Air To Air Heat Exchangers

Consider a Better Solution: Air to Air Heat Exchanger

- Always closed loop
- Low cost
- Easier to mount on only one side of your enclosure
- Energy efficient; uses no more power than a filtered fan system
- Filter-free; no diminished cooling capacity

Applications

A closed loop cooling system which employs the heat pipe principle to exchange heat from an electrical enclosure to the outside.

Construction

- Heat pipe technology
- Closed loop design

Listings

- UL File: SA34086
- Made in USA

Features

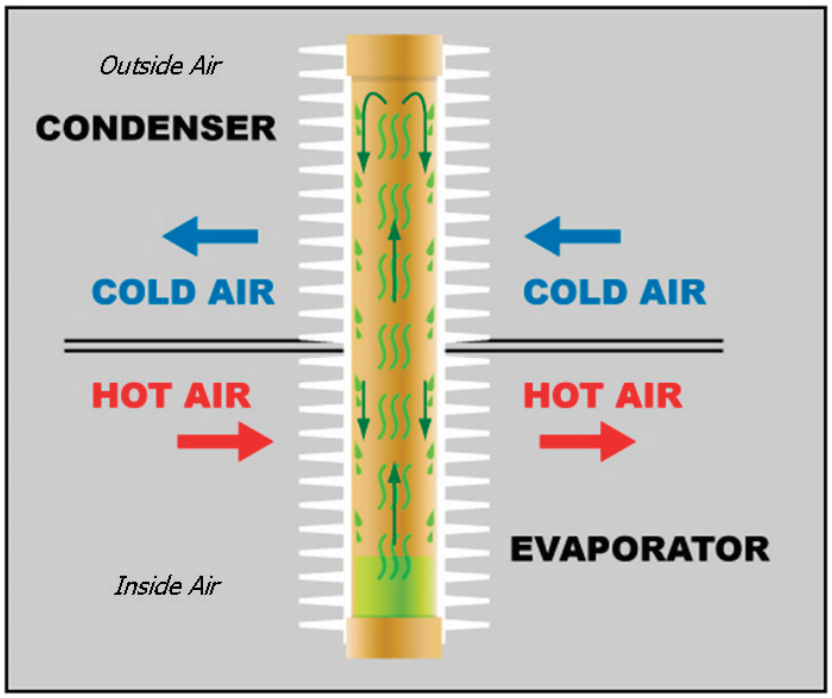
- All units are available in NEMA 4 and 4X
- Available in 120 VAC and 24 VDC
- Motors have a sealed overload protector
- Finned evaporator and condenser sections provide a closed loop
- Coil systems use aluminum end plates and baffles which improve conduction and reduce corrosion for longer life
- UL/cUL listed



Tall, compact, and deep body styles shown

Air to Air Heat Exchange

The Air to Air Heat Exchanger is a closed loop cooling system which employs the heat pipe principle to exchange heat from an electrical enclosure to the outside. Where ambient temperatures are suitable for heat pipes, they are the most efficient method of cooling as the waste heat is the engine which drives the system. The only power requirement is to operate two circulating fans or blowers.



Heat pipes have a liquid refrigerant under a partial vacuum inside sealed tubes. They operate with a phase change process which is much like that of mechanical air conditioning, but without the compressor. Each heat pipe has an evaporator section and a condenser section which are separated by a permanent baffle so as to provide a closed loop. The bottom of each heat pipe is in contact with heated air from the electrical enclosure. When the enclosure air reaches approximately 75° F, the refrigerant changes to vapor phase (boils) and the vapor (steam) rises to the top of the tube which is in contact with cooler outside (ambient) air.

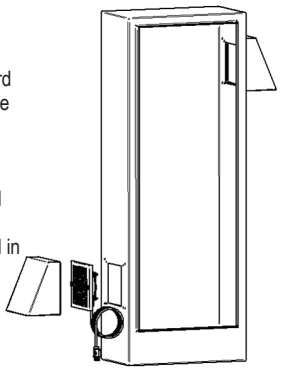
When the outside air temperature is lower than the enclosure temperature, the refrigerant vapor gives up heat to the outside air and returns to the liquid phase. It then falls to the bottom and repeats the cycle endlessly so long as there is a negative temperature differential between the enclosure and outside. Heat pipes will not operate in reverse cycle so heat cannot be transferred from the ambient to the interior of the enclosure. Although the operation is self limiting, thermostatic control can be used to shut off the fans when not needed.

The Stratus design has a top-to-bottom enclosure air flow pattern with maximum separation of the inlet and outlet. This design pulls the hottest air from the top of the enclosure and returns the cooled air from the bottom of the heat pipe to the enclosure. The air flow on the ambient side is bottom in, top out, so that the hotter discharge air moves up and away rather than being recirculated.

The units use aluminum end plates and baffles which improve conduction and reduce corrosion for longer life. The center aluminum baffle, which is swaged into the heat pipe coil, provides an air tight seal between the two air systems.

Air To Air Heat Exchanger Specifications

In this image, a standard installation shows where the dirt and particulate will enter the enclosure and be pulled in by the fans on your drives and devices. Filters or not, contamination is invited in by this open loop approach.



In this image, a standard installation demonstrates the closed loop condition maintained by the Air to Air Heat Exchanger. Cool air inlet and outlet vents are completely covered by the heat exchanger. This provides NEMA type 4 or 4X.



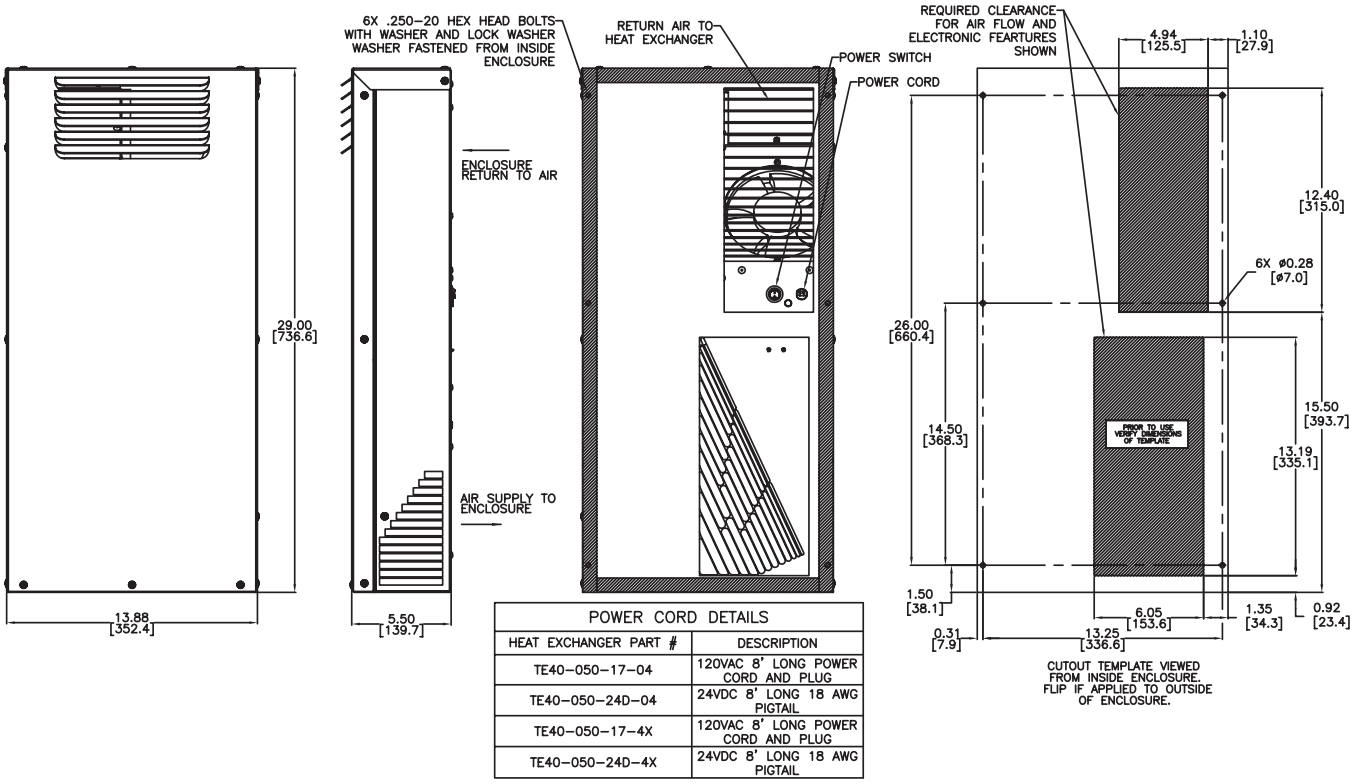
Air To Air Heat Exchanger Specifications

Part Number	TE20-015-17-04	TE20-015-17-4X	TE20-015-24D-04	TE20-015-24D-4X	TE30-030-17-04	TE30-030-17-4X	TE30-030-24D-04	TE30-030-24D-4X	TE40-050-17-04	TE40-050-17-4X	TE40-050-24D-04	TE40-050-24D-4X
Price	$;000ad?:	$;;000ad,:	$;000ae0:	$;000ae1:	$;000ae2:	$;000ae3:	$;000ae4:	$;000ae5:	$;000ae6:	$;000ae7:	$;000ae8:	$;000ae9:
Operating Voltage Range (V)	± 10%											
Inrush Current (Start Up Current) (A)	1.92		3.90		1.92		3.90		2.59		9.70	
Loading Current (Running Current) (A)	0.37		0.80		0.37		0.80		0.47		1.94	
SCCR (Short Circuit Current Rating) (A)	Refer to Footnote 1											
Recommended Circuit Protection Device Rating (A)	1.5		2.5		1.5		2.5		2		6	
VA Rating (W)	42		20		42		20		56		47	
Refrigerant Type (oz)	Methanol (0.41)		Methanol (0.41)		Methanol (0.81)				Methanol (1.22)			
Watts/°C (F°)	22 (12)				44 (24)				71.6 (40)			
Free Air Flow (CFM)	131		127		131		127		211		235	
Weight Without Packaging (lbs)	16				19				32			
Body Style	compact				deep				tall			
Material Type	2CRS with ANSI 61 gray powder coat	3Stainless Steel	2CRS with ANSI 61 gray powder coat	3Stainless Steel	2CRS with ANSI 61 gray powder coat	3Stainless Steel	2CRS with ANSI 61 gray powder coat	3Stainless Steel	2CRS with ANSI 61 gray powder coat	3Stainless Steel	2CRS with ANSI 61 gray powder coat	3Stainless Steel
Voltage/Hz	120 VAC 50/60		24 VDC		120 VAC 50/60		24 VDC		120 VAC 50/60		24 VDC	
Maximum Ambient Temperature	160°F (71.1°C)											
Agency Approval	UL File: SA34086											

Notes: [1] **SCCR rating is based on the SCCR rating for the circuit protection device installed in the panel / enclosure per UL50 and UL508a to protect the AC unit Typically 10KA for Fast Acting Fuses.**
[2] **Cold-rolled steel with ANSI-61 gray polyester powder coating inside and out.**
[3] **Fabricated from 16-gauge 304 stainless steel.**

Air To Air Heat Exchanger Dimensions

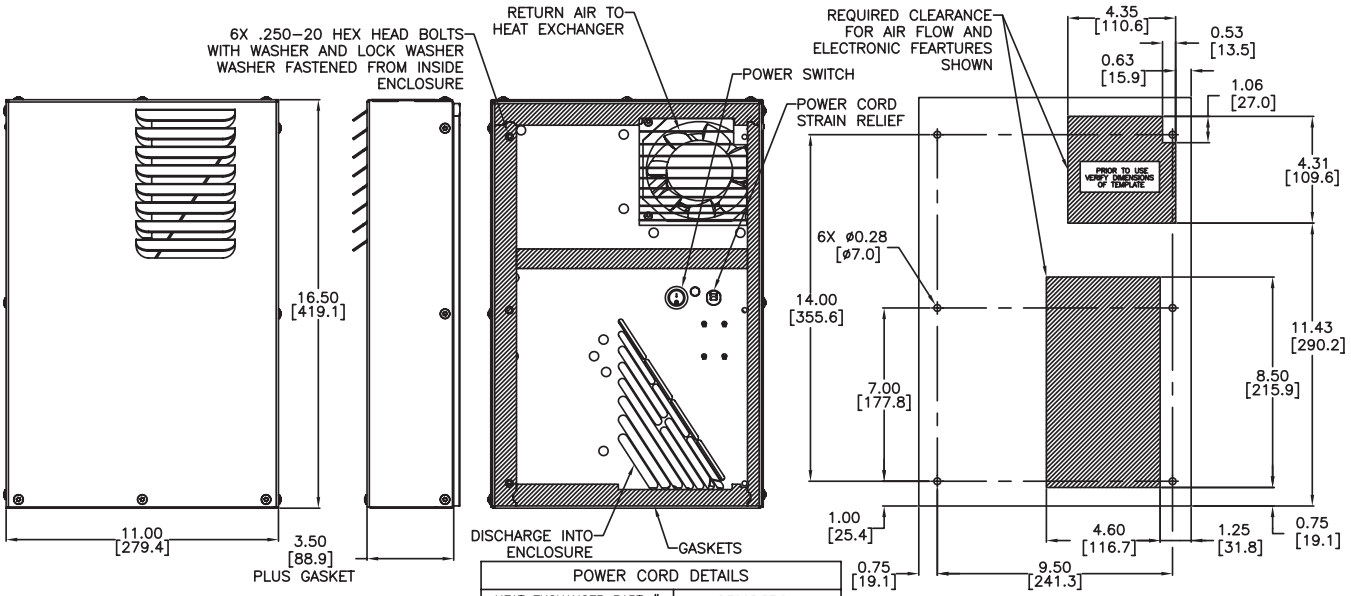
Dimensions - Tall



POWER CORD DETAILS	
HEAT EXCHANGER PART #	DESCRIPTION
TE40-050-17-04	120VAC 8' LONG POWER CORD AND PLUG
TE40-050-24D-04	24VDC 8' LONG 18 AWG PIGTAIL
TE40-050-17-4X	120VAC 8' LONG POWER CORD AND PLUG
TE40-050-24D-4X	24VDC 8' LONG 18 AWG PIGTAIL

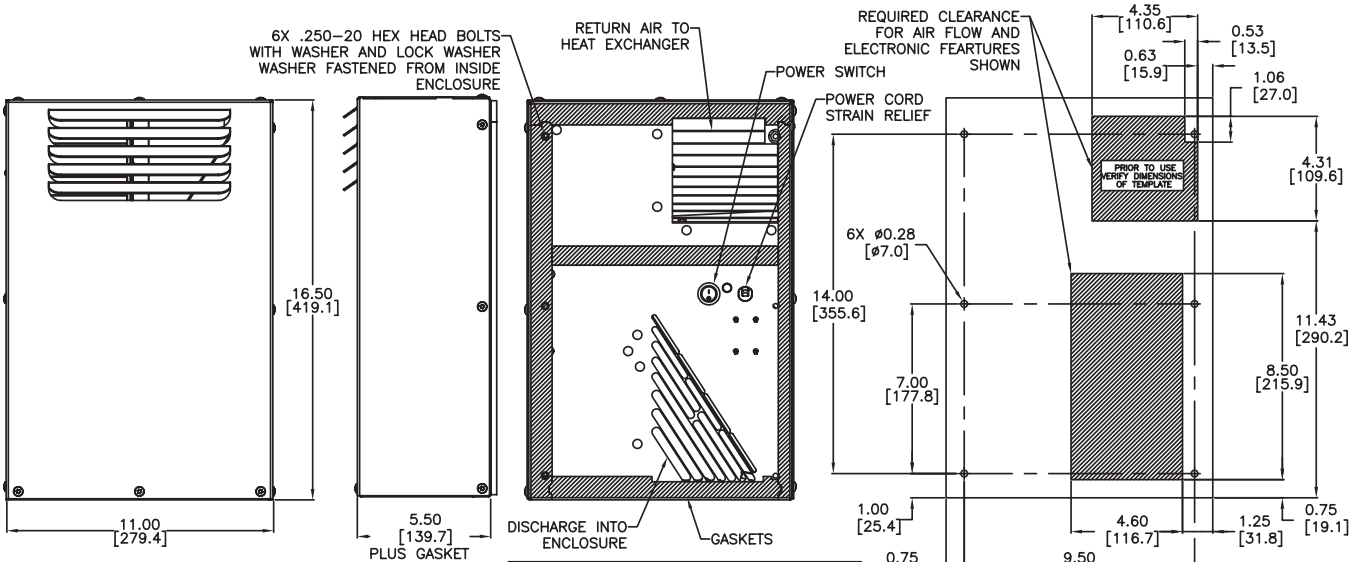
Air To Air Heat Exchanger Dimensions

Dimensions - Compact



POWER CORD DETAILS	
HEAT EXCHANGER PART #	DESCRIPTION
TE20–015–17–04	120VAC 8' LONG POWER CORD AND PLUG
TE20–015–24D–04	24VDC 8' LONG 18 AWG PIGTAIL
TE20–015–17–4X	120VAC 8' LONG POWER CORD AND PLUG
TE20–015–24D–4X	24VDC 8' LONG 18 AWG PIGTAIL

Dimensions - Deep



POWER CORD DETAILS	
HEAT EXCHANGER PART #	DESCRIPTION
TE30–030–17–04	120VAC 8' LONG POWER CORD AND PLUG
TE30–030–24D–04	24VDC 8' LONG 18 AWG PIGTAIL
TE30–030–17–4X	120VAC 8' LONG POWER CORD AND PLUG
TE30–030–24D–4X	24VDC 8' LONG 18 AWG PIGTAIL

Enviro-Therm® Series Air To Air Heat Exchangers

SAGINAW CONTROL & ENGINEERING
Your Enclosure Source ®

Application

Enviro-Therm® Heat Exchangers are designed for high-efficiency and high-performance air-to-air heat transfer. Designed with an internal closed loop system to provide protection from dust, oil and water. For indoor and outdoor application. Rugged, energy efficient, and reliable cooling system.



SCE-HE04W120V

Construction

- Internal components are corrosion resistant
- HE08, HE18 and HE24 counter-flow core
- HE04 modified heat pipe core
- Filterless design, low maintenance counter-flow heat exchangers are finless, reducing the chances of clogging, and easy to clean
- Threaded mounting studs provided for simple installation
- Digital touchpad programmable controller
- Controller Preset 95°F to cool - Adjustable 68°F to 122°F.
- Temperature differential hysteresis 5.4°F
- High temp alarm preset 131°F
- High performance ball bearing fans
- Door activated switch wiring provisions provided for easy installation
- Cage clamp terminal connector

Finish

RAL 7035 river texture powder coat over aluzinc coated steel

Listings

- NEMA Type 3R & 12
- cULus Recognized Type 3R & 12 [File E498756]
- IEC 60529
- IP 54

c UL us CE

Enviro-Therm® Series Air To Air Heat Exchanger General Specifications

Part Number	*SCE-HE04W120V*	*SCE-HE08W120V*	*SCE-HE18W120V*	*SCE-HE24W120V*
Price	$;0067#b:	$;0067#c:	$;0067#d:	$;0067#e:
Drawing Links	PDF	PDF	PDF	PDF
Cooling Capacity	4 Watts/°F	8 Watts/°F	18 Watts/°F	24 Watts/°F
Operating Temperature Range	23°F - 131°F			
Dimensions (H x W x D)	20.00 x 7.50 x 5.95	29.50 x 10.00 x 5.95	29.66 x 10.24 x 5.95	47.16 x 10.24 x 5.95
Weight	16.5 lbs	25.0 lbs	26.5 lbs	36.8 lbs
Rated Operating Voltage / Frequency	120 V - 50/60 Hz			
Running Current	1.10 A		1.40 A	1.80 A
Starting Current	1.30 A		1.60 A	2.20 A
Power Consumption	65 W	120 W	150 W	195 W
Fuse Rating	1.6A (T) - Time Delayed [Slow Acting]		3A (T) - Time Delayed [Slow Acting]	
Circuit Breaker - MCB Type D or K	1.6A Slow Acting		3A Slow Acting	
Connection	Cage Clamp Terminal Connector			
Max Current at Door Switch	5 A DC			

Dimensions given in Inches

PWS Series Air-to-Water Heat Exchanger

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

Application

Pfannenberg PWS Series air-to-water heat exchangers are particularly suitable where ambient temperatures are high or the atmosphere proves to be particularly oily or aggressive like areas with high amounts of particulate. Ideal areas of use for air-to-water heat exchangers are wherever machines or production processes are cooled by tempered water and water is thus already provided.

These air-to-water heat exchangers are closed loop and require a source of chilled liquid to cool. With a cold source of fluid, these units have high cooling capacity and low energy usage in a small footprint. They can be very effective even if the ambient air temperature is high.

The sealed cabinet provides contaminant-free cooling without adding heat to the local environment.



12351010005

Features

- Hydronic push-to-connect fittings for coolant that supports quick connection to 1/2inch O.D. hose or 1/2in I.D. hose with included adapter
- Physical barriers for condensation management allow for condensation to be collected and drained from the system with zero intrusion into the cabinet
- Adjustable thermostat permits precise control of the electrical enclosure temperature by regulating the coolant flow by activating a solenoid valve
- Adjustable thermostat range of 46°F to 122°F (8°C to 55°C) with a factory setting of 95°F (35°C)
- Rated operating voltage of 115 VAC (60Hz)
- Terminal block electrical connection
- High-temp alarm preset 131°F
- High-performance ball bearing fans
- Door-activated switch wiring provided for easy installation
- Cage clamp terminal connector
- Integrated temperature monitoring with alarm contact

Finish

RAL 7035 powder coat over galvanized sheet steel.

Listings

- NEMA Type 3R, 4, & 12
- cULus Recognized Type 3R, 4, & 12 [File SA10300]
- cULus Listed File SA10300

PWS Series Air-to-Water Heat Exchanger General Specifications			
Part Number	***12351010005***	***12358410045***	***12358510045***
Price	$;006hx0:	$;006hx1:	$;006hx2:
Series	PWS 7102	PWS 3302	PWS 3502
Drawing Links	PDF	PDF	PDF
Cooling Capacity	3241 BTU/H	12283 BTU/H	21496 BTU/H
Weight	16.5 lbs	66 lbs	73 lbs
Running Current	0.69A	0.70A	1.89A
Starting Current	1.4A	0.8A	3.1A
Connection (Water)	1/2in OD Hose Barb	1/2in push-in fitting	

PWS Series air-to-water Heat Exchanger

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Performance Graphs

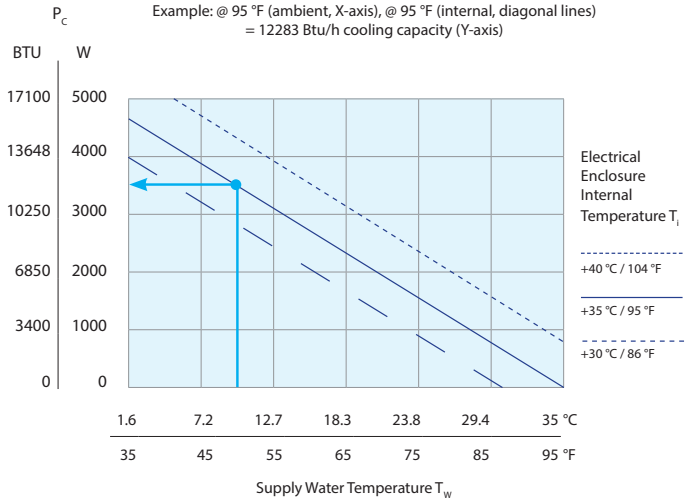
**PWS 7102 Performance Curve not available*



PWS 3302

How to use this chart

Example: @ 95 °F (ambient, X-axis), @ 95 °F (internal, diagonal lines)
= 12283 Btu/h cooling capacity (Y-axis)





PWS 3502

How to use this chart

Example: @ 95 °F (ambient, X-axis), @ 95 °F (internal, diagonal lines)
= 21496 Btu/h cooling capacity (Y-axis)

