



MULTIPLE SCROLL COMPRESSORS TYPE AIR COOLED PACKAGE CHILLERS



Smartwise Innovations...
Towards Green. Quality & Reliability Solutions

 **Smartech**

SCOD_A SERIES

INTRODUCTION

This series of Multiple Scroll Compressors Type Air Cooled Package Chillers were developed by a group of industry engineers, each of them with over 20 years of experience in the design, manufacturing, installation and service of electric chillers, packaged air-conditioners, split air-conditioners, fancoils, air handling units, and related products.

- The Group is fully committed to innovative design, new and advanced technologies, value engineering and to provide expert personalized service to architects, consulting engineers, developers, building owners and contractors.
- The company's ability and courage to utilize and adopt latest technologies, combined with fullest personalized assistance, has enabled the company to provide architects, consultants and developers various customized solutions to their various demanding application requirements.
- The company has the unique expertise and experience to custom design and fabricate equipment for installations in marine and corrosive environments, explosive and hazardous environments, low noise environments and any other stringent application needs!

MULTIPLE SCROLL TYPE COMPRESSORS AIR COOLED PACKAGE CHILLERS

GENERAL DESCRIPTION

The Air Cooled Scroll Chillers are designed and manufactured to ensure efficient and reliable performance and to provide an economical system of air conditioning for residential, commercial and industrial buildings. The air-cooled scroll chillers can also be suitably piped and connected to provide chilled water or cold brine solution for process cooling purposes.

Each air-cooled scroll chiller consists of an outdoor weatherproof casing constructed from heavy gauge galvanized steel coated with oven-baked epoxy polyester paint; two or multiple scroll compressors with minimum of two independent refrigerant circuits; a large surface area Copper tubes-Aluminium fins condenser coil for efficient heat transfer; a compact Brazed Plate Heat Exchanger used as cooler; two or multiple axial propeller fans with direct drive induction motors; factory packaged and prewired power and control panel; and a microprocessor based controller for capacity step modulation and safety protections.

The air-cooled scroll chillers are suitable for outdoor installations with free and unducted condenser fans air discharge. For chillers of size 60, 72, 88 and 96, shell and tubes type coolers, each with independent either 3 or 4 refrigerant circuit and single water side circuit are offered as standard in lieu of BPHE coolers.

Nomenclature

SCOD	72	A	R2
SMARTECH Chiller Scroll Compressor DX Evaporator	Nominal Cooling Tons	Air Cooled Type	R2- R22 R7 - R407C



MECHANICAL SPECIFICATIONS AND FEATURES

RANGE

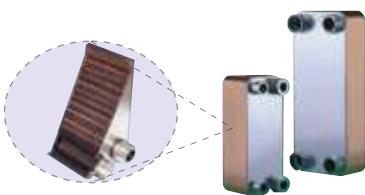
The Chiller has 17 cooling capacity sizes from 9 to 96 tons and available with HCFC-22 and HFC-407C refrigerants.

HERMETIC SCROLL COMPRESSOR

- Hermetic Scroll type operating at 2950 RPM (50Hz)
- Proven high efficiency, low noise and high reliability compressor design to ensure long life operation
- With internal line break motor protection or solid state motor protection
- No-contact scroll design and 100% motor cooled by suction gas
- Minimum two compressors with two to four steps unloading



BPHE EVAPORATOR



The compact Brazed Plate Exchanger (BPHE) acts as an evaporator, a secondary gas or liquid is cooled as it loses heat to the liquid refrigerant. The refrigerant boils and is converted into gas, absorbing more energy.

BPHE evaporator provides a good, stable boiling process with a small temperature difference between the refrigerant and the secondary fluid. A low temperature difference means that a higher evaporation temperature is possible, which reduces the pressure difference in the system and increases the density of the refrigerant gas. These two factors increase the refrigeration capacity and reduce the power consumption of the compressor, which together increases the total system efficiency.

BPHEs are the most efficient way of transferring heat for cooling capacities below 50 RT, and with maximum independent twin refrigerant circuit. BPHEs offer considerably better performance and overall economy compared with other, traditional heat transfer technologies such as shell and tube evaporators.

Some of the advantages are:

- Compact size and 85-90% lighter by weight and volume than a shell and tube evaporator of the same capacity.
- Superior heat transfer performance
- Less refrigerant charge required compared with shell & tube evaporators
- Little maintenance required. Very little fouling occur even after long period of operation due to the high internal turbulence which creates a self cleaning effect on the internal channels.

Caution:

A water strainer should be field installed at the return chilled water inlet pipe, prior to the brazed plate heat exchanger, to prevent entry of any particles larger than 1mm, which could block the internal channels, causing poor performance, increased waterside pressure drop and risk of freezing.

SHELL & TUBE EVAPORATOR

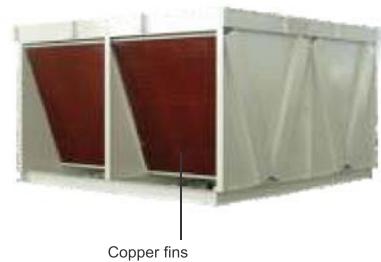
The adoption of a dedicate, high efficiency exchange tube allowed to exalt performances increasing the cooling capacities by values close to 10%. This performance improvement can be alternatively translated into a raising of the evaporation temperature and then in an optimisation of the COP of the cooling system, not only in combination with R407C but also with the other refrigerants.

- Header, tube sheet, shell, refrigerant and water connections are made of carbon steel
- High efficiency exchange tubes are in copper, internally finned.
- Baffles are made of brass or other suitable material (carbon steel)
- The bolt system is made of steel alloys or stainless steel depending on working conditions and temperatures, while gaskets are made of an asbestos free compound.



ADS CONDENSER COIL

- Constructed from staggered rows of inner ridged copper tubes mechanically expanded into die-formed aluminium fins for positive bonding and efficient heat rejection.
- The pre-coated aluminium fins improve corrosion resistance and maintains the fins surface for efficient heat rejection.
- The condenser coil is pressure tested up to 450psig with dry nitrogen under water for leaks.
- Optional copper fins condenser coil.



AXIAL PROPELLER FANS

- The patented and unique designed axial propellers are selected to deliver high condenser air flow rates, with low noise level and low motor power consumption.
- The 3-phase, high starting torque, direct drive condenser fan motors run at maximum speed of 950 rpm for low noise operation.
- All condenser fan motors are provided with either internal line break motor protection or external mounted overload protector; and are suitable for outdoor installations with minimum IP54 protection.
- Optional variable fan speed control or fan cycling in response to condensing head pressures, during low ambient condition.



POWER AND CONTROL PANEL

Each chiller is packaged with a power and control panel which is ready to accept rated 3 phase 50Hz electrical supply from a remote mounted isolator.

The power panel is furnished with factory pre-wired and mounted DOL starters for compressors, DOL starters for condenser fan motors, MCBS for compressors and fan motors, external overload protectors for compressors and/or fan motors. Power, alarm and compressor run lights to indicate unit operation status.

The Heart of the control panel is the highly reliable **Smart-Advance SA600** microprocessor based controller with advance compressor management logic for scroll compressors in response to required chilled water inlet set-point temperature.

The **Smart-Advance SA600** controller provides the following safety-protection controls and features:-

- A 4-digit LED display with 18 icons offers clear readability with dedicated units of measures for each value displayed.
- Monitors in/out temperature, high / low refrigerant pressure.
- High discharge pressure cut-out protection
- Low suction pressure cut-out protection
- Chilled water anti- freeze protection
- Staggered starting of compressors to reduce current inrush.
- Compressors short cycling (on and off repeatedly) prevention which can cause overheating of compressors and premature failures or burnt-out of compressors.
- Lead-lag control of compressors operation and auto-balancing of compressors run-hours
- Large historical alarms memory
- Equipped with TTL serial connection which enables easy integration with plant supervision, monitoring and management systems through MODBUS communication protocol.
- Can be furnished with **optional** RS485 to form LAN with suitable adaptor for local / remote plant management.
- Smart-Advance SA 800 - for size 26 to 96.



OTHER SAFETY CONTROLS

COMPRESSOR MOTOR PROTECTION

Each compressor is either provided with internal line break protection device against high motor winding temperature; or solid state motor protection (mounted inside compressor terminal box) to protect against high motor winding temperature.

CONDENSER FAN MOTOR PROTECTION

Each condenser fan motor is either provided with build-in thermal protector or external mounted thermal overload relay.

OPTIONAL ACCESSORIES

UNDER VOLTAGE AND PHASE PROTECTION RELAY

It protects against low incoming voltage conditions as well as single phase reversal and phase unbalance by opening the control circuit.

HEAT RECOVERY / DESUPERHEATERS

This can be factory supplied and installed to get free hot water up to as high as 55°C.

OTHER OPTIONAL ACCESSORIES

- Coated or uncoated copper fin coils in lieu of pre-coated aluminium fins coils.
- Suction and discharge pressure gauges.
- Discharge or suction stop valves for each compressor.
- Water flow switches to be shipped loose.
- Spring isolators to be shipped loose.
- Rubber-in-shear isolators to be shipped loose.
- Remote keyboard (up to 100m)



PERFORMANCE TABLE

R22

Lvg Water Temp (°F)	Model SCOD	Ambient Temp (°F)							
		85		95		105		115	
		Ton	kWi	Ton	kWi	Ton	kWi	Ton	kWi
42	9	9.1	8.9	8.4	10.2	7.7	11.6	6.9	13.3
	10	9.8	9.9	9.2	11.1	8.5	12.5	7.6	14.3
	12	12.2	12.4	11.4	13.8	10.7	15.4	9.6	17.6
	13	13.2	13.5	12.4	15.0	11.6	16.8	10.4	19.2
	15	15.3	15.0	14.4	16.8	13.5	18.9	12.1	21.6
	18	18.0	18.0	16.9	20.3	15.9	22.8	14.2	26.1
	20	20.8	18.8	19.5	21.0	17.5	23.8	15.4	27.2
	24	24.6	22.8	22.9	25.6	21.0	28.8	18.7	32.4
	26	27.1	25.0	25.6	28.2	23.9	32.0	22.1	36.4
	30	31.7	29.6	29.9	33.6	27.9	38.2	25.6	43.6
	35	35.9	33.6	33.5	37.8	31.2	42.4	28.6	47.6
	40	41.0	37.6	38.2	42.0	34.6	47.6	30.5	54.4
	48	49.4	45.6	45.9	51.2	41.9	57.6	37.4	64.8
	60	61.6	56.4	57.4	63.0	51.9	71.4	45.6	81.6
	72	74.2	68.4	68.9	76.8	63.1	86.4	56.2	97.2
	88	90.5	83.2	84.1	93.2	76.6	105.2	67.8	119.2
	96	98.8	91.2	91.8	102.4	84.0	115.2	74.8	129.6
44	9	9.5	8.9	8.7	10.2	8.0	11.6	7.2	13.3
	10	10.2	9.9	9.6	11.1	8.9	12.5	8.0	14.3
	12	12.8	12.4	12.0	13.9	11.2	15.5	10.0	17.7
	13	13.8	13.5	12.9	15.1	12.1	16.8	10.9	19.2
	15	16.0	15.0	15.0	16.9	15.0	16.9	13.4	19.3
	18	18.8	18.1	17.7	20.3	16.6	22.9	14.9	26.1
	20	21.7	18.9	20.3	21.2	18.5	23.8	16.3	27.2
	24	25.7	22.8	24.0	25.6	21.9	28.8	19.6	32.4
	26	28.3	25.0	26.6	28.2	24.9	32.0	22.9	36.4
	30	33.0	29.6	31.0	33.6	29.1	38.2	26.7	43.6
	35	37.2	33.8	35.2	37.8	32.5	42.4	29.9	47.6
	40	42.8	37.8	40.0	42.4	36.5	47.6	32.2	54.4
	48	51.5	45.6	48.0	51.2	43.7	57.6	39.1	64.8
	60	64.1	56.7	60.0	63.6	54.7	71.4	48.2	81.6
	72	77.4	68.4	72.1	76.8	65.7	86.4	58.8	97.2
	88	94.3	83.4	88.0	93.6	80.3	105.2	71.3	119.2
	96	103.1	91.2	96.0	102.4	87.5	115.2	78.3	129.6
46	9	10.0	8.9	9.1	10.2	8.4	11.6	7.5	13.3
	10	10.7	10.0	10.0	11.2	9.3	12.6	8.3	14.4
	12	13.4	12.5	12.5	13.9	11.7	15.5	10.5	17.7
	13	14.5	13.6	13.5	15.1	12.7	16.9	11.3	19.3
	15	16.7	15.1	15.7	16.9	14.7	19.1	13.2	21.8
	18	19.7	18.1	18.5	20.4	17.4	22.9	15.6	26.2
	20	22.6	18.9	21.2	21.2	19.4	23.8	17.2	27.2
	24	26.8	22.8	25.0	25.6	22.9	28.8	20.6	32.4
	26	29.4	25.0	27.8	28.2	25.9	32.0	23.9	36.4
	30	34.2	29.8	32.4	33.6	30.2	38.2	27.9	43.6
	35	38.8	33.8	36.5	37.8	33.9	42.4	31.2	47.6
	40	44.5	37.8	41.7	42.4	38.2	47.6	33.9	54.4
	48	53.6	45.6	50.1	51.2	45.8	57.6	41.3	64.8
	60	66.7	56.7	62.6	63.6	57.4	71.4	50.8	81.6
	72	80.5	68.4	75.2	76.8	68.9	86.4	62.0	97.2
	88	98.2	83.4	91.9	93.6	84.1	105.2	75.2	119.2
	96	107.3	91.2	100.2	102.4	91.8	115.2	82.6	129.6
48	9	10.4	8.9	9.6	10.2	8.7	11.6	7.8	13.3
	10	11.1	10.0	10.4	11.2	9.7	12.6	8.7	14.4
	12	14.0	12.5	13.1	14.0	12.2	15.6	11.0	17.8
	13	15.1	13.6	14.1	15.2	13.2	16.9	11.8	19.3
	15	17.4	15.1	16.4	17.0	15.4	19.1	13.8	21.8
	18	20.6	18.2	19.3	20.5	18.1	23.0	16.2	26.3
	20	23.5	19.0	22.1	21.2	20.3	23.8	18.2	27.2
	24	27.9	22.8	26.1	25.6	24.0	28.8	21.7	32.4
	26	30.6	25.2	28.8	28.2	26.9	32.0	24.9	36.4
	30	35.5	29.8	33.5	33.8	31.5	38.2	29.1	43.6
	35	40.2	34.0	37.8	37.8	35.2	42.4	32.5	47.6
	40	46.2	38.0	43.5	42.4	40.0	47.6	35.8	54.4
	48	55.7	45.6	52.2	51.2	48.0	57.6	43.4	64.8
	60	69.3	57.0	65.2	63.6	60.0	71.4	53.7	81.6
	72	83.7	68.4	78.4	76.8	72.1	86.4	65.2	97.2
	88	102.0	83.6	95.7	93.6	88.0	105.2	79.2	119.2
	96	111.5	91.2	104.5	102.4	96.0	115.2	86.8	129.6
50	9	10.9	8.9	10.0	10.2	9.1	11.6	8.4	13.3
	10	11.5	10.1	10.8	11.3	10.1	12.7	9.4	14.2
	12	14.6	12.5	13.7	14.0	12.8	15.6	12.0	17.4
	13	14.2	13.7	14.8	15.2	13.8	17.0	12.9	18.9
	15	18.2	15.1	17.1	17.0	16.0	19.2	15.0	21.5
	18	21.5	18.2	20.2	20.5	18.9	23.1	17.7	25.9
	20	24.4	19.0	22.9	21.2	21.2	23.8	19.1	27.2
	24	28.9	23.0	27.1	25.6	25.0	28.8	22.7	32.4
	26	31.8	25.2	30.0	28.4	28.1	32.0	26.1	36.4
	30	36.9	29.8	34.9	33.8	32.9	38.4	30.4	43.6
	35	41.8	34.0	39.5	38.0	36.9	42.4	33.9	47.6
	40	48.0	38.0	45.2	42.4	41.7	47.6	37.5	54.4
	48	57.8	46.0	54.3	51.2	50.1	57.6	45.5	64.8
	60	72.0	57.0	67.8	63.6	62.6	71.4	56.3	81.6
	72	86.9	69.0	81.6	76.8	75.2	86.4	68.4	97.2
	88	105.9	84.0	99.6	93.6	91.9	105.2	83.1	119.2
	96	115.8	92.0	108.7	102.4	100.2	115.2	91.1	129.6

Note: Kwi is compressor power input

PERFORMANCE TABLE



Lvg Water Temp (°F)	Model SCOD	Ambient Temp (°F)							
		85		95		105		115	
		Ton	kWi	Ton	kWi	Ton	kWi	Ton	kWi
42	9	9.1	9.5	8.3	10.8	7.6	12.4	6.9	14.2
	10	10.2	10.4	9.3	11.7	8.5	13.2	7.8	14.9
	12	12.5	13.0	11.5	14.6	10.6	16.4	9.7	18.4
	13	13.6	14.2	12.5	15.9	11.4	17.7	10.4	19.8
	15	15.3	15.7	14.1	17.6	13.0	19.6	11.9	21.9
	18	18.1	18.7	16.5	21.1	15.1	23.9	13.7	27.0
	20	20.2	18.9	18.5	21.4	16.7	24.4	14.8	28.0
	24	23.8	22.5	21.9	25.5	19.9	29.0	17.8	32.9
	26	26.2	25.1	24.4	28.5	22.5	32.3	20.5	36.5
	30	30.6	29.4	28.4	33.4	26.0	38.2	23.3	43.6
	35	35.0	33.2	32.4	37.9	29.5	43.4	26.2	49.8
	40	39.8	37.7	36.4	42.8	32.9	48.8	29.2	56.0
	48	47.7	45.0	43.9	51.0	39.9	58.0	35.6	65.8
	60	59.7	56.6	54.7	64.2	49.4	73.2	43.9	84.0
	72	71.5	67.5	66.0	76.5	59.8	87.0	53.5	98.7
	88	87.5	82.7	80.5	93.8	72.8	106.8	64.9	121.8
	96	95.4	90.0	88.0	102.0	79.8	116.0	71.3	131.6
44	9	9.5	9.5	8.7	10.9	7.9	12.4	7.2	14.2
	10	10.6	10.4	9.7	11.7	8.9	13.3	8.1	15.0
	12	13.1	13.0	12.1	14.6	11.0	16.4	10.1	18.4
	13	14.3	14.2	13.0	15.9	11.9	17.8	10.9	19.9
	15	16.0	15.7	14.7	17.6	13.6	19.7	12.5	22.0
	18	18.9	18.7	17.3	21.1	15.8	23.9	14.4	27.0
	20	21.3	18.9	19.5	21.4	17.6	24.4	15.7	27.9
	24	24.8	22.5	23.0	25.6	20.9	29.0	18.6	33.0
	26	27.4	25.2	25.5	28.5	23.5	32.3	21.4	36.6
	30	32.0	29.4	29.7	33.5	27.2	38.2	24.5	43.6
	35	36.7	33.3	34.0	37.9	31.0	43.4	27.6	49.6
	40	41.9	37.8	38.3	42.8	34.7	48.8	30.9	55.8
	48	49.8	45.0	46.1	51.2	42.0	58.0	37.4	66.0
	60	62.9	56.6	57.6	64.2	52.1	73.2	46.5	83.7
	72	74.7	67.5	69.1	76.8	63.0	87.0	56.1	99.0
	88	91.7	82.8	84.5	94.0	76.8	106.8	68.4	121.8
	96	99.7	90.0	92.2	102.4	84.1	116.0	74.8	132.0
46	9	9.9	9.5	9.1	10.9	8.3	12.4	7.6	14.2
	10	11.1	10.4	10.2	11.8	9.3	13.3	8.5	15.0
	12	13.7	13.0	12.6	14.6	11.6	16.4	10.6	18.5
	13	14.9	14.2	13.6	16.0	12.5	17.9	11.4	20.0
	15	16.8	15.7	15.4	17.6	14.2	19.7	13.0	22.0
	18	19.8	18.7	18.1	21.2	16.5	24.0	15.0	27.1
	20	22.2	18.9	20.5	21.4	18.6	24.4	16.6	27.9
	24	26.0	22.6	24.0	25.6	21.9	29.0	19.7	33.0
	26	28.6	25.2	26.6	28.5	24.6	32.3	22.5	36.6
	30	33.4	29.4	31.0	33.5	28.5	38.2	25.8	43.8
	35	38.3	33.3	35.5	37.9	32.5	43.4	29.1	49.6
	40	43.8	37.8	40.3	42.8	36.6	48.8	32.7	55.8
	48	52.1	45.2	48.2	51.2	43.9	58.0	39.5	66.0
	60	65.8	56.7	60.5	64.2	55.0	73.2	49.2	83.7
	72	78.2	67.8	72.3	76.8	66.0	87.0	59.3	99.0
	88	96.0	83.0	88.6	94.0	80.6	106.8	72.3	121.8
	96	104.3	90.4	96.5	102.4	88.0	116.0	79.1	132.0
48	9	10.4	9.5	9.5	10.9	8.7	12.4	7.9	14.1
	10	11.6	10.4	10.6	11.8	9.7	13.3	8.9	15.1
	12	14.4	13.0	13.2	14.6	12.1	16.4	11.1	18.5
	13	15.7	14.3	14.3	16.0	13.0	17.9	11.9	20.1
	15	17.5	15.7	16.1	17.6	14.8	19.8	13.6	22.1
	18	20.7	18.7	18.9	21.2	17.2	24.0	15.7	27.1
	20	23.4	18.9	21.5	21.4	19.6	24.4	17.5	27.9
	24	27.1	22.6	25.2	25.6	23.0	29.0	20.7	33.0
	26	29.9	25.2	27.8	28.5	25.7	32.3	23.5	36.6
	30	34.9	29.4	32.4	33.5	29.8	38.2	27.1	43.8
	35	40.0	33.3	37.2	38.0	34.0	43.4	30.6	49.6
	40	46.1	37.8	42.4	42.8	38.5	48.8	34.5	55.8
	48	54.4	45.2	50.5	51.2	46.1	58.0	41.5	66.0
	60	69.2	56.8	63.7	64.2	57.9	73.2	51.9	83.7
	72	81.6	67.8	75.8	76.8	69.1	87.0	62.2	99.0
	88	100.6	83.0	93.0	94.0	84.7	106.8	76.1	121.8
	96	108.9	90.4	101.1	102.4	92.2	116.0	83.0	132.0
50	9	10.9	9.5	9.9	10.9	9.1	12.4	8.3	14.1
	10	12.1	10.5	11.1	11.8	10.1	13.4	9.3	15.1
	12	15.1	13.0	13.8	14.6	12.7	16.5	11.6	18.5
	13	16.4	14.3	15.0	16.0	13.7	18.0	12.5	20.1
	15	18.3	15.8	16.8	17.7	15.5	19.8	14.2	22.2
	18	21.6	18.7	19.8	21.2	18.0	24.0	16.4	27.2
	20	24.5	18.9	22.6	21.5	20.5	24.4	18.5	27.9
	24	28.3	22.6	26.3	25.6	24.1	29.1	21.7	33.0
	26	31.2	25.2	29.1	28.5	26.9	32.3	24.6	36.6
	30	36.4	29.5	33.9	33.5	31.2	38.3	31.7	43.8
	35	41.7	33.4	38.8	38.0	35.7	43.4	32.1	49.6
	40	48.2	37.9	44.5	43.0	40.5	48.8	36.4	55.8
	48	56.7	45.2	52.8	51.2	48.4	58.2	43.6	66.0
	60	72.4	56.8	66.8	64.5	60.8	73.2	54.7	83.7
	72	85.1	67.8	79.2	76.8	72.6	87.3	65.4	99.0
	88	105.0	83.1	97.4	94.2	88.9	107.0	80.1	121.8
	96	113.5	90.4	105.7	102.4	96.8	116.4	87.3	132.0

Note: kwi is compressor power input

PHYSICAL SPECIFICATIONS



Model	09 AR2	10 AR2	12 AR2	13 AR2	15 AR2	18 AR2	20 AR2	24 AR2	26 AR2	30 AR2	35 AR2	40 AR2	48 AR2	60 AR2	72 AR2	88 AR2	96 AR2
Nominal Capacity	Ton	8.7	9.6	12.0	12.9	15.0	17.7	20.3	24.0	26.6	31.0	35.2	40.0	48.0	60.0	72.0	88.0
Nominal Power Input	kW	10.2	11.1	13.9	15.1	16.9	20.3	21.2	25.6	28.2	33.6	37.8	42.4	51.2	63.6	76.8	93.6
Type	Qty	Single [2]	Single [2]	Single [2]	Single [2]	Single [2]	Single [2]	Single [2]									
% Step Capacity Reduction																	
No. Of Refrigerant Circuits	Qty	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Coil Row / Total Face Area																	
Total CFM	CFM	9400	12500	13000	12800	17800	19000	19200	19800	27200	29200	29000	39600	38800	59100	78300	79200
No. Of Fans	Qty	1	1	1	2	2	2	2	2	3	3	3	4	4	6	8	8
Fan Diameter	inch [mm]	30 [760]	33.7 [850]	36 [914]	36 [914]	36 [914]	36 [914]	36 [914]	36 [914]	39 [991]	39 [991]	39 [991]	39 [991]	39 [991]	39 [991]	39 [991]	39 [991]
Motor Input Power	kW	1.10	1.80	1.80	0.90	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.80
Compressor																	
Condenser																	
Evaporator Type	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E	PH/E
Water Connection Sizes	inch [mm]	1 1/2 [38.1]	1 1/2 [38.1]	1 1/2 [38.1]	1 1/2 [38.1]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	3 [76.2]	3 [76.2]	4 [102]
Nominal Water Flow Rate	USGPM	21.5	24.0	28.7	31.1	35.9	43.1	47.9	57.4	62.2	71.8	83.7	95.7	114.8	154.1	174.1	211.3
Evaporator Pressure Drop	Psi	2.1	2.9	2.9	3.0	3.0	3.1	3.1	3.3	2.7	2.8	2.8	2.9	3.1	2.9	3.1	3.1
Strainer (Supply/Loose) PD	ft.wg	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	-	-	-	-
Pump Type	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Vertical	Vertical	Vertical
Available External Head Pressure	ft.wg	61.8	55.1	65.0	59.8	66.4	59.6	56.4	54.3	55.7	69.5	93.0	76.4	99.0	55.0	79.5	84.4
Power Input	kW	0.75	0.75	1.00	1.00	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	4.00	4.00	5.50
Speed	RPM	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900
Electrical																	
Compressor (each)	R/LA	8.5	9.5	11.7	12.9	13.9	16.8	19.7	24.7	12.7	15.0	16.8	19.3	24.5	18.3	22.4	42.7
	L/R/A	66	73	80	96	96	140	174	111	118	118	118	140	174	145	175	320 / 270
Unit Data																	
Unit Width	inch [mm]	36 1/2 [934]	42 [1067]	36 1/2 [934]	36 1/2 [934]	36 1/2 [934]	42 [1067]	42 [1067]	42 [1067]	42 [1067]	43 [1092]	37 1/2 [946]	43 [1092]	43 [1092]	43 [1092]	43 [1092]	43 [1092]
Unit Length	inch [mm]	36 1/2 [934]	42 1/2 [1080]	42 1/2 [1080]	70% [1751]	73% [1867]	84 [2133.6]	84 [2133.6]	84 [2133.6]	84 [2133.6]	112% [2858]	127 [3226]	127 [3226]	127 [3226]	127 [3226]	127 [3226]	127 [3226]
Unit Height	inch [mm]	51 1/2 [1326]	52 1/2 [1334]	48 1/2 [1322]	56 1/2 [1345]	62 1/2 [1588]	55 1/2 [1410]	65 1/2 [1664]	66 1/2 [1669]	66 1/2 [1669]	72 1/2 [1842]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]
Unit Shipping Weight	lbs [kg]	750 [340]	830 [375]	920 [417]	980 [445]	1350 [612]	1450 [658]	1450 [676]	2010 [912]	2430 [1138]	2620 [1102]	2920 [1135]	3360 [1124]	4550 [2054]	5000 [2258]	8340 [3733]	8710 [3951]
Unit Operating Weight	lbs [kg]	800 [362]	890 [404]	990 [449]	1050 [476]	1300 [590]	1450 [658]	1600 [708]	2170 [984]	2620 [1180]	3150 [1429]	3620 [1642]	4900 [2233]	5400 [2450]	9000 [4082]	9400 [4264]	9400 [4264]
Charge R22	lbs [kg]	22 [10]	24 [11]	29 [13]	31 [14]	35 [16]	42 [19]	46 [21]	55 [25]	62 [28]	71 [32]	82 [37]	93 [42]	110 [50]	139 [63]	165 [75]	201 [91]
General																	

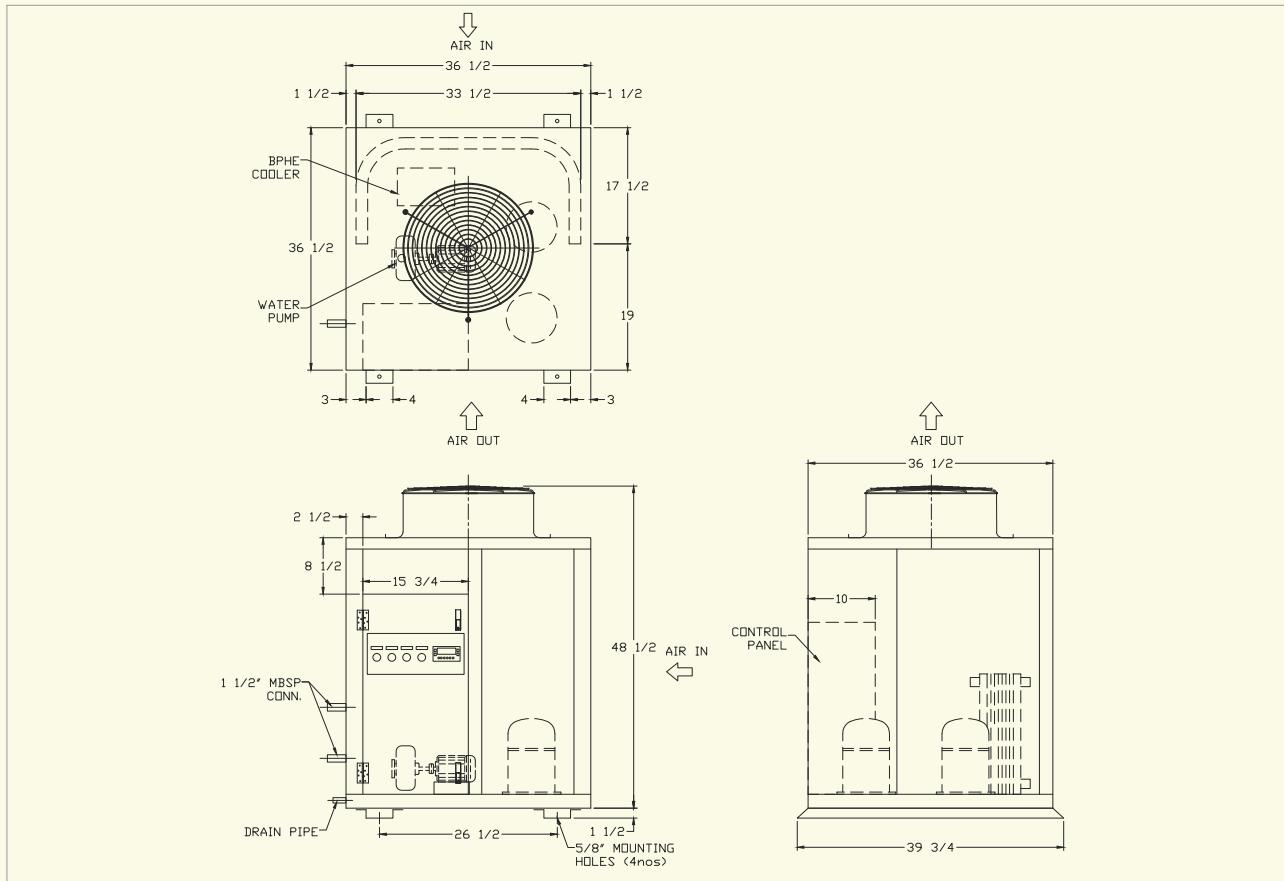
PHYSICAL SPECIFICATIONS



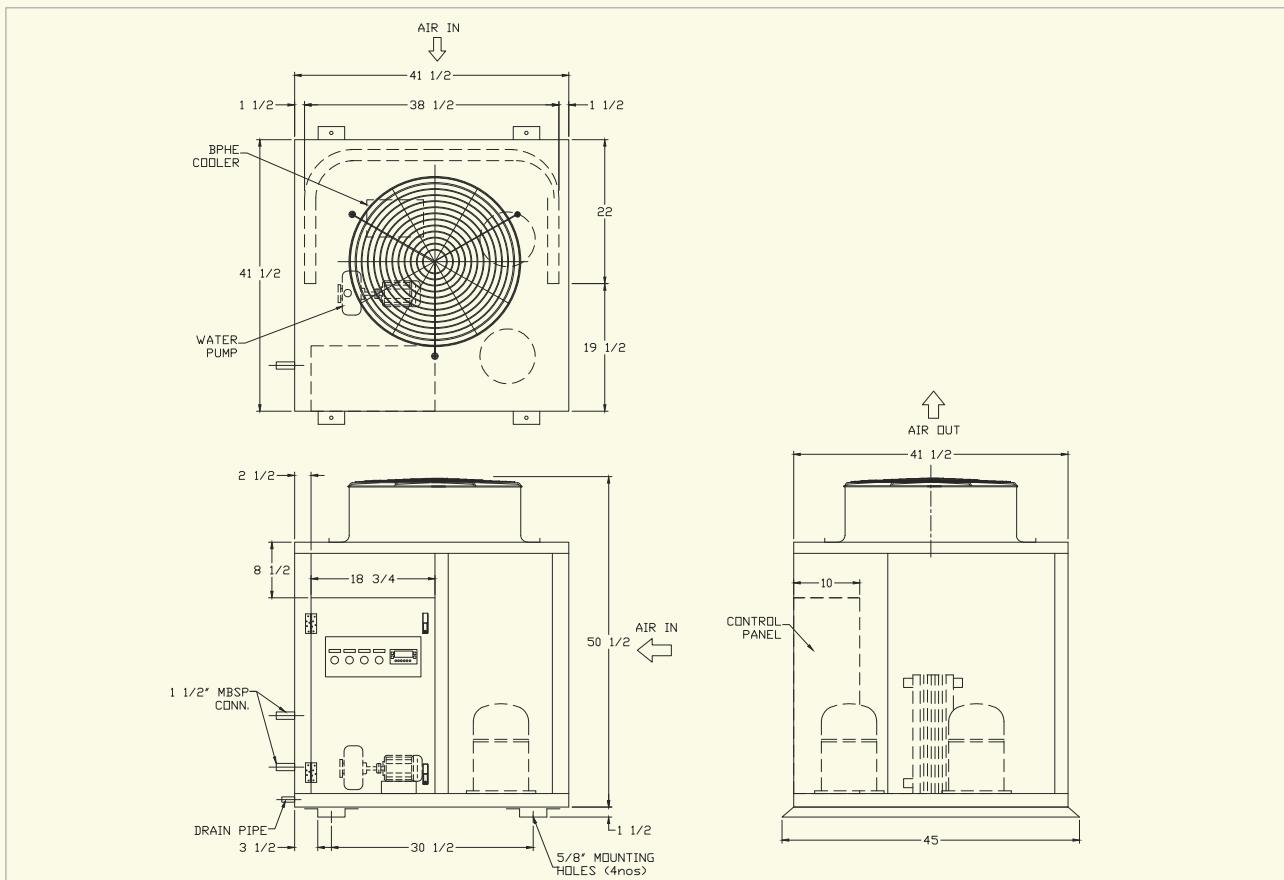
Model	09 AR7	10 AR7	12 AR7	13 AR7	15 AR7	18 AR7	20 AR7	24 AR7	26 AR7	30 AR7	35 AR7	40 AR7	48 AR7	60 AR7	72 AR7	88 AR7	96 AR7
Nominal Capacity	Ton	8.7	9.7	12.1	13.0	14.7	17.3	19.5	23	25.5	28.7	34.0	38.4	46.1	57.6	69.1	84.5
Nominal Power Input	kW	10.9	11.7	14.6	15.9	17.6	21.2	21.4	25.6	28.5	33.5	37.9	42.8	51.2	64.2	76.8	94.0
Type	Qty	Single [2]	Tandem [4]	Tandem [4]	Tandem [4]	Tandem [4]	Tandem [6]	Tandem [6]	Tandem [8]								
% Step Capacity Reduction		100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%	100% 50%
No. Of Refrigerant Circuits	Qty	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Coil Row / Total Face Area	ft ²	2 / 16.8	2 / 20.6	2 / 21.7	2 / 23.3	2 / 29.3	2 / 31.8	2 / 36.0	2 / 42.0	2 / 53.2	2 / 61.2	2 / 85.6	2 / 94.1	2 / 133.3	2 / 175.4	2 / 171.1	
Total CFM	CFM	9100	12700	12800	12200	18000	17500	18800	18800	27400	28000	38000	38200	57000	75500	77200	104000
No. Of Fans	Qty	1	1	1	2	2	2	2	2	3	3	4	4	6	6	8	8
Fan Diameter	inch [mm]	30 [760]	33.7 [850]	33.7 [850]	26 [660]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	33.7 [850]	33.7 [850]	
Motor Input Power	kW	1.10	1.80	1.80	0.90	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.80
Evaporator Type		PHE	PHE	PHE	PHE	PHE	S&T	S&T									
Water Connection Sizes	inch [mm]	1 1/2 [38.1]	1 1/2 [38.1]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 [50.8]	2 1/2 [63.5]	2 1/2 [63.5]	3 [76.2]	3 [76.2]	3 [76.2]	4 [102]	4 [102]	
Nominal Water Flow Rate	USGPM	21.5	24.0	28.7	31.1	35.9	43.1	47.9	57.4	62.2	71.8	83.7	95.7	114.8	154.1	174.1	211.3
Evaporator Pressure Drop	Psi	2.1	2.9	2.9	3.0	3.0	3.1	3.1	3.3	2.7	2.8	2.8	2.9	3.1	3.1	3.1	3.1
Strainer (Supply Loose) PD	ft.wg	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	-	-	-
Pump Type	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Vertical	Vertical	
Available External Head Pressure	ft.wg	61.8	55.1	65.0	59.8	66.4	59.6	56.4	54.3	55.7	69.5	93.0	76.4	99.0	55.0	79.5	84.4
Power Input	kW	0.75	0.75	1.00	1.00	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	4.00	5.50	7.50
Speed	RPM	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900
Compression (each)	RA	9.9	10.7	13.2	14.3	15.7	18.6	20.3	26.2	13.7	15.9	17.7	20.1	26.2	23.2	45.1 / 38.3	45.1
	LRA	66	73	80	80	96	96	140	174	111	118	118	140	174	145	175	320
Unit Data	RA	25.0	27.1	32.6	33.9	39.0	44.8	49.6	61.4	52.9	61.7	67.1	77.1	97.2	155.3	175.1	203.0
	MCA	27	30	36	37	43	49	55	68	66	71	82	104	160	181	214	240
	MFS	32	40	50	50	60	63	75	100	63	80	80	100	125	175	200	250
Unit Width	inch [mm]	36 1/2 [934]	42 [1067]	42 [1067]	36 1/2 [934]	36 1/2 [934]	42 [1067]	42 [1067]	42 [1067]	37% [946]	43 [1092]	43 [1092]	43 [1092]	43 [1092]	88 [2235]	88 [2235]	88 [2235]
Unit Length	inch [mm]	36 1/2 [927]	42 2/3 [1080]	42 2/3 [1080]	70 1/3 [1791]	73 1/3 [1867]	84 [2133.6]	84 [2133.6]	112% [2858]	127 [3226]	127 [3226]	127 [3226]	127 [3226]	127 [3226]	88 [2235]	133 [3378]	133 [3378]
Unit Height	inch [mm]	51 1/2 [1256]	52 1/2 [1334]	48 1/2 [1232]	56 1/2 [1588]	62 1/2 [1435]	65 1/2 [1410]	65 1/2 [1664]	66 1/2 [1689]	72 1/2 [1689]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	178 [4521]	178 [4521]
Unit Shipping Weight	lbs [kg]	750 [1340]	830 [1375]	920 [1417]	1050 [476]	1210 [549]	1450 [658]	1490 [676]	2430 [1102]	2620 [1125]	3360 [1524]	4550 [2064]	5000 [2268]	8340 [3783]	8710 [3951]		
Unit Operating Weight	lbs [kg]	800 [1362]	890 [4041]	990 [4491]	1300 [590]	1450 [658]	1560 [708]	1600 [726]	2170 [984]	2620 [1188]	3150 [1429]	4900 [1642]	5400 [2450]	9000 [4082]	9400 [4264]		
Charge R407c	lbs [kg]	22 [10]	24 [11]	29 [13]	31 [14]	42 [19]	46 [21]	55 [25]	62 [28]	71 [32]	82 [37]	93 [42]	110 [50]	139 [63]	165 [75]	201 [91]	218 [99]

DIMENSION DATA

SCOD 09 AR2(7)



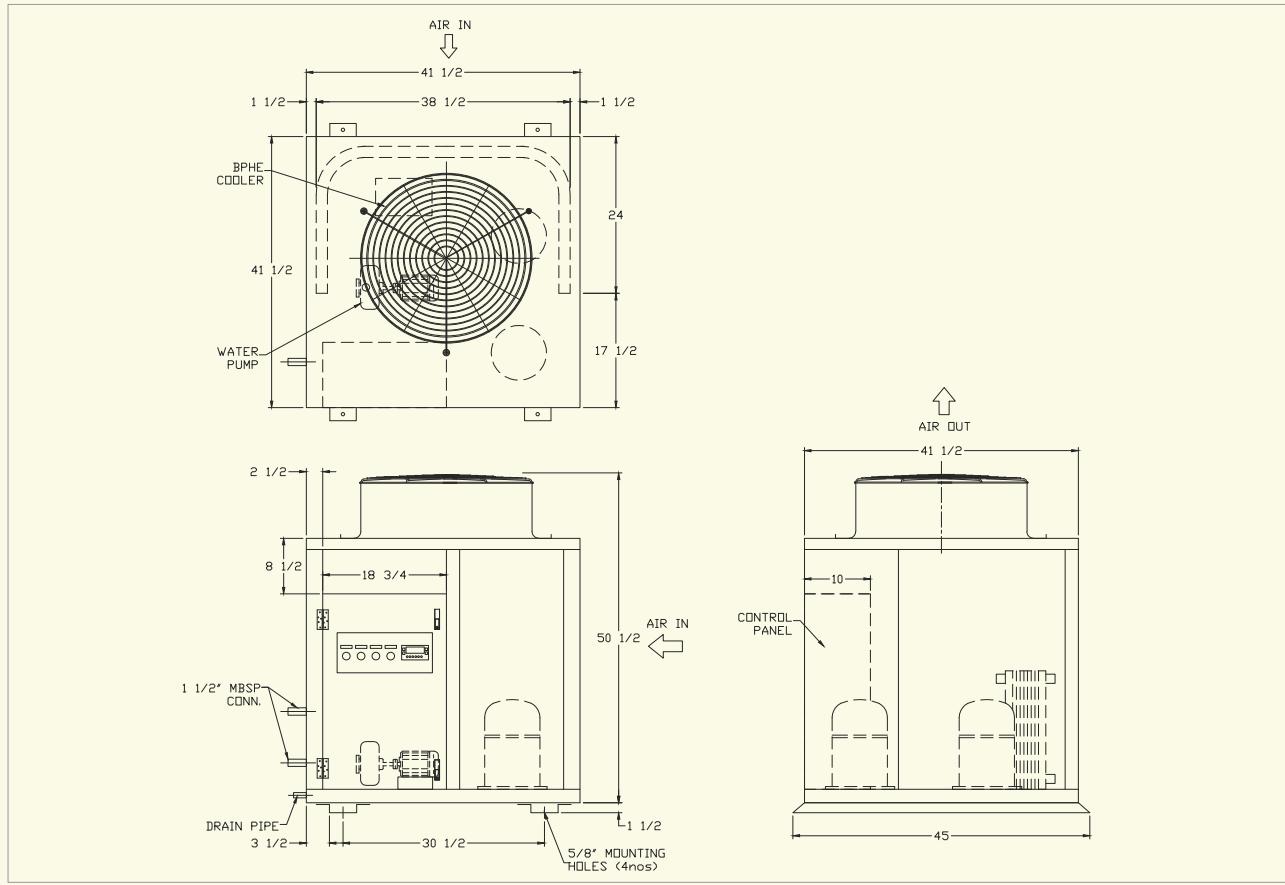
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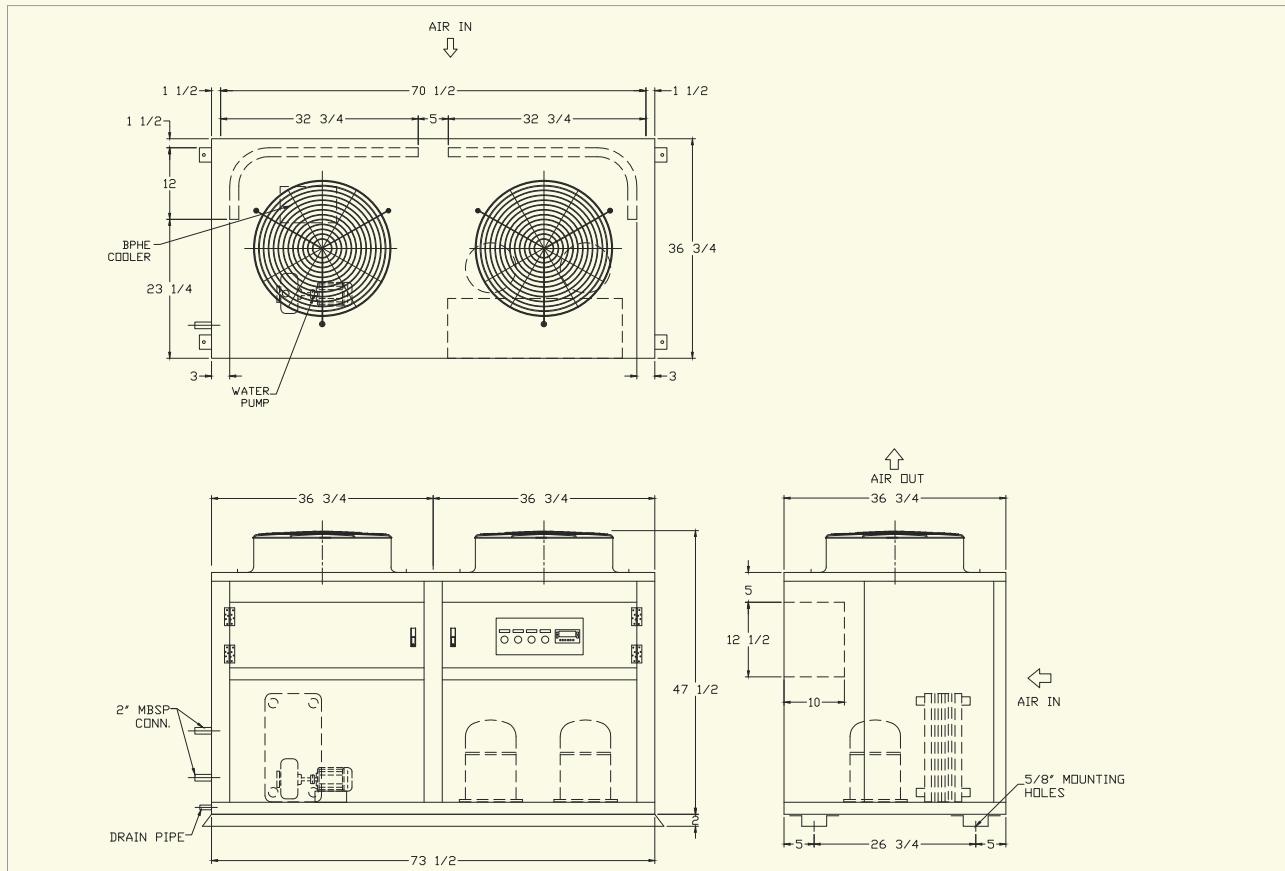
NOTE: ALL DIMENSIONS ARE IN INCHES

DIMENSION DATA

SCOD 12 AR2(7)



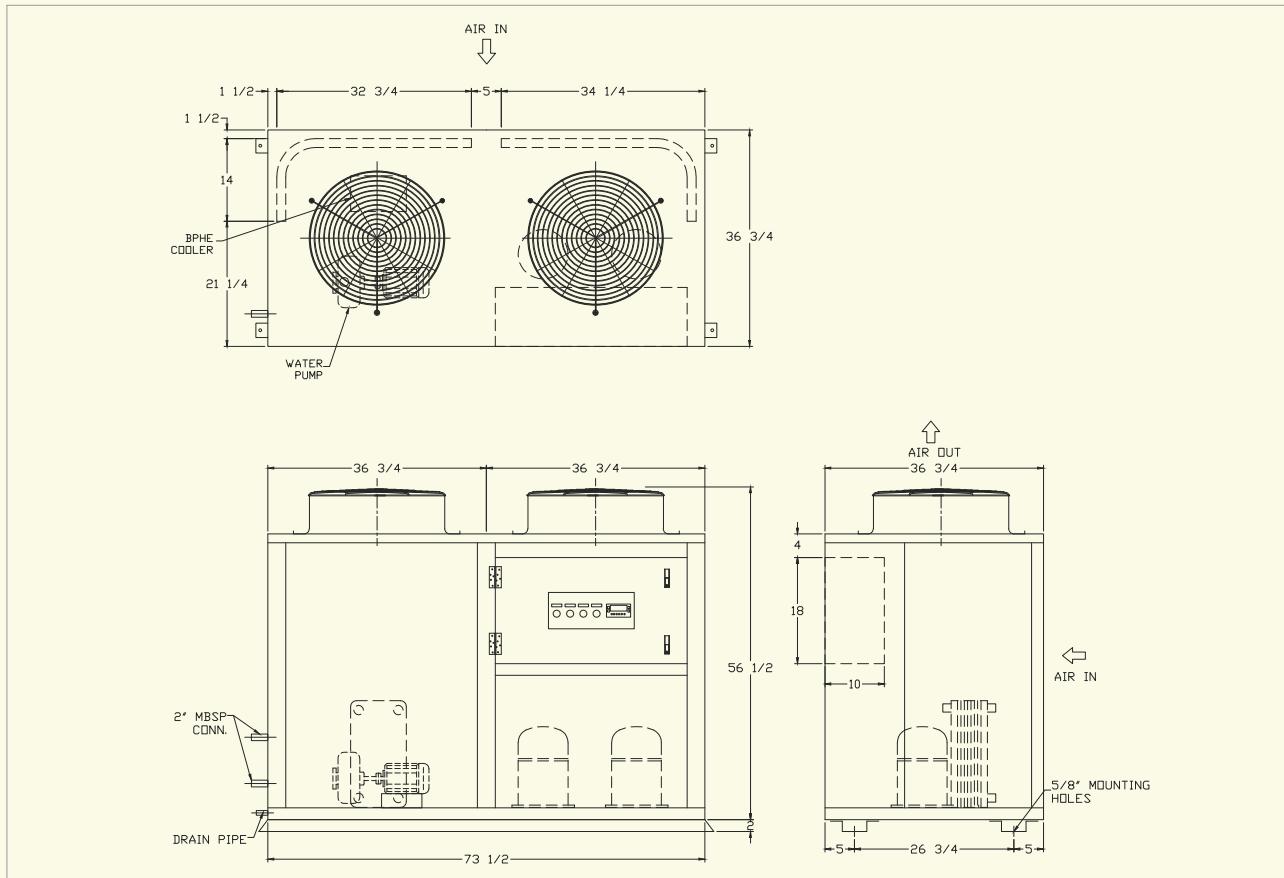
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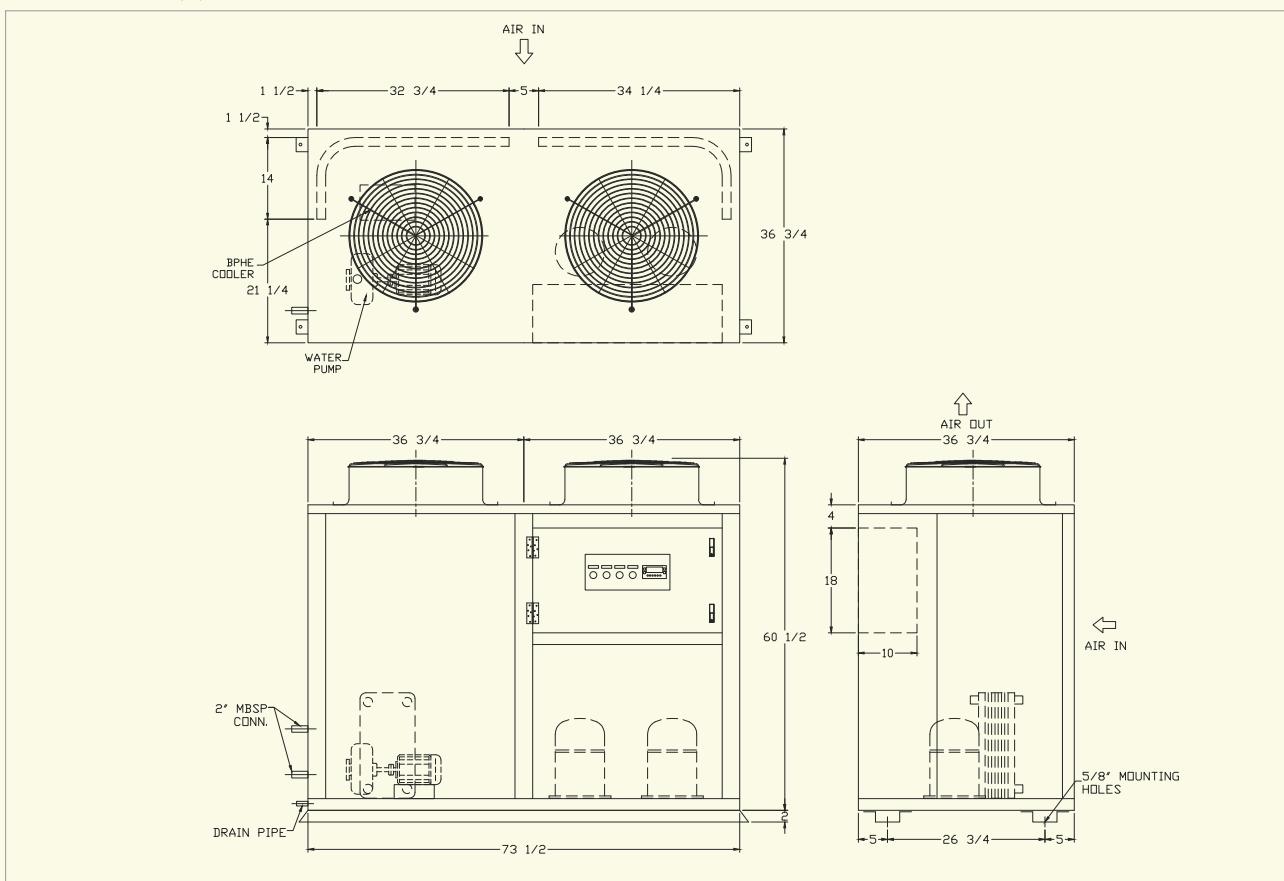
NOTE: ALL DIMENSION ARE IN INCHES

DIMENSION DATA

SCOD 15 AR2(7)



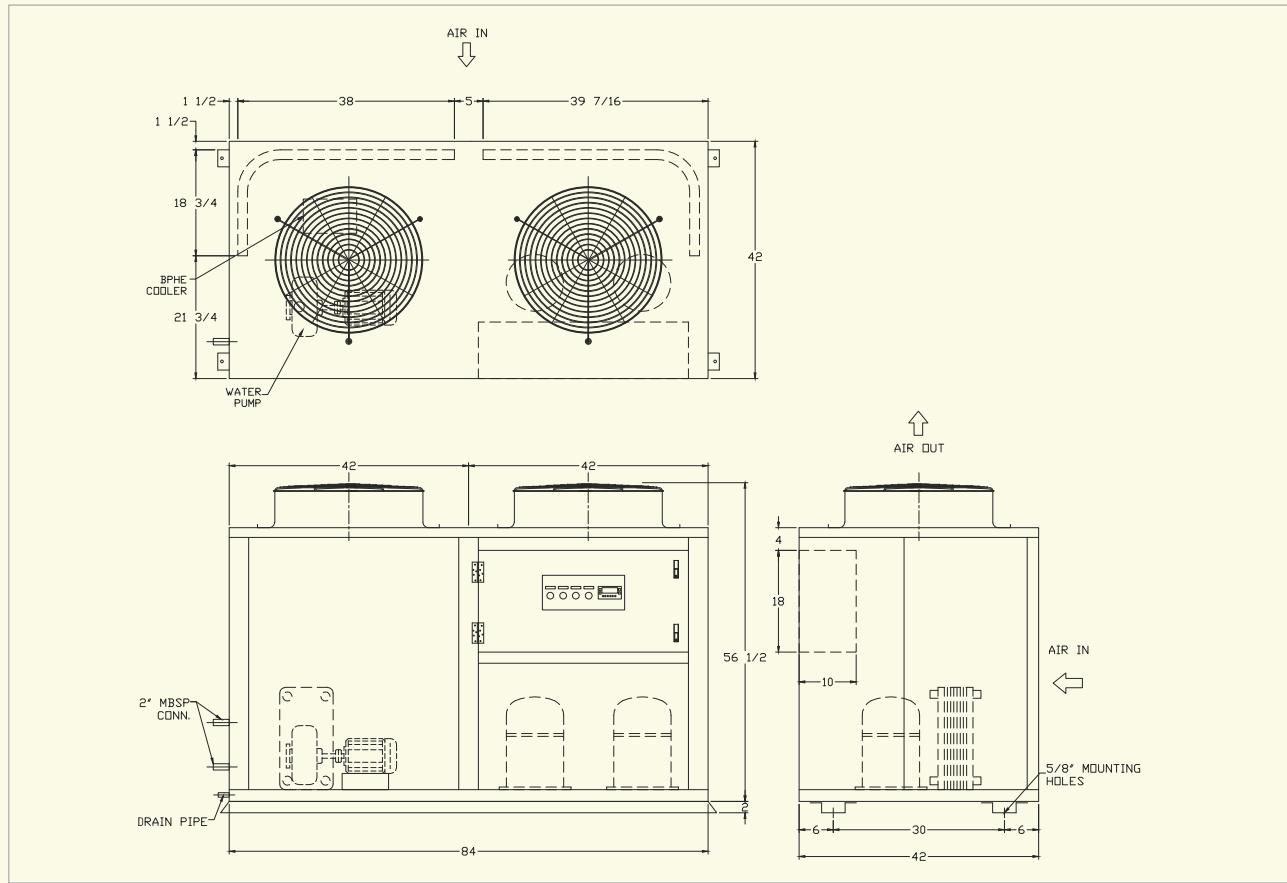
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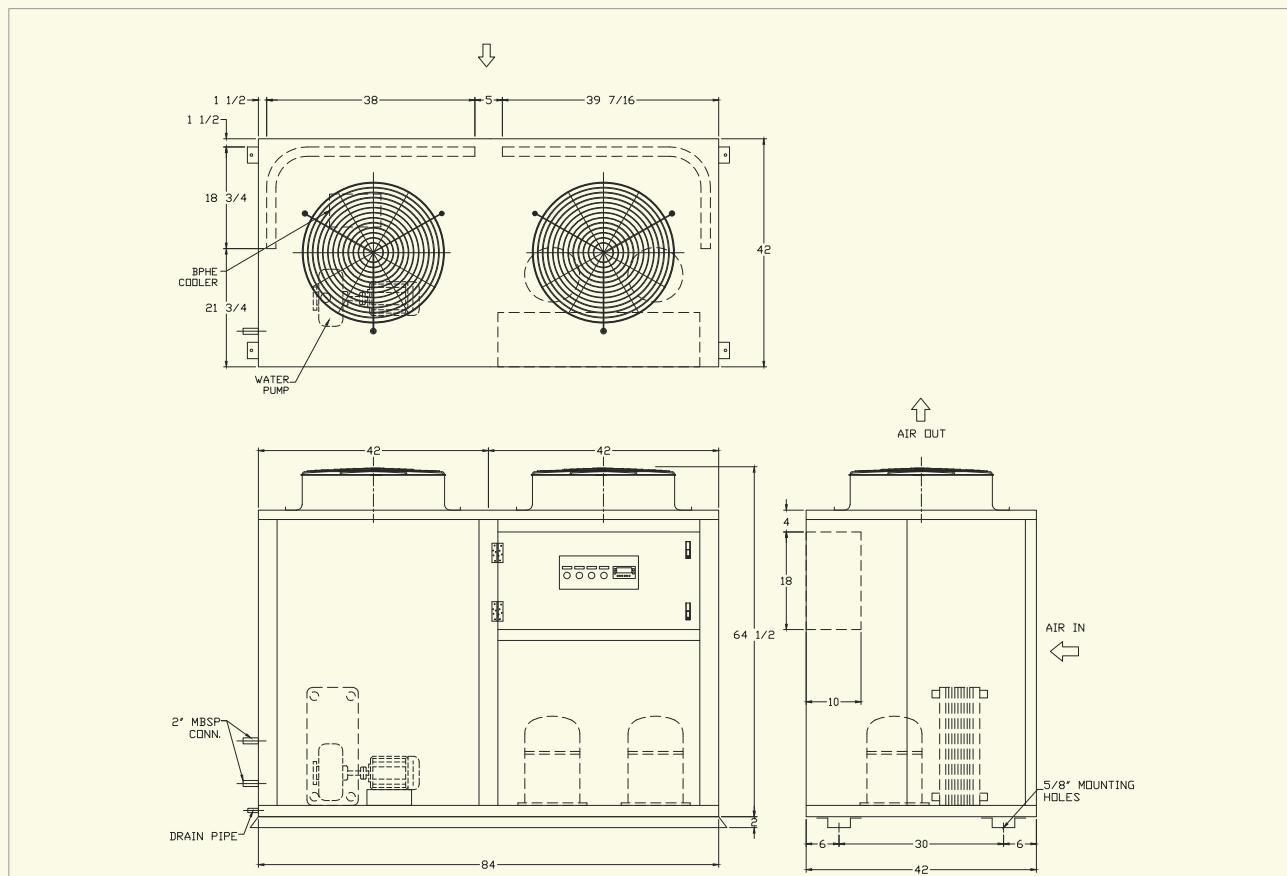
NOTE: ALL DIMENSION ARE IN INCHES

DIMENSION DATA

SCOD 20 AR2(7)



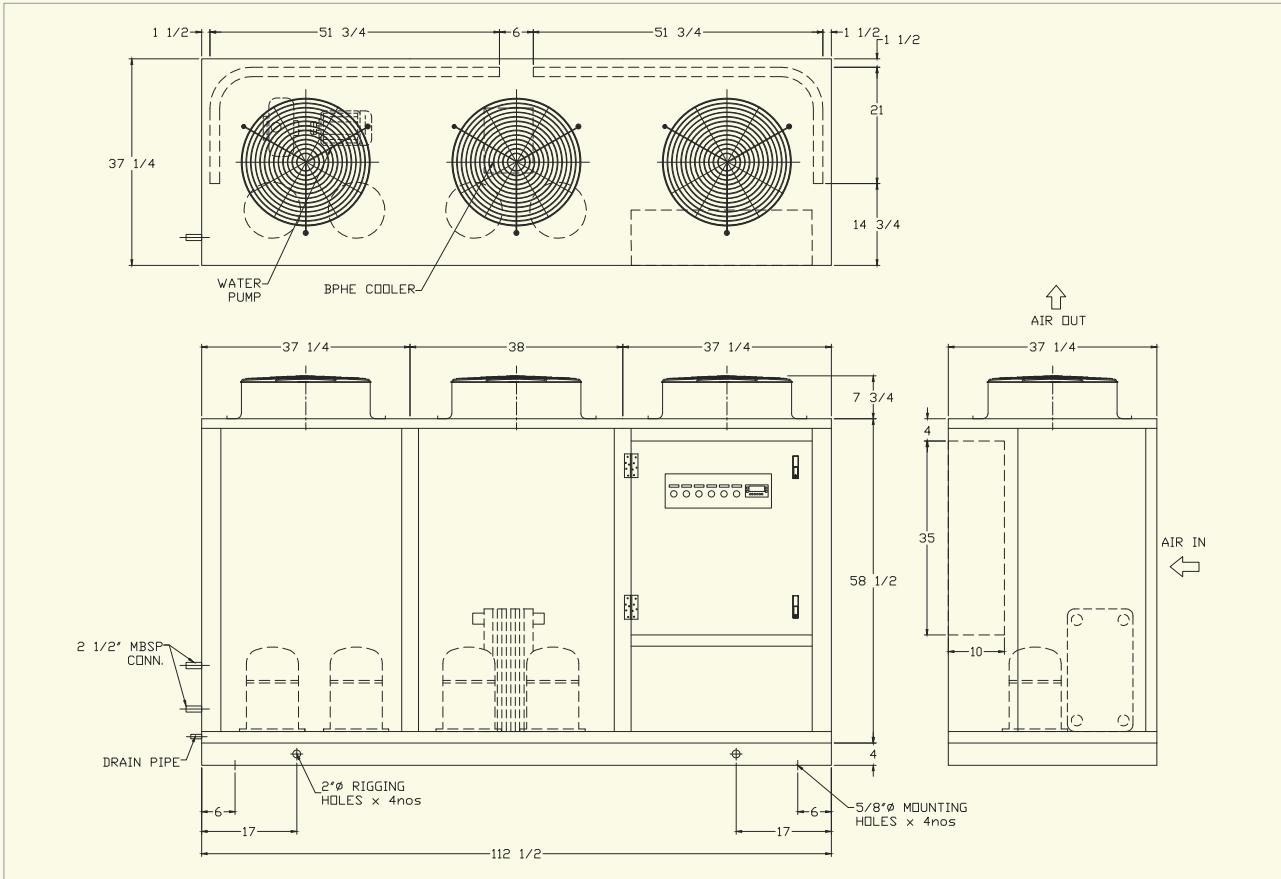
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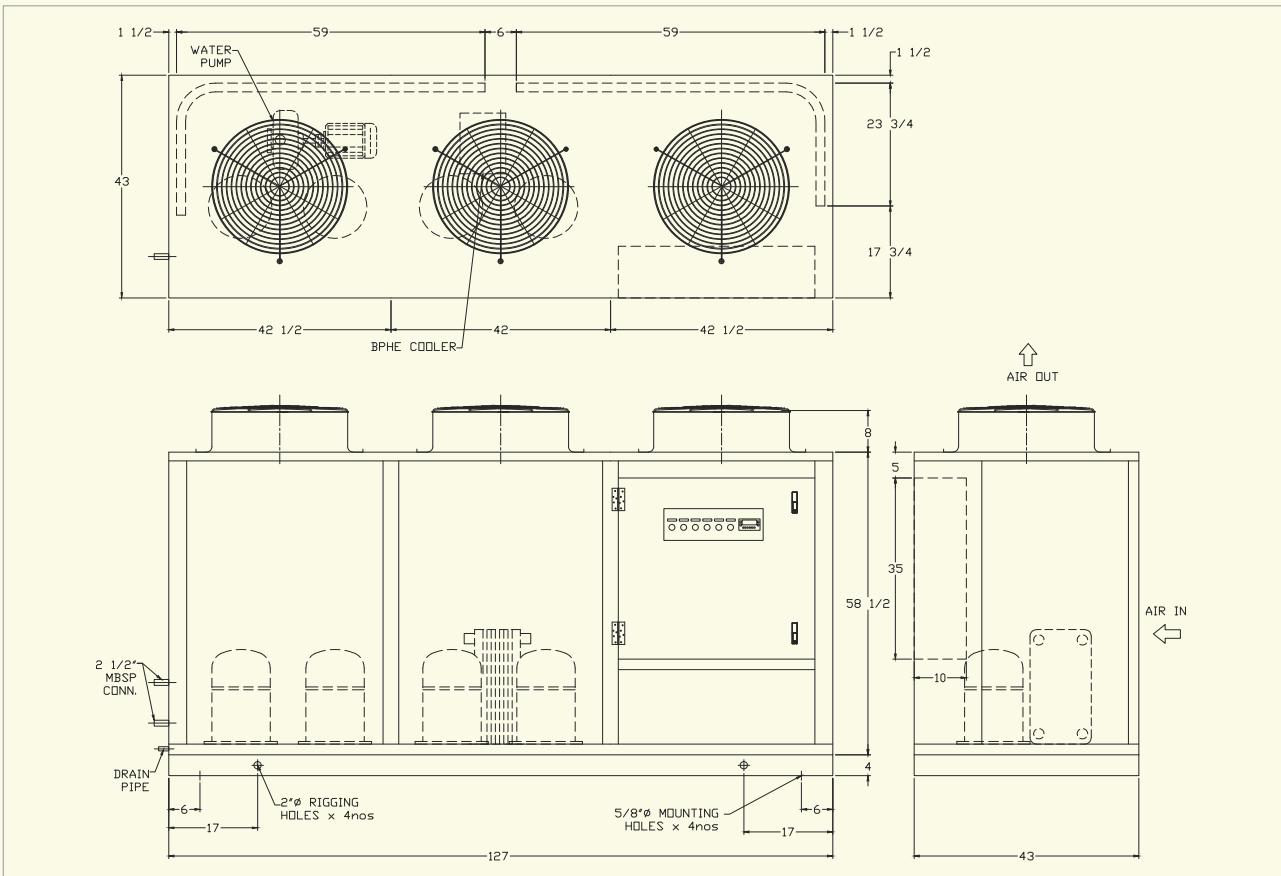
NOTE: ALL DIMENSION ARE IN INCHES

DIMENSION DATA

SCOD 26 AR2(7)



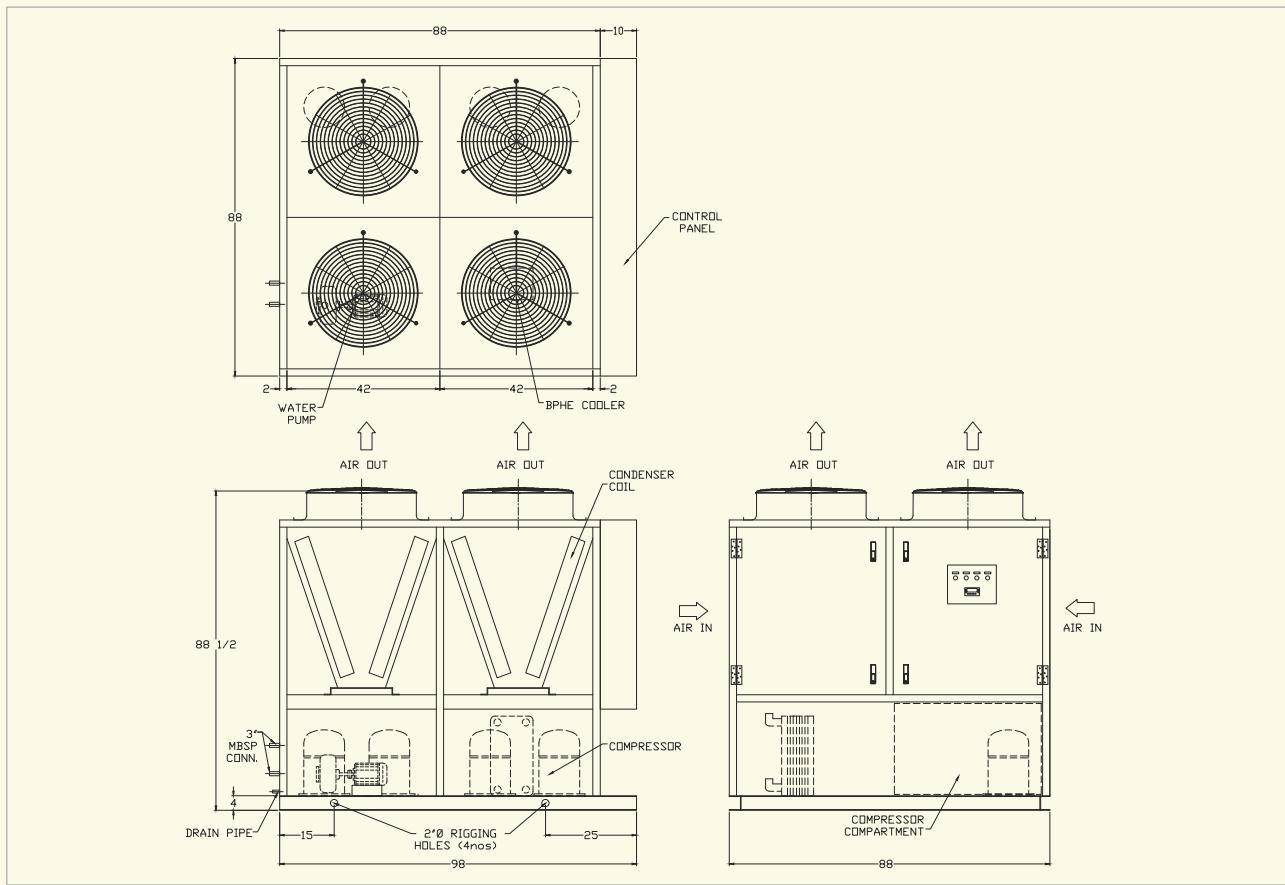
SCOD 30 AR2(7), SCOD 35 AR2(7)



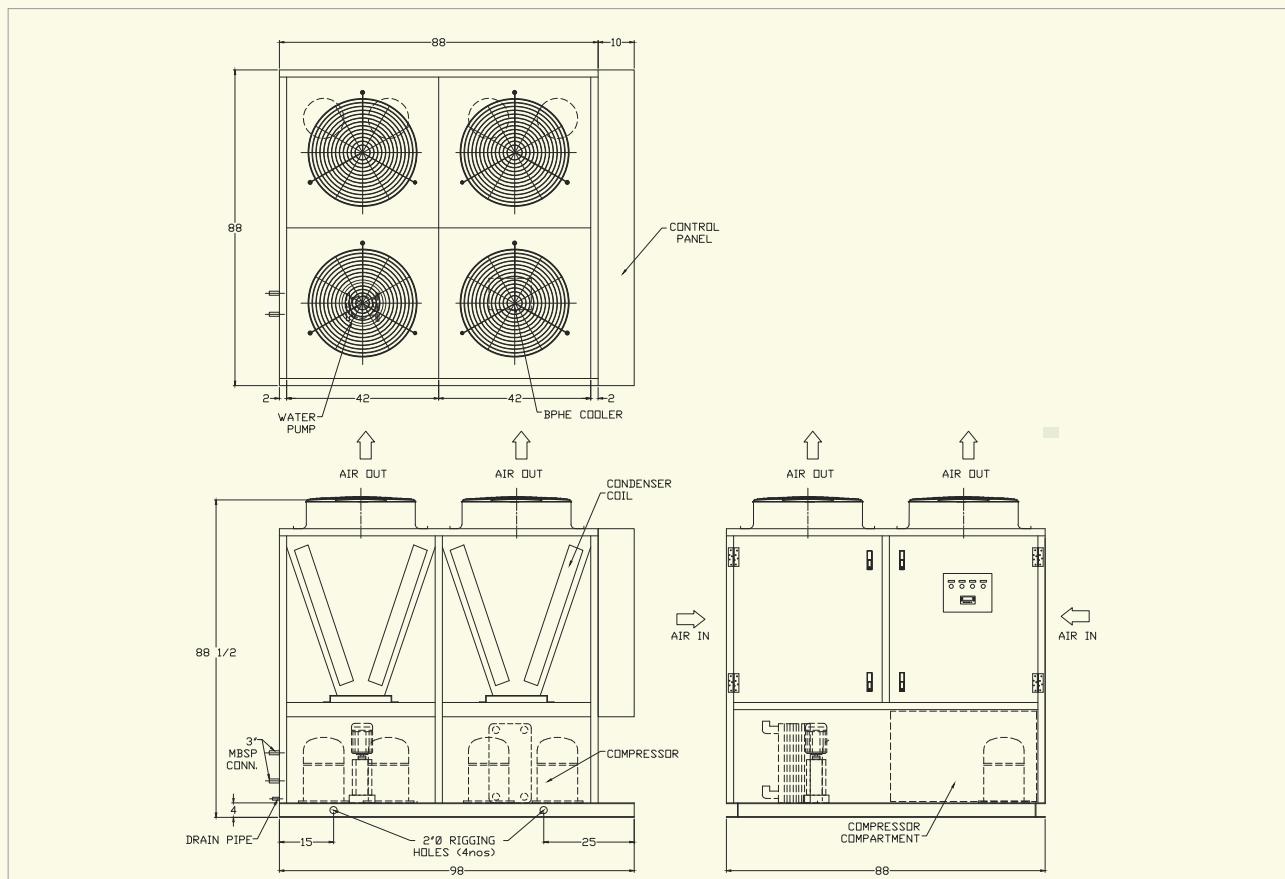
NOTE: ALL DIMENSION ARE IN INCHES

DIMENSION DATA

SCOD 40 AR2(7)



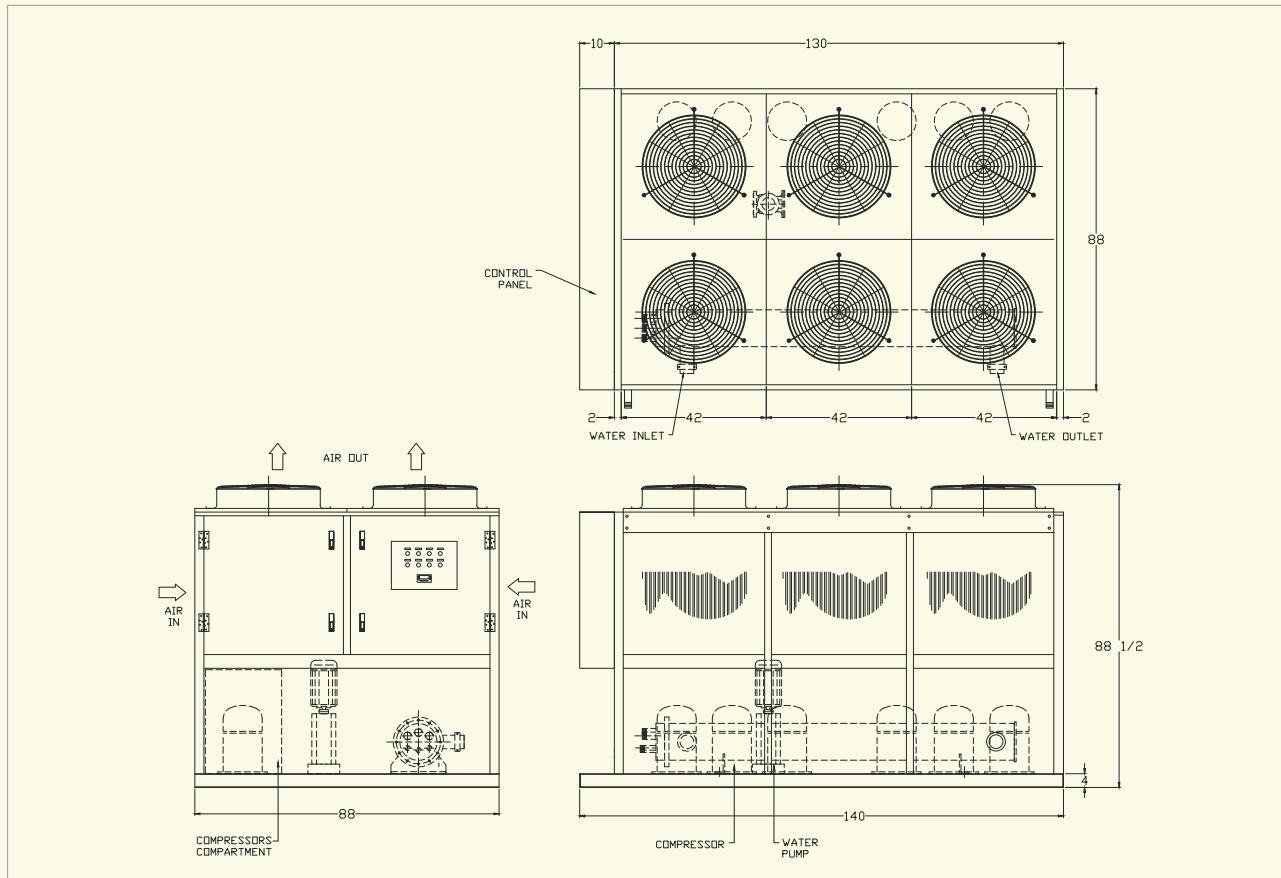
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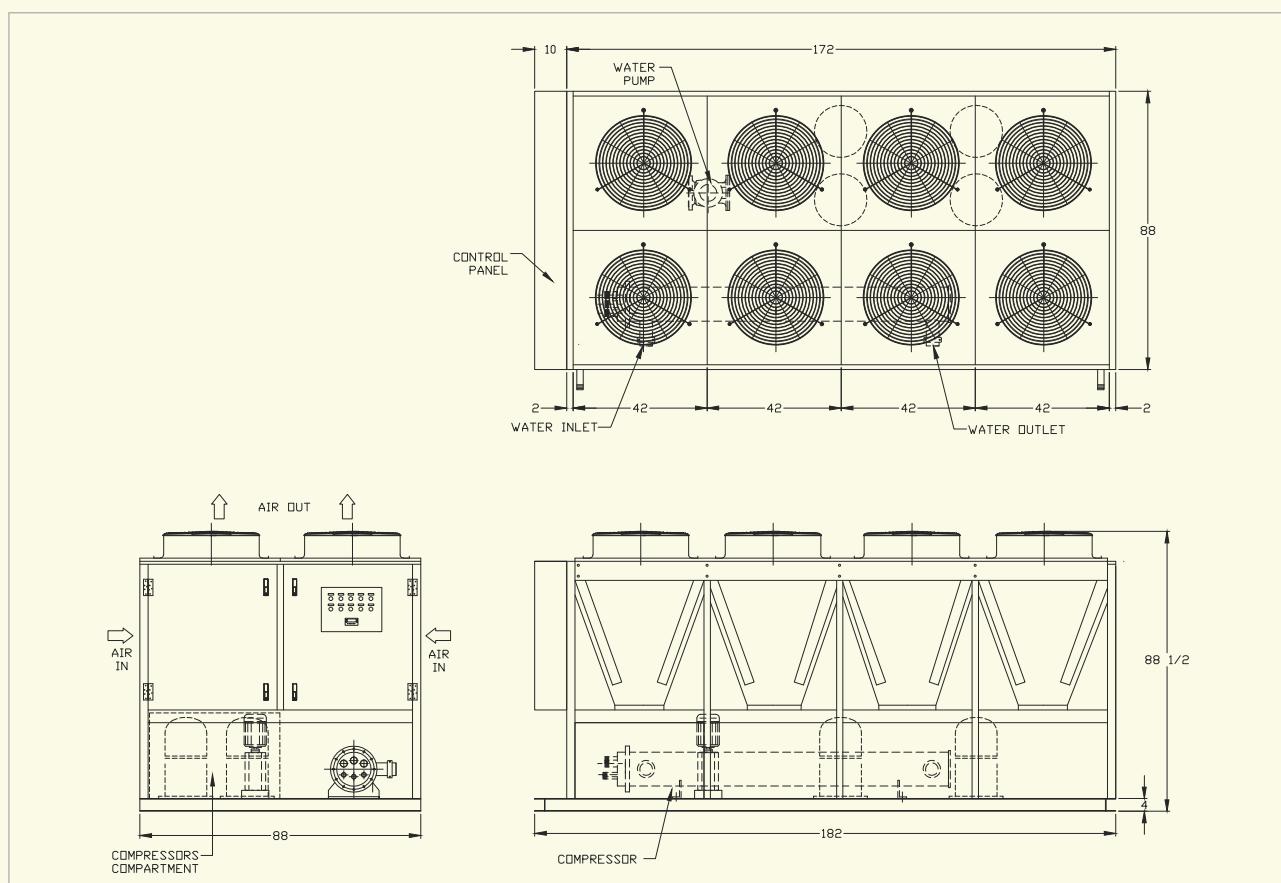
NOTE: ALL DIMENSION ARE IN INCHES

DIMENSION DATA

SCOD 60 AR2(7), SCOD 72 AR2(7)



SCOD 88 AR2(7), SCOD 96 AR2(7)



NOTE: ALL DIMENSION ARE IN INCHES



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