FT^2

Calculate the exposed surface area of the enclosure in *Square Feet*:

AREA (ft^2) =

2[(H" x W") + (H" x D") + (W" x D")] ÷ 144

where "H","W", and "D" are the dimensions of the enclosure.

Air Conditioners

» Determine the required air conditioner size (capacity):

(WATTS x 3.413)
+ [1.25 x AREA (ft^2) x ΔT(°F)]
BTU/HR.

Use the above formula to determine the required cooling capacity needed to maintain the desired operating temperature for your enclosure. This selection procedure applies to uninsulated, sealed, gasketed enclosures in indoor locations.

All industrial air conditioners are rated at their maximum operating point. Operating an air conditioner at temperatures below maximum conditions will result in reduced cooling capacity. In other words, operating 95°F ambient and 95°F enclosure temperature results in a 10% to 20% reduction in the rated capacity. (Note: full cooling capacity is probably not necessary at lower ambient temperatures.)

Air conditioners are appropriate for applications in which:

- The temperature inside the enclosure must be maintained at or below ambient temperature.
- Humidity must be removed from the enclosure.
- Ambient air contaminants must be kept out of the enclosure.

Air Conditioner Selection

BTU/Hrs.	Side Mount Models	Page
800–1000	13	9.04
1400–1700	CR23	9.16
1500–1800	17	9.04
2200–4000	28	9.08
2200–4000	CR29	9.16
3700–4000	33NSM	9.08
0–6000	36N	9.08
6000–8500	CR43	9.16
6700–12000	52	9.12

BTU/Hrs.	Top-Mount Models	Page
2200–4000	HBII	9.14

BTU/Hrs.	Vortex Cooler	Page
400-2500	VC Series	9.20

Selection and Sizing Software

Designed to assist you in determining the most suitable choices of air conditioners, heat exchangers, or fans for your application. **Download a free copy of our selection software by visiting our web site: www.hoffmanonline.com.**

Side-Mount Compact Air Conditioners

Side-Mount Compact Page 9.04

	H	W	D	BTU/Hr. (Watts)
13 Series	13.25 (337)	14.25 (362)	7.80 (198)	1000 (293)
17 Series	17.65 (448)	12 (305)	8.68 (220)	1800 (527)

Millimeter dimensions in ( ).

Side-Mount Mid-Size Air Conditioners

Side-Mount Mid-Size Page 9.08

	H	W	D	BTU/Hr. (Watts)
28 Series	28.50 (724)	17 (432)	11.33 (288)	2000-4000 (586-1758)
33NSM Series	34.37 (873)	12 (305)	9.88 (251)	4000 (1172)
36N Series	38.72 (984)	15 (381)	11.33 (288)	6000 (1758)

Millimeter dimensions in ( ).

Side-Mount Full-Size Air Conditioners

Side-Mount Full-Size Page 9.12

	H	W	D	BTU/Hr. (Watts)
52 Series	52.63 (1337)	17.13 (435)	11.33 (288)	8000-12000 (2344-3516)

Millimeter dimensions in ( ).

Top-Mount Air Conditioners

Top-Mount Page 9.14

	H	W	D	BTU/Hr. (Watts)
HBII	10.25 (260)	17 (432)	21.08 (535)	2200-4000 (645-1172)

Millimeter dimensions in ( ).

Compact to Full-Size Air Conditioners

CR Compact to Full-Size Page 9.16

	H	W	D	BTU/Hr. (Watts)
CR23	23 (584)	10 (254)	8.75 (222)	1600 (469)
CR29	29.50 (749)	15.75 (400)	8.63 (219)	2200-4000 (645-1172)
CR43	43.31 (1100)	15.75 (400)	10.25 (260)	6000-8500 (1758-2490)

Millimeter dimensions in ( ).

Corrosive / Outdoor Air Conditioners

CR Corrosive/Outdoor Page 9.16
VC Vortex Cooler Page 9.20

	H	W	D	BTU/Hr. (Watts)
CR23	23 (584)	10 (254)	8.75 (222)	1600 (469)
CR29	29.50 (749)	15.75 (400)	8.63 (219)	2200-4000 (645-1172)
CR43	43.31 (1100)	15.75 (400)	10.25 (260)	6000-8500 (1758-2490)
VC Series	See page 9.20			400-2500 (117-733)

Millimeter dimensions in ( ).